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THE
CYCLOPÆDIA;
OR,
Universal Dictionary
OF
ARTS, SCIENCES, AND LITERATURE.

VOL. V.

CYCLOPEDIA:

Classical Literature

AND SCIENCE AND LITERATURE

THE
CYCLOPÆDIA;

OR,

UNIVERSAL DICTIONARY

OF

Arts, Sciences, and Literature.

BY

ABRAHAM REES, D.D. F.R.S. F.L.S. *S. Amer. Soc.*

WITH THE ASSISTANCE OF

EMINENT PROFESSIONAL GENTLEMEN.

ILLUSTRATED WITH NUMEROUS ENGRAVINGS,

BY THE MOST DISTINGUISHED ARTISTS.

IN THIRTY-NINE VOLUMES.

VOL. V.

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CYCLOPÆDIA:

OR, A NEW

UNIVERSAL DICTIONARY

OF

ARTS and SCIENCES.

(SECOND EDITION.)

BOOK-KEEPING.

BOOK-KEEPING is the art of recording mercantile transactions in a regular and systematic manner.

A merchant's books should exhibit the true state of his affairs. They should shew the particular success of each transaction, as well as the general result of the whole; and should be so arranged as to afford correct and ready information upon every subject for which they may be consulted.

Books may be kept either by single or double entry.

Single Entry is chiefly used in retail business; it is the most concise and simple method of book-keeping; but not the most perfect, being defective in some essential particulars.

Double Entry is generally used in wholesale and mercantile affairs; whence it is sometimes called *Merchants' Accounts*. This method is universally preferred in extensive commerce, being the most comprehensive and systematic in its principles, and the most certain in its conclusions. Book-keeping, as a science, is therefore understood to mean the method by double entry; and in this sense we shall use the term, unless when there is occasion to distinguish double from single entry.

BOOK-KEEPING, History of. The origin of book-keeping, like that of most other useful arts, is involved in great obscurity. It is generally supposed to have been first practised at Venice in the fifteenth century, when that city was the grand emporium of Europe. Some authors, however, think that double entry was known to the ancients, and revived only in Italy, with the revival of commerce; and certain quotations are adduced in support of this opinion. Thus Pliny, in speaking of fortune, says, "Huic omnia expensa; huic omnia feruntur accepta; et in tota ratione mortalium sola utramque paginam facit," lib. ii. cap. 7.

Similar passages may be likewise quoted from others, which shew, that the ancients entered the receipts and pay-

ments of money on opposite pages, in the way of debtor and creditor; but nothing beyond single entry can be inferred from this practice; nor is it probable that any thing more was wanted in the rude and simple state of ancient commerce. Insurances, bills of exchange, and other modern improvements required, and, in all probability, produced corresponding improvements in the mode of keeping accounts; but the circumstance which places the question in the clearest light is, that the terms of this art cannot be traced to any ancient language, but seem immediately derived from the Italian, as adopted in the other languages of Europe. When Snellius translated Stevin's book-keeping into Latin, he was obliged to invent or adopt new terms. Thus he calls book-keeping, *apologistica*; the ledger, *codex accepti expensæ*; the waste-book, *liber deletitiæ*; the stock account, *fori*; and the balance-account, *epilogismus*.

From the principles of book-keeping, conjectures may be formed of its origin. The double purpose of a bill of exchange, and the manner of recording the same, might have naturally suggested the idea of double entry. The principle might have been even deduced from the axioms of Euclid, or the properties of an algebraic equation; and it is remarkable that the first European author on algebra, Lucas de Burgo, wrote the first treatise on book-keeping, which is thus described by de la Porte: "Vers l'an. 1495, Frère Luc Italien de nation, en fit imprimer un traité en Italien (c'est le plus ancien auteur que j'aie vu sur cette matière), il fut suivi par plusieurs auteurs du même Pays, & par des François, qui au commencement du siècle suivant nous en ont donné des Méthodes imprimées. Mais l'ordre embarrassant, & le style long & embrouillé de ces ouvrages comparés à la netteté & à la brièveté qui sont en usage aujourd'hui, font voir combien l'expérience a poli & abrégé cette Science." *La Science des Négocians et Teneurs de Livres*, par M. De la Porte, p. 12. Paris, 1753.

Vol. V.

B

La Porte's

La Perte's remarks on the want of method and arrangement in the old systems of book-keeping, will, in some measure, apply to his own, though it still continues a favourite work in France. We shall, however, take no further notice here of foreign publications, but confine our observations to those of our own country, where every subject connected with commerce seems to have been cultivated with the greatest assiduity and success.

The first treatise on book-keeping, in the English language, of which there is any account, was published in the year 1543 by Hugh Oldcastle, a schoolmaster; and it was reprinted, in 1588, by John Mellis, under the following curious title: "A briefe instruction and manner how to keepe bookes of accompts, after the order of debitor and creditor, and as well for proper accompts, partible, &c. by three bookes, named the memoriall, journall, and leager. Newly augmented and set forth by John Millis, scholemaster of London. Imprinted by him at the Signe of the White Beare, nigh Baynard's Castle, 1588, 12mo." In his Epistle to the Reader, Mellis says, "And knowe ye for certaine, that I presume ne vsurpe not to set forth this worke of mine own labour and industrie, for truly I am but the renewer and reuiuer of an auncient old copie printed here in London the 14th of August 1543." See Ames's *Typographical Antiquities*, vol. ii. p. 753.

In 1569, a system of book-keeping was published in London by James Peele, who says, in his preface, "that he had instructed many mercantile people in this art, which had been long practised in other countries, though then new in England."

There is no trace of any other work of the kind until the year 1652, when John Collins, an eminent mathematician and accountant, published a large work, entitled, "An Introduction to Merchants' Accounts," which served long as a standard book on the subject.

About the beginning of the following century, several smaller systems were written, chiefly by Snell, Hatton, Malcolm, Webster, Miers, and Stevens; but the most popular work that had yet appeared, was Mair's "Book-keeping methodized," published in 1738, which, after passing through three editions, was re-printed, with alterations, in 1768, under the new title of "Book-keeping modernized;" and these alterations, he says, became necessary, "in consequence of the constant change and perpetual flux in the forms and fashions of accountship." But it may be observed, that if this edition was modelled after the real practice of that time, the forms and arrangements of merchants' accounts must have since undergone great changes, and manifest improvements. In Mair's Book-keeping, however, the principles of double entry are correctly explained; but the rules and examples are too numerous and verbose for school practice.

From the first appearance of this work, to the year 1789, numerous other systems were published, better adapted to the purposes of teaching the art, though differing but little in arrangement. The most generally approved were those of Dodson, Weston, Donn, Hutton, Hamilton, Gordon, Dowling, and Jackson. Tracts were also written, within the above period, by Crosby, London, Shortland, Wood, Cooke, Sedger, and Dilworth.

On a review of the foregoing publications, it does not appear that the theory of book-keeping had hitherto kept pace with the improvements of practice. While merchants were constantly adopting plans of arrangement, which promoted perspicuity and correctness, and diminished the labour of the counting-house; school-masters, the chief authors on book-keeping, seemed only to consult or imitate each

other's works, which had been long considered by men of business as obsolete or impracticable.

A work of a very different description was published in 1789, by Benjamin Booth, a merchant, who thus observes in his preface: "It is surprising that in a commercial country like this, there should not be a treatise on the subject (book-keeping), which, when applied to a large scale of business, can be reduced to practice. Those I have seen, appear to have been written by persons who had not abilities sufficient for the undertaking, or by such as never had an opportunity of bringing their theories to the test of experience." This elaborate work, which is evidently the result of experience, contains various examples of judicious arrangement; but it is not elementary, having only a journal and ledger.

Some smaller publications followed, which deserve commendation, particularly those of Mr. Wicks and Mr. Shires. The latter work is stated to be the result of thirty years' experience. It exhibits much neatness and ingenuity in the arrangement; but, like Booth's Book-keeping, it contains only a journal and ledger.

In tracing the progress of Italian book-keeping, something should be said of a rival method, entitled the "English Book-keeping," published by Mr. Jones in 1796, a work chiefly remarkable for the enormous subscription raised on the occasion. A prospectus of this performance was previously circulated, announcing the discovery of an infallible method of book-keeping by single entry, and at the same time representing the Italian method as delusive and erroneous. By high promises and accredited recommendations, subscriptions (at a guinea each) are said to have been obtained, to the amount of six or seven thousand pounds. The work, however, did not answer the expectations of the public. Several ingenious tracts soon appeared, defending double entry, and exposing the insufficiency of this new system; and one of peculiar merit, written by Mr. Mill, closed the controversy. This gentleman, in order to form a comparative estimate between the English and Italian methods, arranged Mr. Jones's materials into a journal and ledger, by double entry; and, in the course of the operation, detected an essential error;—a detection which completed the triumph of double entry.

The English system of book-keeping, though universally rejected, has proved useful to the public as well as to the author. It gave rise to much investigation on the subject; and the extraordinary eagerness manifested in the subscription, shewed that men of business wished for a more practical system of merchants' accounts than had been hitherto offered to their notice.

In 1801, Mr. Kelly published a work, entitled "The Elements of Book-keeping," which appears to have met with very general approbation, and from which the present article is, by permission, extracted. The subsequent editions of this publication have been considerably enlarged by tracts on exchange, banking, and other commercial subjects; but its principal object (as stated in the preface) is to explain and illustrate the modern improvements of merchants' accounts. Of what these improvements consist, may be known from the following account of the work, given in Nicholson's *Philosophical Journal*, Feb. 1802.

"The improvements, which time and experience have effected in book-keeping, do not comprehend any change in the original principle of double entry, but in the arrangement and classification of similar accounts, which facilitate the operations of commerce nearly in the same manner that the business of manufactures is expedited by the division of labour. The elementary treatise before us (Kelly's Book-keep-

BOOK-KEEPING.

ing) exhibits these improvements. Here the waste book is divided into a number of subsidiary books, each of which is the register of its peculiar portion or department of business; and each book is divided into monthly transactions. By these means the journal is greatly shortened and simplified; but the principal advantage of such arrangement consists in posting the books; for here a whole month's cash, bills, commission, insurance, and interest, are each carried in one sum, or entry, from the journal to the ledger. This method, by which repetitions are avoided, and labour considerably diminished, is now generally adopted in our principal mercantile houses."

PRINCIPLES OF BOOK-KEEPING BOTH BY SINGLE AND DOUBLE ENTRY.

SINGLE ENTRY chiefly records transactions on credit, and for this purpose two books are required, called the *Day Book* and the *Ledger*.

The *day book* begins with an account of the owner's property, debts, &c.; then follows a detail of the occurrences of trade, set down in the order of time in which they take place.

The name of the person, or customer, is first written with the term *Dr.* or *Cr.* annexed, according as he becomes debtor or creditor by the transaction; and this may be distinguished by the following general rule:

"The person who receives is *Dr.* and the person who gives or parts with any thing is *Cr.*"

Thus, if I sell goods on credit, I enter A. B. the buyer, *Dr.* to the goods, specifying their quantity and value.

If I buy goods on credit, I enter C. D. the seller, *Cr.* by the goods, specifying their quantity and value.

By the same rule, if I pay money, the person to whom I pay it is made *Dr.* to cash for the amount; and if I receive money, the person from whom I receive it, is made *Cr.* by cash, for the amount.

And if debts be contracted or discharged by any other means, the same rule is observed; the person, who becomes indebted to me, is entered *Dr.* and the person to whom I become indebted, *Cr.*—Also, the person whose debt I discharge is made *Dr.*; and he that discharges a debt due by me, is *Cr.*

The *ledger* collects together the dispersed accounts of each person in the day book, and places the *Drs.* and *Cr.* upon opposite pages of the same folio. The person's name is written in large characters as a title: on the left hand, or first page, he is styled *Dr.*; and on the opposite, or right hand page, *Cr.* On these pages the transactions are en-

tered as they stand *Drs.* or *Cr.* in the day-book. For instance, A. B. is debited for whatever he has bought of me; and on the opposite page, he is credited for the payments he has made. In short, whatever I have given him, is on the *Dr.* side, and what he has given me on the *Cr.*; and the difference between the *Dr.* and *Cr.* sides is called the "balance."

A Short Specimen of Single Entry.

January 1, 1805.

Suppose John Smith owes me 100*l.* which is my sole property, or the net of my estate; and suppose that on the 2d of January, I buy of him 80 yards of cloth, at 15*s.* per yard; on the 3d, I sell James Taylor, on credit, 60 yards of the said cloth at 18*s.* 4d. per yard; and on the 4th, James Taylor pays me in part 40*l.* Required the day book and ledger of the foregoing transactions, according to single entry, and also the profit or loss.

Day Book.

Folio of Ledger.	Jan. 1, 1805.					
	John Smith, <i>Dr.</i>			£	s.	d.
	To Balance from Ledger A	-	-	100	0	0
	2.					
	John Smith, <i>Cr.</i>					
	By Cloth for 80 yards, at 15s. per yd.			60	0	0
	3.					
	James Taylor, <i>Dr.</i>					
	To Cloth for 60 yds, at 18s. 4d. per yd.			55	0	0
	4.					
	James Taylor, <i>Cr.</i>					
	By Cash received in part	-	-	40	0	0

To post the foregoing Accounts into the Ledger.

The ledger being ruled in folio form, according to the following specimen, with the left side for *Dr.* and the right side for *Cr.* also a margin for the date, and near the money columns, one for reference to the day book, proceed as follows:

Open an account for John Smith, and debit him, on the left hand page, for 100*l.*; and for the 2d day's transaction, credit him for 60*l.* on the opposite page.

For the 3d day, open an account for James Taylor, debiting him for 55*l.*; and for the 4th day, credit him for 40*l.*

When every transaction is thus posted, each account is balanced, by subtracting the less sum or side from the greater, and then putting the difference or balance under the smaller side, by which both sums are made equal.

LEDGER BY SINGLE ENTRY.

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By the above ledger it appears that the balances are in my favour; and if these be added to the cash I have in hand, and the value of the goods unsold, the sum is the net of my

estate; which, compared with my original stock, shews my profit or loss. Thus it appears that

BOOK-KEEPING.

John Smith owes me	£. 40
James Taylor owes me	15
I have in Cash	40
I have unfold 20 yards of cloth, at 15s. per yard (the prime cost)	15
	—
110 The net of my estate.	
100 Stock beginning.	
	—
£. 10 gain.	

Hence I have cleared 10l. by the sale of 60 yards of cloth at a profit of 3s. 4d. per yard.

Remarks on single Entry.

By single Entry I cannot tell what goods are unfold, or my profits or losses by my books only, except when the transactions are but few, as in the foregoing examples. For as the ledger here contains only the accounts of persons dealing on credit, it affords no other knowledge to the owner, than what debts are due to him, and what he owes.

But if he wish to know what goods are undisposed of, and what he has gained or lost by the whole or any part of his dealings, he cannot obtain this knowledge by single entry, without "taking stock;" that is, he must weigh or measure what goods he has unfold; and their value, added to the cash in hand, and the balance of debts, will shew the net of his estate, and this, compared with his original stock, will shew his profit or loss.

Hence book-keeping by single entry is essentially defective, as it affords no method of ascertaining the state of a merchant's affairs, without taking stock; a task which is both laborious and liable to error, and which at best affords no adequate means of preventing embezzlement or detecting fraud; but these objects are attained by double entry, perhaps as effectually as human ingenuity can devise.

DOUBLE ENTRY.

In double entry, three principal books are required; the *waste book*, *journal*, and *ledger*.

The *waste book* gives a regular detail of the transactions of business, set down in the order of time in which they take place, and stated in a clear, simple, and circumstantial manner.

The *journal* records the same transactions as the *waste book*, but they are differently expressed; for here the *Drs.* and *Cr.* of the various accounts are ascertained, in order to transfer them with more ease to the ledger.

The manner of ascertaining the *Dr.* and *Cr.* of each transaction here is the same, in effect, as in single entry; but in double entry, things as well as persons, are made *Drs.* and *Cr.*; and one thing or person is made *Dr.* to another thing or person.

Thus, if I sell cloth to A.B. on credit, I enter it in the journal, A.B. *Dr.* to Cloth. If I buy cloth of C.D. on credit, I journalize it, Cloth *Dr.* to C.D.; and if I buy or sell for ready money, or barter one kind of goods for another, the following general rule must be observed:

"What I receive is *Dr.* to what I give or part with." For instance, if I buy cloth for ready money, the journal entry is "Cloth *Dr.* to Cash;" and if I sell it for ready money, "Cash *Dr.* to Cloth;" always specifying the quantity, price, and amount.

When two or more persons or things are included in the same account, they are expressed by the term "Sundries," or "Sundry Accounts;" thus, if I sell cloth for part money, and the rest on credit, I journalize it, "Sundries *Drs.* to Cloth;" and then specify the particulars.

The following rules for distinguishing *Dr.* and *Cr.* will apply in all cases:

The person to whom, or for whose account I pay, or furnish the means of payment is *debtor*.

The person from whom, or for whose account, I receive, or who furnishes me with the means of payment, is *creditor*.

Every thing which comes into my possession, or under my direction is *debtor*.

Every thing which passes out of my possession, or from under my direction, is *creditor*.

The word *Inoc* is sometimes used to assist the memory as being composed of the initials of the rule—*In Debtor, Out Creditor*.

The following lines may likewise assist the memory in journalizing:

By journal laws, what I receive,
Is debtor made to what I give;
Stock for my debts must debtor be,
And creditor by property;
Profit and loss accounts are plain,
I *debit* loss, and *credit* gain.

The *ledger* collects the scattered items, articles, or transactions, from the journal, and places them under their respective heads, opposing the *Drs.* and *Cr.* of each, on the same principle as in single entry; but here accounts are opened for goods as well as for persons, and every account is entered twice, whence this method is called "double entry."

The accounts of the ledger are distinguished into three kinds, personal, real, and fictitious.

Personal accounts are the same in double as in single entry; and every person is debited or credited as he stands *Dr.* or *Cr.* in the journal.

Hence every personal account, suppose that of A.B., contains on the *Dr.* side all items or articles, by which he becomes indebted to me, and on the *Cr.* side all items or articles, by which I become indebted to him.

Real accounts are those opened for merchandize, or any other species of property, such as cash, bills, ships, houses, &c. Here, as in all other accounts, each transaction is entered on the *Dr.* or *Cr.* side, as it stands in the journal. Thus, goods bought are entered on the *Dr.* side; and when these or any part of them are sold, they are entered on the *Cr.* side; by which the quantity on hand, and the profit or loss on each article may be, at any time, ascertained.

Fictitious accounts are those of stock, and profit and loss.

Stock is a term used to represent the name of the merchant or owner of the books. On the *Dr.* side is entered the amount of the debts which he owed when the books were opened; and on the *Cr.* the amount of the cash, goods, debts, and any other property then belonging to him. The difference between the *Dr.* and *Cr.* sides shews his net stock, at that time.

Profit and loss is a general term used for either gain or loss, such as may arise from trade, interest, commission, &c. On the *Dr.* side are entered all transactions of losses; and on the *Cr.* side those of gain—the difference shews the net gain or loss.

A short Example of Double Entry.

WASTE BOOK.			
LONDON, Jan. 1. 1805.			
John Smith owes me, as per old Account in Ledger A.	100	0	0
JAN. 2.			
Bought of John Smith, 80 yards of Cloth, at 15s. per yard, on account	60	0	0
3.			
Sold James Taylor on credit, 60 yards of Cloth, at 18s. 4d. per yard	55	0	0
4.			
Received of James Taylor, in part	40	0	0

BOOK-KEEPING.

JOURNAL.			
Folio of Ledger.	LONDON, Jan. 1, 1805.	£	s. d.
	John Smith Dr. to Stock, £100 - -	100	0 0
	For Balance of old Account - - -		
	2.		
	Cloth Dr. to John Smith, £60 - -	60	0 0
	For 80 yards, bought at 15s. per yard - -		
	3.		
	James Taylor Dr. to Cloth, £55 - -	55	0 0
	For 60 yards, at 18s. 4d. per yard - -		
	4.		
	Cash Dr. to James Taylor, £40 - -	40	0 0
	Received of him on account - - -		

Rules for posting the Journal into the Ledger.

The ledger being ruled with the *Dr.* side to the left, and the *Cr.* side to the right, (as before described,) let there be a space allotted to the left of each page, for the day of the month, and to the right, for the page of the journal from whence each account is taken.

The accounts are mostly opened in the ledger, accord-

ing to the order in which they stand in the journal; this is not, however essential to the truth of the work, but it is the most regular method, and the most clear to learners. The stock account stands first, and, like all other accounts, is debited or credited as journalized.

Here stock is *Cr.* by John Smith; then for the second entry, John Smith is *Dr.* to stock, for every *Dr.* must have a *Cr.* and every *Cr.* a *Dr.*

By the same rule the other accounts are entered twice in the ledger; first, in the direct way, as they stand in the journal, and then reversed. Thus, the second day's account is posted, Cloth *Dr.* to John Smith, and then John Smith *Cr.* by Cloth.

In the same manner the third and fourth day's accounts are posted; James Taylor is debited to Cloth, and Cloth credited by James Taylor; Cash is next made *Dr.* to James Taylor, and James Taylor *Cr.* by Cash.

Here it may be observed that, when an account is once opened in the ledger, every following transaction which concerns it must be brought back, and entered there on the proper side, as an account is never opened twice, though it may be transferred for want of room.

LEDGER.

1805.	Stock.	Dr.	£	s.	d.	1805.	Per Contra,	Cr.	£	s.	d.
	To Balance for the Net of my ESTATE		110	0	0	Jan. 1.	By John Smith - - -		100	0	0
							By Profit and Loss - - -				
									110	0	0
Jan. 1.	John Smith	Dr.				Jan. 2.	Per Contra,	Cr.			
	To Stock - - -		100	0	0		By Cloth - - -		60	0	0
							By Balance - - -		40	0	0
									100	0	0
Jan. 2.	Cloth	Dr.				Jan. 3.	Per Contra,	Cr.			
	To John Smith, 80 yards, at 15s. p. yard - - -		60	0	0		By James Taylor, 60 yards, at 18s. 4d. - - -		55	0	0
	To Profit and Loss - - -		10	0	0		By Balance unfold, 20 yards, at 15s. - - -		10	0	0
									70	0	0
Jan. 3.	James Taylor	Dr.				Jan. 4.	Per Contra,	Cr.			
	To Cloth for 60 yards, at 18s. 4d. p. yard - - -		55	0	0		By Cash - - -		40	0	0
							By Balance - - -		15	0	0
									55	0	0
Jan. 4.	Cash	Dr.					Per Contra,	Cr.			
	To James Taylor - - -		40	0	0		By Balance - - -		40	0	0
	Profit and Loss	Dr.					Per Contra,	Cr.			
	To Stock gained - - -		10	0	0		By Cloth - - -		10	0	0
	Balance	Dr.					Per Contra,	Cr.			
	To John Smith - - -		40	0	0		By Stock for the Net of my Estate - - -		110	0	0
	To Cloth - - -		15	0	0						
	To James Taylor - - -		15	0	0						
	To Cash - - -		40	0	0						
			110	0	0						

BOOK-KEEPING.

To make a trial balance.

When every account is posted twice from the journal into the ledger, and on opposite, or contrary, sides, it is evident that all the sums on the *Dr.* side will equal all those on the *Cr.* side.

This trial, or check, is generally made on a separate paper, and it may be performed every day, month, or year, according to the extent of the business. The titles of the ledger accounts are written under each other with *Dr.* to the left, and *Cr.* to the right. Annexed to each, on its proper side, is set down the sum of every *Dr.* and *Cr.*; and both sides will agree if the work be right: as in the following example, from the preceding ledger.

Trial balance.

Dr.				Cr.		
£.	s.	d.		£.	s.	d.
0	0	0	Stock - - - - -	100	0	0
100	0	0	John Smith - - - - -	60	0	0
60	0	0	Cloth - - - - -	55	0	0
55	0	0	James Taylor - - - - -	40	0	0
40	0	0	Cash - - - - -	0	0	0
255	0	0		255	0	0

To make the general balance, and close the ledger.

The journal being all correctly posted, an account must be opened for profit and loss, and another for balance. These two accounts, with that of stock, are not to be closed until the others are balanced.

Proceed therefore to the second account, where the difference between the *Dr.* and *Cr.* sides appears to be 40l.; set this sum under the smaller side, making both equal.

This balance or difference being on the *Cr.* side, John Smith's account is therefore credited by balance, and on the balance sheet it is entered on the *Dr.* side: for if John Smith be *Cr.* by balance, then is balance *Dr.* to John Smith.

By this simple method all personal accounts are closed; but in real accounts a double operation is necessary, when any of the goods remain unsold, as these must be first balanced.

Thus, in the cloth account, the quantities on the *Dr.* and *Cr.* sides must be compared, and their difference set down under the smaller quantity, making both sides equal.

Here the difference is 20 yards, which, at first cost, is worth 15l.; this sum must be entered on the *Cr.* side of the cloth account, and then on the *Dr.* side of the balance account, thus making cloth *Cr.* by balance, and balance *Dr.* to cloth.

When the goods on the *Dr.* and *Cr.* sides are balanced, the money columns must be next compared, and their difference shews the profit or loss upon the article. In the cloth account the *Cr.* side is 10l. more than the *Dr.*; hence cloth is made *Dr.* to profit and loss for that sum; and profit and loss *Cr.* by cloth for the same.

James Taylor's account, and the account of cash being next balanced, proceed to prove the work.

The proof of book-keeping.

The accounts being all balanced, except those of stock, profit and loss, and balance, let the profit and loss account be first closed. Here profit and loss is *Dr.* to stock for 10l. gained, and therefore stock is made *Cr.* by the same.

The stock account must be next closed, where the balance appears to be 110l. Hence stock is made *Dr.* to balance for this sum, and the balance account must therefore be made *Cr.* by stock for the same.

Now if the work be right, both sides of the balance ac-

count will be equal; which is the proof of book-keeping, and which proof necessarily arises from double entry.

The reason of this proof will also appear obvious from the following considerations:

The balance account contains on the *Dr.* side what goods I have unsold, what cash I have in hand, and what debts are due to me:

And on the *Cr.* side it contains what debts I owe. Therefore the difference between the *Dr.* and *Cr.* side of the balance account is the net of my estate.

Now there is another method of finding the net of my estate, which is, by adding my profits or subtracting my losses from my original stock; and when this sum is put on the *Cr.* side of the balance account, it will make both sides equal, if the books be correct.

This principle, or proof of book-keeping by double entry may be thus mathematically demonstrated:

Let S = the net stock at opening the books.

p = the gain or loss at closing the books.

D = the *Dr.* side of the balance account.

C = the *Cr.* side of the balance account.

Then $S + p = N$ = the net stock at closing the books, and $D - C$ = the net stock at closing the books.

Hence (per Ax. 1. Euclid.) $D - C = N$, and therefore $D = N + C$ which was to be proved; that is, the *Dr.* side of the balance account should equal the *Cr.* side, added to the net stock.

Hence the proof of book-keeping may be considered as consisting of two methods of ascertaining my property, and these must always agree if the work be right. If they differ, the books are certainly wrong.

The converse of this rule, however, does not hold; for the balance account may close when the work is wrong—a false statement, for instance, continued on both sides of the ledger, will not prevent the proof; but there is scarcely a probability that such an error could be continued unobserved; and even intentional mis-statements may be prevented by a “check ledger;” that is, by having two ledgers kept by different persons. The general practice is to examine the books frequently, which is done by one person reading the journal, while another inspects the ledger, in order to see that every account has been regularly posted by double entry. It also promotes accuracy, to have the books regularly written up, so as to make the journal keep pace with the waste book, and the ledger with the journal.

The following Set of Books exhibits the modern improvements of Merchants' Accounts.

This system of book-keeping is performed on the principles of double entry, like the foregoing, with a waste book, journal, and ledger, but it differs in arrangement; for here the waste book is divided into a certain number of subsidiary books, each adapted to a particular kind of business: these are, the CASH BOOK, BILL BOOK, INVOICE BOOK, and SALES BOOK.

The cash book is the waste book for all money paid or received.

The bill book is the waste book for all bills of exchange received or accepted.

The invoice book is the waste book for all goods exported or sent off, whether on commission, or on the merchant's own account.

The sales book, or account of sales book, is the waste book for all goods imported and sold on commission.

The waste book contains the particulars of such occurrences as cannot be brought under any of the foregoing heads, and it also gives a general account of every transaction,

BOOK-KEEPING.

tion, with a reference to the subsidiary book, where the particulars are to be found.

In the subsidiary books each month's occurrences are classed together, and so disposed as greatly to simplify the journal; but the principal advantage of this arrangement consists in carrying a whole month's cash, or bills, in one line to the ledger: and the same may be done with a month's commission, interest, insurance, &c. though the practice has not yet become so general. Specimens of both methods are here given.

To show the advantages of simplicity and conciseness, the subsidiary books have other important uses as originals. Every exporter and importer of goods upon commission, must have an invoice and sales book, and the cash and bill books are necessary in all departments of commerce.

Where subsidiary books are kept for every kind of business, a waste book like the following may be dispensed with: though such will be found highly useful, both as an index and day book. But, in teaching, a book of this kind is especially necessary, not only as connecting the other books, and giving a ready reference to each, but as affording a regular history of the business, which the learner should always understand.—It is perhaps the want of this knowledge that renders the theory of book-keeping so much more obscure and perplexing than the practice.

THE WASTE OR DAY BOOK.

This book opens with an inventory of the merchant's property, (supposed to be transcribed from the balance account of a former ledger,) after which, a general register or diary is given of all transactions, in the order of time in which they happened, with a reference to the subsidiary books, where such are regularly entered.—The following are the references:

C. B. - Cash Book,	I. B. - Invoice Book,
B. R. - Bills Receivable,	S. B. - Sales Book.
B. P. - Bills Payable,	

WASTE BOOK, Jan. 1, 1805.

(1)

The following is an inventory of my effects, both real and personal, being a list of the balances in my favour and against me, transferred from ledger A. dated the 31st ult.

I have in cash	11700
Real property 4,000l. in the 4 p. cents.	3130
House in Kent	1520
House at Richmond	500
Household Furniture	750
Ship Charlotte, my half	3120
Merchandise for balance in hand	2165 10 6
Bills for balance due to the Custom-house	462 10

Bills receivable for the following bills in hand, (particulars from former bill book.)

No.		
210	On Ramsay and Co. due } Jan. 15.	520 0 0
216	On Edward Malone Jan. 25,	400 0 0
215	On ditto	383 10 0
211	On Hamilton and Co. } Feb. 1.	312 0 0
		1615 10

24963 10 6

WASTE BOOK, Jan. 1, 1805.

(2)

No.	Brought forward	24963 10 6
253	On Weldon and Co. Feb. 15, 162 10	
201	On ditto - - - 24, 231 5 0	
104	On ditto - - - 28, 216 5 0	

Millman and son,	Oporto	610 0 0
Charles Le Coin	Paris	572 10 0
William Lamos	Bilboa	380 15 0
William Chumley	Hanburgh	428 12 0
William Pemberton	Naples	310 13 9
Wilson and Vanelli	Leghorn	721 13 5
		570 2 6
		28566 17 2

I owe as follows:

To Smithson and Co. of	London	820 5 0
To George Holland	ditto	421 11 6
To Gibson and Carr	Birmingham	268 11 4
To Winter and West	Jamaica	506 0 0
To Hampton and Co.	ditto	173 10 0
To Edward White	ditto	316 4 0
To James Prime	ditto	516 19 0
To Edward Connor	ditto	721 18 0
To Richard Broadly	ditto	216 9 0

Bills payable for the following bills accepted by me (particulars from former bill book.)

No.		
213	Charles Mills, due Jan. 12,	713 11 0
219	James Harrison - 26,	210 10 6
214	John Gibson - 26,	431 15 9
216	Walter and Hume 30,	610 15 3
218	Thomas Pembroke 30,	105 11 6
215	Henry Barlow Feb. 4,	410 0 0
217	Patrick Hamilton - 11,	126 0 0
		2608 4 0
		6569 11 10

Jan. 1.

Shipped on board the Neptune, for Naples,	
Henry Marfom master, fugar for the account of William Pemberton, as per invoice book, viz.	
Merchandise	128 1 10
Charges	7 16 0
Commission	4 18 2
Insurance	3 2 0

143 18 0

Accepted a bill drawn on me by George Holland, as per bills payable, No. 1.

400 0 0

Received by this day's post a bill from Charles Le Coin, of 2385 livres 11 sous, at 5 p. cent. as per bill receivable, No. 1.

85 11 7

Paid Henry Barlow's bill, No. 215. as per cash book

410 0 0

Received discount on the above, for 29 days at 5 p. cent. C. B.

1 12 0

Shipped on board the Swan, for Bilboa, sundry goods for the account of William Lamos, as per I. B. viz.

Merchandise	635 19 10
Charges	10 13 8
Commission	19 11 4
Insurance	11 1 6

675 6 4

BOOK-KEEPING.

WASTE BOOK, Jan. 12, 1805. (3)	
-12-	
Paid Charles Mills's bill, due this day, No. 213. C. B.	713 11 0
-15-	
Received the amount of Ramsay and Co.'s bill, No. 210. as p C. B.	520 0 0
-15-	
Shipped on board the Betsy, for Leghorn, lead for the account of Wilfon and Vanelli, as p I. B. viz.	
Merchandize - - - - 213 4 5	
Charges - - - - - 0 2 6	
Commission - - - - - 4 17 2	
Insurance - - - - - 3 15 0	
	221 19 1
-16-	
Accepted a bill drawn by Gibson and Carr, N. 2, B. P.	300 0 0
-18-	
Bought of Samuel Lightfoot, fundry goods, amounting, as p bills of parcels, to	3050 0 0
-19-	
Received from William Chulmley, two bills, No. 2, and 3, B. R.	582 10 0
-21-	
Samuel Lightfoot has drawn upon me two bills, No. 2. and 3, B. P.	1050 0 0
-23-	
Arrived the Nancy, from Oporto, on board of which are ten pipes of Port wine, consigned to me by Millman and son, to sell for their account, S. B.	
Paid fundry charges on landing	196 11 9
-25-	
Received of William Lamos, three bills of exchange, No. 4, 5, and 6, B. R.	800 0 0
-25-	
Received cash of Edward Malone's bills, No. 424 and 435, C. B.	783 10 0
-26-	
Paid John Gibson's bill, No. 214, C. B.	431 15 9
-26-	
Paid James Harrison's bill, No. 219, C. B.	200 1 6
-27-	
Received from G. Scaford, my half share for freight on board the ship Charlotte, C. B.	138 10 0
-28-	
Received from William Shepherd for the produce of farm in Kent, C. B.	54 10 0
-29-	
Accepted three bills drawn by Smithson and Co, No. 5, 6, and 7, B. P.	820 5 0
-30-	
Paid for repairs on board the ship Charlotte, C. B.	43 15 0
-30-	
Paid Walter and Hume's bill, N ^o 210, C. B.	610 15 3
-30-	
Paid Thomas Pembroke's bill, No. 218, C. B.	105 11 6
-31-	
Shipped on board the Hope, Stanley, for Jamaica, fundry goods for fundry persons, as p I. B. viz.	

WASTE BOOK, Jan. 31, 1805. (4)	
Winter and West,	
Merchandize - - - 375 9 9	
Charges - - - - 3 19 5	
Commission - - - 11 10 8	
Insurance - - - - 12 18 6	
	403 18 4
Hampton and Co.	
Merchandize - - - 170 2 0	
Charges - - - - 7 12 6	
Commission - - - 5 7 10	
Insurance - - - - 5 19 0	
	189 1 4
Edward White,	
Merchandize - - - 608 2 6	
Charges - - - - 5 5 0	
Commission - - - 18 11 8	
Insurance - - - - 20 7 6	
	652 6 8
James Prime,	
Merchandize - - - 603 13 6	
Charges - - - - 9 9 2	
Commission - - - 18 11 6	
Insurance - - - - 20 7 6	
	652 1 8
Edmund Connor,	
Merchandize - - - 704 12 11	
Charges - - - - 9 9 2	
Commission - - - 21 12 11	
Insurance - - - - 27 10 11	
	763 5 11
Richard Broadly and Shipper, each a half share,	
Merchandize - - - 923 15 3	
Charges - - - - 8 14 5	
Commission - - - 28 6 2	
Insurance - - - - 36 5 0	
	997 0 10
-31-	
Sold Smithson and Co. Port wine, S. B.	218 1 8
Sold George Holland, Port wine, S. B.	139 11 3
-31-	
Received a dividend at the bank, half year's interest on £4000. at 4 p Cent. C. B.	80 0 0
-31-	
Sold £2000 stock at 79½ p Cent. commission ½ p Cent. C. B.	1595 0 0
-31-	
Received this month, debentures for fundry goods shipped, amounting to	138 15 0
Received cash for debentures this month, C. B.	195 10 0
Paid fundry charges this month for house expenses, C. B.	68 10 0
All the insurances of this month have been made with the London Assurance Company, and the premiums are unpaid.	

BOOK-KEEPING.

SUBSIDIARY BOOKS;

Comprehending the Bill Book, Invoice Book, Sales Book, and Cash Book.

THE BILL BOOK.

The bill book is an index or register of bills of exchange, whether receivable or payable.

Bills receivable are those which the merchant receives in payment of some debt or contract—and bills payable are such as are drawn upon him, and which he must pay when due.

When Bills receivable come to hand, their particulars are entered in their respective columns of the bill book; and the particulars of bills payable are likewise inserted in their proper columns, when advice is received of their having been drawn, or when they are left for acceptance.

The use of the bill book will be understood by observing how the two following bills are entered.

Copy of the Bill, received from Charles le Coin, and entered in Bills receivable.

Liv. fol. d.
2385 11 a 25 $\frac{3}{4}$.

Paris, Dec. 9th, 1801.

Two months after sight pay to the order of Mr. W. Bing, two thousand three hundred and eighty-five livres eleven sols Tournois, exchange a 25 $\frac{3}{4}$ p ecu. for value received.

Mr. John Carr,
London.

Accepted Jan. 1802.
J. Carr.

H. JONES

Copy of the Bill drawn on me by George Holland, and entered in Bills payable.

£.400 0 0

London, Jan. 2, 1805.

Thirty-one days after date, pay to Mr. George Binns, or order, four hundred pounds for value received.

To Mr. A. B.
London.

Accepted,
A. B.

GEORGE HOLLAND.

Bills Receivable, January 1805.

No.	By whom drawn and Place.	Date.	To whom Payable.	Time.	Acc ^d .	Due.	Sum.	To whom paid and when.
2	1 Bill on Chas. Le Coin, Paris	Dec. 9	William Bing	2 Months sight	March 6	85	14	5
2	2 Ditto 11 Wm. Chudley, Hull	Jan. 5	Charles Hume	31 Days sight	Feb. 22	210	0	0
2	3 Ditto 1 Ditto	Oct. 9	George Ellis	21 Days sight	Feb. 12	372	10	0
2	4 Ditto 25 Wm. James, Paris	Jan. 2	Edward Ingram	2 Months sight	March 28	250	0	0
2	5 Ditto 25 Ditto	Jan. 2	Horner & Scott	2 Months sight	March 28	310	0	0
2	6 Ditto 25 Ditto	Jan. 2	White & Croker	2 Months sight	March 28	240	0	0

Bills Payable, January 1805.

No.	By whom drawn and Place.	Date.	To whom Payable.	Time.	Acc ^d .	Due.	Sum.	To whom paid and when.
2	1 George Holland, London	Jan. 2	George Binns	31 Days date	Jan. 2	Feb. 5	400	0 0 Clerk of the Bank Feb. 5
2	2 Gibson and Carr, Birmingham	Jan. 12	Alfred Simpson	31 Days date	Jan. 16	Do. 15	300	0 0 John Stubbs Feb. 15
2	3 Saml. Lightfoot, London	Jan. 21	John Andrews	31 Days date	Jan. 21	Do. 24	500	0 0 D. Lindo Feb. 29
2	4 Ditto, London	Jan. 24	Ellis and Co.	2 Mths. date	Jan. 24	Mar. 27	550	0 0 William Hoare Mar. 27
2	5 Smithson & Co., London	Jan. 28	George Ramfay	21 Days date	Jan. 29	Feb. 21	237	10 0 Henry James Feb. 21
2	6 Ditto, London	Jan. 28	Henry Watts	31 Days date	Jan. 29	Mar. 3	310	10 0 John Sills Mar. 2
2	7 Ditto, London	Jan. 28	Wright and Hull	31 Days date	Jan. 29	Do. 3	272	5 0 Samuel Binns Mar. 2

INVOICE BOOK.

An Invoice is a paper sent off with Goods exported on commission. The preamble generally contains the name of the ship, master, place of destination, and of the person to whom the consignment is made.

An account is next given of the quantity and amount of the goods, which are generally charged at the *bona fide* prime cost. The tradesmen's Bills of parcels are either copied or sent with the invoices, and referred to.

The shipping charges are added to the value of the goods, and upon this sum the agent or factor generally charges his commission. When he insures the goods, he has also a small commission on the capital insured, which capital is allowed to be something more than the value of the risk, in order to cover the amount of the risk, premium, and other expenses, in case of loss.

The cost of insurance generally concludes the invoice, and the agent signs his name at the bottom with the words, errors excepted; this signature, however, does not appear in the book.

The invoice book, which contains the copies of all invoices sent off, is sometimes called the invoice book outward, to distinguish it from the invoice book inward, which contains copies of invoices received from abroad. But this book is often dispensed with, by preserving the originals, either filed, or in pigeon-holes, or pasted in a blank book made for the purpose.

Invoices of goods received to be sold on commission, are generally copied into the sales book, to which the charges are added.

The following invoice is here deemed a sufficient specimen, and those referred to in the waste book may be understood as arranged in the same manner.

BOOK-KEEPING.

Invoice of Sugar shipped on board the Neptune, Henry Marfom, Master, for Naples, by order of William Pemberton, Merchant there, for his Account and Risk, and to him consigned.

London, Jan. 1, 1805.

W. P.	No.	Cwt.	Cwt.			
No.	1 Grofs	9 1 20	Tare	1 1 11		
1 a 4	2 —	9 0 25	—	1 0 27		
	3 —	9 2 17	—	1 1 0		
	4 —	9 1 26	—	1 1 2		
	Grofs	37 3 4		5 0 12		
	Tare	5 0 12				
	Neat	32 2 20 at 5l. 3s. 7 Cwt,			168	5 10
CHARGES.						
	Debenture Entry	- - -		4 9 0		
	Cost of Hogsheads	- - -		1 12 6		
	Cartage, Wharfage, Lighterage, and					
	Bills of Lading	- - -		1 4 6		
	Commission on 176l. 1s. 10d. at $2\frac{1}{2}\%$			Cent.	7	6 0
	Premium of Insurance on 190l. at $1\frac{1}{2}\%$			2 17 0	3	19 2
	Policy Duty	- - -		0 5 0		
	Commission $\frac{1}{2}\%$	- - -		0 19 0		
					4	1 0
					183	12 0
	Drawback allowed at the Custom-House	-			40	4 0
	Entd. Jour. P. 3.				143	8 0

THE SALES BOOK, OR FACTORY BOOK.

This book is used to trace the net proceeds of any cargo or consignment sold upon commission.

An account sales generally occupies two pages, with a preamble over both, setting forth the names of the goods, ship, and person, from whom the consignment is received. The first, or left-hand page, contains an account of the various charges incurred by the transaction, such as freight, custom, expences of landing and selling, together with the brokerage, and factor's commission, both of which are charged on the gross amount of the Sales. Commission is sometimes charged on money advanced for duty, together with the gross amount of the consignment; and some factors likewise charge interest on all advances.

The second, or right-hand page, contains an account of the quantity, price, and amount of the goods sold, with the buyer's name, and the time of payment. The difference between this gross amount, and the charges, is the net proceeds: for which the factor gives his correspondent credit, and sends him a copy of the account sales, to which he generally signs his name, with the words *Errors excepted*.

In small consignments, an account of sales may be comprised in one page, beginning either with the charges, or with the amount of the goods. The forms of these accounts are various, but all tend to the same object, that of ascertaining the net proceeds.

BOOK-KEEPING.

Dr. Account Sales of 10 Pipes of Port Wine, received of the Navy, from Oporto, on Account of Millman and Son, Cr.

1805.	CHARGES.				1805.				
Jan. 23.	To Duty* on 1374 Galls. } at 1s. 6 $\frac{1}{2}$ d. per Gall. } Excise, at 11l. 18s. $\frac{1}{2}$ } Tun of 252 Galls. } Freight, Primage, &c. -	106 17 4 64 17 8 10 7 6	182 2 6		Jan. 31.	By Smithson and Co. sold them pay- able at 2 Months 6 Pipes,			
	Cooperage, 3s. $\frac{1}{2}$ Pipe Cartage, Wharfage, &c. } as $\frac{1}{2}$ Cooper's Account } Vault Rent, Insurance from Fire, and taking Stock -	1 10 0 6 9 0 3 0 0				No. Gall. 1 137 2 140 3 140 4 139 5 131 6 141			
	Brokerage, 5s. $\frac{1}{2}$ Pipe - Landwaiter's Fees - Postage of Letters -	2 10 0 0 10 0 0 10 3				838 Lefs two Gall. } allowed for Ul- lage, viz. 836 Galls. at 36l. $\frac{1}{2}$ } Pipe of 138 Gallons. }	218 1 8		
	Interest on Duty advanced to this } Day, 96 Days, at 5 $\frac{1}{2}$ Cent. - } Commission at 2 $\frac{1}{2}$ Cent.	14 9 3 2 5 2 8 18 9							
Jan. 31.	To Millman and Son, for Net } Proceeds due this Day - }	207 15 8 149 17 3			Jan. 31.	By George Holland, sold him payable in 3 Months. 4 Pipes,			
						7 138 8 140 9 118 10 140			
						536 Lefs 1 Gall. for } Ullage, 535 Gall. } at 36l. $\frac{1}{2}$ Pipe } of 138 Gallons. }	139 11		
		357 12 11					357 12 11		
* The above Sales took place in 1790, since which period the duty has been advanced to 3s. 4d. per gall. and the excise to 44l. 11s. per tun. As these charges are liable to continual variation, the old rates are here continued as being equally proper to shew the form of an Account Sales.									

Entl. Journ. P. 4. and 6.

THE CASH BOOK.

The cash book contains an account of all money transactions; it is kept in a folio form like the ledger, with *Dr.* marked on the left-hand page, and *Cr.* on the right. On the *Dr.* side is entered all money received, and on the *Cr.* all money paid.

The amount of these receipts or disbursements may be carried in one sum to the ledger, for every month, week, or day, according to the extent of the business; but monthly divisions are most general; and it is found convenient to transfer the cash book first to the journal, classing articles of the same kind together.

The following cash book is formed from the waste and subsidiary books, by observing those transactions where

money is either paid or received, and entering them accordingly with dates, names, and other necessary particulars. In real business, however, such transactions should be entered at the time they take place.

Separate columns are sometimes allotted in the cash book for money kept at different places; such as, at a banker's, at the bank, and at home. The banker's book is occasionally found useful in correcting and abridging the cash book, which may be also abridged by the help of a petty cash book, containing an account of small charges on merchandize, and of other incidental expenses.

The cash book sometimes contains accounts that need not be transferred to the journal; such as loans and accommodations, which are to be soon repaid; these may be entered short, and when settled, they of course, balance themselves.

BOOK-KEEPING.

CASH,		Dr.	CONTRA,	Cr.	
1805.			1805.		
Jan. 5.	To Interest for discounting H. Barlow's Bill, No. 215	1 12 6	Jan. 1.	By Charges on Merchandize, p Nancy, for Naples	7 16 0
15	To Bills Receivable, No. 210, Ramsay and Co.	520 0 0	5	By Bills Payable, No. 215, H. Barlow	4 10 0
25	No. 424, E. Malone	400 0 0	12	By Charges on Merchandize, p Swan, for Bilbao	10 13 8
	No. 235, ditto	383 10 0		By Bills Payable, No. 213, C. Mills	7 13 11
27	To Ship Charlotte, received for freight	138 10 0	15	By Charges on Merchandize, p Betsey, for Leghorn	0 2 6
28	To Farm in Kent	54 10 0	23	By ditto for Sales, p Nancy, paid Customs, &c.	196 11 9
31	To Debentures	195 10 6	26	By Bills Payable, No. 214, J. Gibson	43 15 9
	To Interest, received a Dividend at the Bank	80 0 0		No. 219, J. Harrison	210 10 6
	To Funded Property, sold 2000l. stock at 79 $\frac{3}{4}$ and $\frac{1}{2}$	1595 0 0	30	By Ship Charlotte, paid for Repairs	43 15 0
				By Bills Payable, No. 216, W. Hume	610 15 3
				No. 218, F. Pembroke	105 11 6
			31	By Charges on Merchandize, p Hope for Jamaica	44 9 8
				By House Expences	68 10 0
					2854 2 7
Entd. Jour. P. 1. and 2.		3368 13 0			

JOURNAL.

The journal opens with the inventory of stock; after which the subsidiary books are journalized separately, according to the following rules, and then such transactions of the waste book as are not contained in any of the subsidiary books, close the journal for the month.

Rules for journalizing the Subsidiary Books.

1. To journalize the cash book.

For all money received, "Cash *Dr.* to Sundries;" for all money paid, "Sundries *Drs.* to Cash;" specifying particulars, and classing items of the same kind together. See p. 1. and 2. journal.

2. To journalize the bill book.

For all bills received, "Bills receivable *Dr.* to Sundries;" for all bills accepted, "Sundries *Drs.* to Bills payable;" setting forth names, numbers, and other necessary particulars. See p. 2. journal.

3. To journalize the invoice book.

The person, for whose account the invoice is sent, "*Dr.* to Sundries," viz.

"To Merchandize;" for amount of goods.

"To Charges on Merchandize," for shipping, and other charges.

"To Commission," for the factor's commission.

"To Insurance," for premium of insurance. See p. 3. journal.

When several invoices are sent by the same ship, they may be arranged in columns, as in p. 5. journal; a method which promotes both accuracy and dispatch, and which might be

also used with the invoice book in general, and with the sales book.

4. To journalize the sales book.

The person, to whom the goods are sold, is debited for the sales; and if they are sold for ready money, the account is entered accordingly in the cash book. Then,

"Sales (p the ship's name, &c.) *Dr.* to Sundries."

"To Charges on Merchandize," for charges at landing, &c.

"To Interest," for interest, if charged on money advanced.

"To Commission," for the factor's commission.

"To A.B. (the consigner)," for net proceeds. See p. 4. and 6. journal.

The above titles vary in different houses; as "Sales of Cotton, Sugar, &c, per the ship, *Dr.*;" "Merchandize imported, *Dr.*;" and the charges on sales and invoices, viz. "Freight," "Convoy," "Duty," and "Customs," are mostly arranged under separate heads. But, however these modes and terms may vary, the principles and result are the same.

Note. The pages of the different books are put in parentheses in the corners; and in the ledger the page of the journal, where the article is to be found, is inserted in a column next to the date; and the reference next to the money column shews the folio of the ledger where the second entry is made; but here there can be no figure for "Sundries," as the fundry accounts may occupy different folios; this is an inconvenience which can be only remedied by turning to the journal, where the sundries are specified, and where the folio of each ledger account is marked in the margin.

BOOK-KEEPING.

(1) JOURNAL, Jan. 1835.

SUNDRIES Drs. to Stock.

For the following Balances in my favour
the 31st ult. transferred.

1 Cash—for balance in hand	11700	0	0
1 Funded Property 4000l. at 78½ in the } 4 per cents.	3130	0	0
1 Farm in Kent	1520	0	0
2 House at Richmond	500	0	0
2 Household Furniture	750	0	0
2 Ship Charlotte—my half	3120	0	0
2 Merchandize—for balance in hand	2165	10	6
4 Debentures { for balance due at the } Custom-house	4	2	1
3 Bills receivable, for the amount of bills } due to me	2215	10	0
1 Millman and Son	Lisbon	-	-
2 Charles Le Coin	Paris	-	-
5 William Lamos	Bilboa	-	-
5 William Chulmley	Hamburg	-	-
5 William Pemberton	Naples	-	-
5 Wilfon and Vanelli	Leghorn	-	-

STOCK Drs. to Sundries.

For the following Balances against me
the 31st ult. transferred.

6 To Smithson and Co.	London	-	-
7 To George Holland	Ditto	-	-
7 To Gibfon and Carr	Birmingham	-	-
7 To Winter and West	Jamaica	-	-
7 To Hampton and Co.	Ditto	-	-
7 To Edward White	Ditto	-	-
7 To James Prince	Ditto	-	-
7 To Edmund Connor	Ditto	-	-
7 To Richard Broadly	Ditto	-	-
4 To Bills payable, for my acceptances } unpaid		4600	4

CASH Drs. to Sundries.

For the following Sums received this
Month, as per C. B.

8 To Interest	1	12	6
8 To ditto	80	0	0
4 To Bills receivable, No. 210, 520	0	0	0
	224,	400	0
	235,	383	10
2 To Ship Charlotte	-	-	-
1 To Farm in Kent	-	-	-
4 To Debentures	-	-	-
1 To Funded Property	-	-	-

(1) JOURNAL, Jan. 1835.

SUNDRIES Drs. to Cash.

For the following Sums paid this
Month, as per C. B.

3 Chgs. on merch. 7 Neptun. } for Naples	7	16	0
for Bilboa	Swan,	10	13
for Leghorn	Betley,	0	2
from Oporto	Nancy,	195	11
for Jamaica	Hope,	44	9
5 + Bills payable, No. 215	-	400	0
	211	-	73
	212	-	431
	210	-	20
	210	-	010
	218	-	15
2 Ship Charlotte	-	-	-
8 House Expences	-	-	-

BILLS RECEIVABLE Drs. to Sundries.

For the following Bills received
this Month, as per B. R.

4 To C. Le Coin, N° 1, due Mar. 6	85	14	7
5 To W. Chulmley, 2,—Feb. 22, 210	0	0	0
	3,—	12,	372
5 To Will. Lamos, 4,—Mar. 28, 250	0	0	0
	5,—	28,	310
		28,	240

SUNDRIES Drs. to Bills payable.

For the following Bills accepted by
me this Month, as per B. P.

2 6 G. Holland, N° 1, due Feb. 5	40	0	0
16 6 Gibfon and Carr, 2,—	15	0	0
21 9 S. Lightfoot, 3,—	2,	500	0
	4,—	Mar. 27,	550
29 6 Smithson & Co. 5,—Feb. 21, 237	10	0	0
	6,—	Mar. 3,	310
			272

BOOK-KEEPING.

(3)		JOURNAL, Jan. 1805.			
Date.	Fol. Ledger.				
1	5	WILLIAM PEMBERTON <i>Dr.</i> to Sundries.			
		For Amount of Invoice of Sugar per Neptune, for Naples, as per W. B. p. 2.			
2		To Merchandize	128	1	10
3		To Charges on Merchandize	7	16	0
3		To Commission	4	18	2
3		To Insurance	3	2	0
			143	18	0
12	6	WILLIAM LAMOS <i>Dr.</i> to Sundries.			
		For Amount of Invoice per Swan, for Bilboa, as per W. B. p. 2.			
2		To Merchandize	635	19	10
3		To Charges on Merchandize	10	13	8
3		To Commission	19	11	4
3		To Insurance	11	1	6
			675	6	4
15	5	WILSON and VANELLI <i>Dr.</i> to Sundries.			
		For Amount of Invoice of Lead per Betsey, for Leghorn, as per W. B. p. 3.			
2		To Merchandize	213	4	5
3		To Charges on Merchandize	0	2	6
3		To Commission	4	17	2
3		To Insurance	3	15	0
			221	19	1

(4)		JOURNAL, Jan. 1805.			
Date.	Fol. Ledger.				
18	2	MERCHANDIZE <i>Dr.</i> to Samuel Lightfoot.			
		For amount of goods bought of him, as per B. P.			
9			3050	0	0
31	3	INSURANCE <i>Dr.</i> to the London Assurance Company.			
		For Amount of Insurances made this Month, as per I. B.			
		To Nancy, for Naples	3	2	0
		To Swan, for Bilboa	11	1	6
		To Betsey, for Leghorn	3	15	0
		To Hope, for Jamaica	123	8	5
			141	6	11
31	4	DEBENTURES <i>Dr.</i> to Merchandize.			
		For Drawbacks received this Month			
			138	15	0
	8	SUNDRIES <i>Drs.</i> to Sales per the Nancy.			
		For Amount of 10 Pipes of Port, for Account of Millman and Son, as per S. B.			
31	6	Smithson and Co. 6 pipes at 2 months	218	1	8
31	6	George Holland, 4 do. at 3 months	139	11	3
			357	12	11

(5)

JOURNAL, Jan. 31. 1805.

I

SUNDRIES Drs. to Sundries.

For Amount of Invoices per the Hope, for Jamaica,
as per W. B. p. 3.

Fol. of Led.		Pa. Inv.	Merchandize.	Charges on ditto.	Commission.	Insurance.			
Drs.									
6	Winter and West		375 9 9	3 19 5	11 10 8	12 18 6	403	18	4
7	Hampton and Co.		170 2 0	7 12 6	5 7 10	5 19 0	189	1	4
7	Edward White		608 2 6	5 5 0	18 11 8	20 7 6	652	6	8
7	James Prime		603 13 6	9 9 2	18 11 6	20 7 6	652	1	8
7	Edmund Connor		704 12 11	9 9 2	21 12 11	27 10 11	763	5	11
8	Adventure to Jamaica, in company with R. Broadley, my half		923 15 3	8 14 5	28 6 2	36 5 0	498	10	5
8	Richard Broadley, his half						498	10	5
Crs.									
2	Merchandize		3385 15 11						
3	Charges on Merchandize			44 9 8					
3	Commission				104 0 9				
3	Insurance					123 8 5			

3657 14 9

BOOK-KEEPING.

(6) JOURNAL, Jan. 1805.

Date.	Dr.	Cr.	
31	8		SALES p the Nancy Dr. to Sundries.
23	3	196 11 9	To charges on Merchandize
3		8 18 9	To Commission
8		2 5 2	To Interest
31	4		To Millman and Son, for net proceeds of 10 pipes of port, as p S.B.
			149 17 3
			357 12 11

LEDGER.

The rules already laid down in the introductory part will apply in all cases that can occur for posting the journal into the ledger: some further explanations, however, may be here useful with respect to new forms and arrangements.

In the following ledger the accounts are arranged in the same order as in the journal, except in folios 2, 3, and 4, where articles, which are often referred to at the same time, are contiguously placed, to save the trouble of frequently turning to the index. This method of classing accounts of the same description is found very convenient in extensive business; but in the theory of book-keeping it is more obvious and regular to follow the order of the journal.

When all the accounts are opened in the ledger from the inventory of stock, let the subsidiary books in the journal, for each month, be posted in the following manner:

1. To post the journal of the cash book:

Debit the cash account—to sundries, for the amount received.

Credit the cash account—by sundries, for the amount paid.

Then, for the second or double entry.

Credit each account separately—by cash, for the respective sums received.

Debit each account separately—to cash, for the respective sums paid.

2. To post the journal of the bill book.

Debit bills receivable—to sundries, for their whole amount.

Credit each person from whom they have been received—by bills receivable for their respective amounts.—Again,

Credit bills payable—by sundries, for their whole amount.

Debit each person for whom they have been accepted—to bills payable, for their respective amounts.

3. To post the journal of the invoice book.

Debit the person to whom the invoice is sent—to sundries, for the whole amount.

Credit merchandize, charges, commission, and insurance respectively—by the said person, for the respective sums annexed to these terms.

When several invoices are journalized together in columns, (as in page 5 of the journal,) the whole amounts of merchandize, charges, commission, and insurance, are each posted in one entry. This arrangement not only saves labour and repetition in the journal, and affords checks against error, but is also greatly shortens and simplifies the ledger. Had

those six invoices been journalized separately, there must have been twenty-four entries in the journal, and the same number in the ledger, which, by this method, are comprised in four.

4. To post the journal of the sales book.

Debit the person or persons to whom the consignment is sold—to sales (p the ship's name) for the amount,—and

Credit charges, commission, interest, and the consigner—by sales for the sums annexed to these titles respectively.

Some merchants open also a general account of sales, to which they transfer the amount of Dr. and Cr. sides of the factory book.

When the other articles of the journal are posted, a trial balance should take place. This useful check may be applied either monthly, weekly, or daily, according to the extent of the business.

In making the general balance, the residue of funded property, houses, lands, furniture, ships, or goods unsold, is set down at the first cost; but in real business, it is more correct and satisfactory to enter such balances at their actual value, and to debit or credit profit and loss for the difference between their present worth and prime cost. Such a valuation becomes necessary, when any change takes place in the firm of a house, or in the terms of copartnership; and in order, at any time, to make a true estimate of profit and loss, interest should be charged on all property as well as on debts.

Partnership accounts are made very obscure and perplexing in most old systems of book-keeping, though in real business no such difficulty occurs. The general practice is to keep the books of a joint concern as if they belonged to one person only:—to open a separate account for each partner like that of any other individual, and on closing the books to divide the profits and losses according to the terms of copartnerships.

Alphabetical Index to the Ledger.

A	FOL.	I	FOL.
Adventure to Jamaica	98	Insurance	3
		Interest	8
B		K.	
Bills receivable	3	Kimpton, Edward	17
Bills payable	4		
Broadley, Richard	6	L.	
Balance	10	Le Coin, Charles	4
C		Lamos, William	5
Cash	1	Lightfoot, Samuel	9
Charges on merchandize	3	London assurance Company	9
Commission	3	M	
Chubbrey, William	5	Merchandize	2
Connor, Edmund	7	Millman and Son	4
D		P	
Debentures	4	Pemberton, William	5
F		Prime, James	7
Funded property	1	Profit and Loss	9
Farm in Kent	1	S	
G		Stock	1
Gibson and Carr	6	Ship Charlotte	2
H		Smithson and Co.	6
Hause at Richmond	2	Sales, per the Nancy	8
Household furniture	2	W	
Holland, George	6	Wilson and Vautelli	3
Hampton and Co.	7	Winter and West	6
House expenses	8	White, Edward	7

BOOK-KEEPING.

(1)		LEDGER.															
Dr.		STOCK.										Cr.					
Jan. 1.	1	To Sundries	-	-	-	6569	11	10	Jan. 1.	1	By Sundries	-	-	-	28566	17	2
Jan. 31.		To Balance	-	-	-	1022334	4	2	Jan. 31.		By Profit and Loss	-	-	-	9336	18	10
						28903	16	0							28903	16	0
Dr.		CASH.										Cr.					
Jan. 1.	1	To Stock	-	-	-	111700	0	0	Jan. 3.	2	By Sundries	-	-	-	2854	2	7
Jan.		To Sundries	-	-	-	3368	13	0	Jan. 31.		By Balance	-	-	-	1012214	10	5
						15068	13	0							15068	13	0
Dr.		FUNDED PROPERTY.										Cr.					
Jan. 1.	1	To Stock, 400l. a 78 $\frac{1}{4}$	-	-	-	13130	0	0	Jan. 31.	1	By Cash, 2000l. a 79 $\frac{3}{4}$	-	-	-	11595	0	0
Jan. 31.		To Profit and Loss	-	-	-	930	0	0			By Balance, 2000l. a 78 $\frac{1}{4}$	-	-	-	101565	0	0
						3160	0	0							3160	0	0
Dr.		FARM IN KENT.										Cr.					
Jan. 1.	1	To Stock	-	-	-	11520	0	0	Jan. 28.	1	By Cash	-	-	-	154	10	0
Jan. 31.		To Profit and Loss	-	-	-	954	10	0	Jan. 31.		By Balance	-	-	-	101520	0	0
						1574	10	0							1574	10	0

BOOK-KEEPING.

(2)

LEDGER.

<i>Dr.</i>				HOUSE AT RICHMOND				<i>Cr.</i>			
Jan. 1	1	To Stock	- - -	1	500	0	0	Jan. 31	By Balance	- - -	10 500 0 0

<i>Dr.</i>				HOUSEHOLD FURNITURE.				<i>Cr.</i>			
Jan. 1	1	To Stock	- - -	1	750	0	0	Jan. 31	By Balance	- - -	10 750 0 0

Dr.				SHIP CHARLOTTE.				Cr.							
Jan. 1	1	To Stock	- - -	1	3120	0	0	Jan. 27	1	By Cash	- - -	1	138	10	0
	2	To Cash	- - -	1	43	15	0	31		By Balance	- - -	10	3120	0	0
31		To Profit and Loss	- - -	9	54	15	0								
					3258	10	0						3258	1	0

Dr.				MERCHANDIZE.				Cr.							
Jan. 1	1	To Stock	- - -	7	2165	10	6	Jan. 1	3	By William Pemberton	- - -	3	128	1	1
	1	To Cash	- - -	9	35				3	By W. E. T.	- - -	3	00	0	0
					5215	10	6		3	By Wilson and Vanelli	- - -	3	213	4	5
									5	By Sundries	- - -	5	338	5	15
									4	By Debentures	- - -	4	138	15	0
									31	By Balance	- - -	10	5215	10	6
													5215	10	6

BOOK-KEEPING.

(3)

LEDGER.

Dr.		CHARGES ON MERCHANDIZE.										Cr.							
Jan. 1	1	To Cash	-	-	-	-	1	259	13	7	Jan. 1	3	By William Pemberton	-	-	5	7	16	0
											12	3	By W. Lamos	-	-	5	10	13	8
											15	3	By Wilfon and Vanelli	-	-	5	-	2	6
											31	5	By Sundries	-	-		44	9	8
											23	6	By Sales & the Nancy	-	-	8	196	11	9
																	259	13	7

Dr.				COMMISSION.				Cr.								
Jan. 31	To Profit and Loss	-	-	9	142	6	2	Jan. 1	3	By W. Pemberton	-	-	5	4	18	2
								12	3	By W. Lamos	-	-	5	19	11	4
								15	3	By Wilfon and Vanelli	-	-	5	4	17	2
								31	5	By Sundries	-	-		104	0	9
								4	6	By Sales & the Nancy	-	-	8	8	18	9
														142	6	2

Dr.		INSURANCE.										Cr.	
Jan. 31	4	To the London Assurance } Company - - -	9	141	6	11	Jan. 1	3	By W. Pemberton - - -	5	3	2	0
							12	3	By W. Lamos - - -	5	11	1	6
							15	3	By Wilfon and Vanelli - -	5	3	15	0
							31	5	By Sundries - - -		123	8	5
											141	6	11

<i>Dr.</i>				BILLS RECEIVABLE.				<i>Cr.</i>					
Jan.	1	1 To Stock - - -	1	2225	10	0	Jan.	3	1 By Cash - - -	1	1303	10	0
		2 To Sundries - - -		1468	4	7			31 By Balance - - -	10	2390	4	7
				3693	14	7					3693	14	7

BOOK-KEEPING.

(4)

LEDGER.

Dr.				BILLS PAYABLE.				Cr.								
Jan. 31	To Cash	-	-	1	2482	4	0	Jan. 1	1	By Stock	-	-	1	2658	4	0
	To Balance	-	-	10	2696	5	0	31	2	By Sundries	-	-		2578	5	0
					5178	9	0							5178	9	0

Dr.				DEBENTURES.				Cr.							
Jan.	1	1	To Stock - - -	1	462	10	0	Jan.	31	1	By Cash - - - -	1	195	10	6
		4	To Merchandize - -	2	138	15	0			31	By Balance - - - -	10	405	14	6
					600	5	0						600	5	0

Dr.				MILLMAN AND SON.				Cr.							
Jan. 1	1	To Stock	- - -	1	572	10	0	Jan. 31	6	By Sales at the Nancy	- -	8	149	17	3
								31		By Balance	- - -	10	422	12	9
													572	10	0

Dr.				CHARLES LE COIN.				Cr.							
Jan. 1	1	To Stock	- - -	1	389	15	0	Jan. 31	2	By Bills receivable	- - -	3	85	14	7
								31		By Balance	- - -	10	304	0	5
													389	15	0

BOOK-KEEPING.

(5)

LEDGER.

Dr. WILLIAM LAMOS. Cr.									
Jan. 1	1	To Stock	-	-	-	1	42	12	0
12	3	To Sundries	-	-	-	c	677	6	4
							1105	18	4
Jan. 23	2	By Bills receivable	-	-	-	3	80	0	0
31		By Balance	-	-	-	10	395	18	4
							1105	18	4
Dr. WILLIAM CHULMLEY. Cr.									
Jan. 1	1	To Stock	-	-	-	1	310	13	0
31		To Balance	-	-	-	10	271	17	0
							582	10	0
Jan. 19	2	To Bills receivable	-	-	-	3	582	10	0
Dr. WILLIAM PEMBERTON. Cr.									
Jan. 1	1	To Stock	-	-	-	7	721	13	5
1	3	To Sundries	-	-	-		143	18	9
							865	12	2
Jan. 31		By Balance	-	-	-	10	865	12	2
Dr. WILSON AND VANELLI. Cr.									
Jan. 1	1	To Stock	-	-	-	1	570	2	6
15	3	To Sundries	-	-	-		221	19	1
							792	1	7
Jan. 31		By Balance	-	-	-	10	792	1	7

BOOK-KEEPING.

(6)

LEDGER.

Dr.

SMITHSON AND CO.

Cr.

Jan. 29	2 To Bills payable - - -	4	820	5	0	Jan. 1	1 By Stock - - - - -	1	820	5	0
	4 To Sales & Nancy - - -	8	218	1	8	31	By Balance - - - - -	10	218	1	8
			1038	6	8				1038	6	8

Dr.

GEORGE HOLLAND.

Cr.

Jan. 2	2 To Bills payable - - -	4	400	0	0	Jan. 1	1 By Stock - - - - -	1	421	11	6
	4 To Sales & Nancy - - -	8	139	11	3	31	By Balance - - - - -	10	117	19	9
			539	11	3				539	11	3

Dr.

GIBSON AND CARR.

Cr.

Jan. 16	2 To Bills payable - - -	4	300	0	0	Jan. 1	1 By Stock - - - - -	1	268	11	4
						31	By Balance - - - - -	10	31	8	8
									300	0	0

Dr.

WINTER AND WEST.

Cr.

Jan. 31	5 To Sundries - - - - -	10	403	18	4	Jan. 1	1 By Balance - - - - -	1	516	0	0
31	To Balance - - - - -	10	102	1	8						
			506	19	12						

BOOK-KEEPING.

(7)

LEDGER.

<i>Dr.</i>	HAMPTON AND CO.	<i>Cr.</i>
Jan. 31 To Sundries - - -	1891 Jan. 31 By Stock - - - By Balance - - -	173 10 15 11 <hr/> 1891

Dr.				EDWARD WHITE.				Cr.						
Jan.	1	5	To Sundries - - -	652	6	8	Jan.	1	1	By Stock - - -	1	316	4	0
								31		By Balance . . .	10	336	2	8
												652	6	8

Dr.				JAMES PRIME.				Cr.						
Jan. 31	5	To Sundries	- - -	652	1	8	Jan. 1	1	By Stock	- - -	1	516	19	0
							31	10	By Balance	- - -	10	135	2	8
												652	1	8

Dr.				EDMUND CONNOR.				Cr.						
Jan. 31	5	To Sundries	- - -	763	5	11	Jan. 1	1	By Stock	- - -	1	721	18	0
							31	10	By Balance	- - -	10	41	7	11
												763	5	11

BOOK-KEEPING.

[illegible]

BOOK-KEEPING.

(9)

LEDGER.

Dr.				HOUSE EXPENCES.				Cr.				
Jan. 31	1	To Cash	- - - - 1	68	10	0	Jan. 31	By Profit and Loss	- - 9	68	10	0

Dr.		SAMUEL LIGHTFOOT.										Cr.			
Jan. 2	To Bills payable	-	-	4	1050	0	0	Jan. 18	4	By Merchandize	-	3	3050	0	0
31	To Balance	-	-	10	2000	0	0								
					3050	0	0								

Dr.		LONDON ASSURANCE COMPANY.				Cr.	
Jan. 31	To Balance - - -	141	611	Jan. 31	By Insurance - - -	3	141 611

Dr.				PROFIT AND LOSS.				Cr.					
Jan. 31	2	To House Expences	- - 8	68	10	0	Jan. 31	1	By Funded Property	- - 1	30	0	0
		To Stock	- - - 1	336	18	10		1	By Farm in Kent	- - - 1	54	10	0
								2	By Ship Charlotte	- - - 2	94	15	0
								3	By Commission	- - - 3	142	6	2
								8	By Interest	- - - 8	83	17	8
				405	8	10					405	8	10

BOOK-KEEPING.

Dr.				BALANCE.				Cr.							
Jan. 31.	To Cash	-	-	1	12214	10	5	Jan. 31.	By Bills Payable	-	-	4	2696	5	2
	To Funded Property	-	-	1	1565	0	0		By William Chulmley	-	-	5	27117	2	2
	To Farm in Kent	-	-	1	1520	0	0		By Winter and Well	-	-	6	102	1	8
	To House at Richmond	-	-	2	500	0	0		By Samuel Lightfoot	-	-	9	2000	0	0
	To Household Furniture	-	-	2	750	0	0		By London Assurance Company	-	-	9	141	6	11
	To Ship Charlotte	-	-	2	3120	0	0		By Stock	-	-	1	22334	4	2
	To Merchandize	-	-	2	713	13	6								
	To Bills receivable	-	-	3	2390	4	7						27545	14	9
	To Debentures	-	-	4	405	14	6								
	To Millman and Son	-	-	4	422	12	9								
	To Charles Le Coin	-	-	4	304	0	5								
	To William Lamos	-	-	5	305	18	4								
	To William Pemberton	-	-	5	865	12	2								
	To Wilton and Vanelli	-	-	5	7	2	1								
	To Smithson and Co.	-	-	6	218	1	0								
	To George Holland	-	-	6	117	10	0								
	To Gibbon and Carr	-	-	6	31	8	0								
	To Hampton and Co.	-	-	7	15	11	4								
	To Edward White	-	-	7	330	2	8								
	To James Prime	-	-	7	137	4	8								
	To Edmund Connor	-	-	7	21	7	11								
	To Richard Broadley	-	-	8	22	1	5								
	To Adventure to Jamaica	-	-	8	49	10	5								
					27545	14	9								

Remarks on the Ledger and Subsidiary Books.

As interest should be charged in the ledger upon every article, or debt, from the time it becomes due to the period of settlement, the operation ought to take place before the general balance, and the difference between the interest of the *Dr.* and *Cr.* sides of each account of the ledger should be carried back to the journal, making "Sundries *Drs.* to Interest" for the balance in favour of stock, and "Interest *Dr.* to Sundries" for the balances on the other side. These entries should then be posted to their respective accounts in the ledger; and it is common, at the same time, to insert postage of letters, and other small charges on merchandize.

The manner of inserting the balance, and profit and loss accounts, in the ledger, varies in different counting-houses. In some they are placed as in the foregoing specimen: in others, the particulars of those accounts are inserted at the end of the journal, and the sum total only of each transferred to its proper place in the ledger; a method that is found very convenient in extensive business, where accounts in the ledger may be thus closed as the goods are sold off, which greatly diminishes the labour of the general balance.

Besides the subsidiary books already explained, there are various others peculiar to certain kinds of business; such as *Books of Insurance*, and *Shipping Accounts*. There are also several, the titles of which are sufficiently explanatory of their uses; such as the *Order Book*, *Letter Book*, *Petty Cash Book*, *Diary*, and *Debiture Book*. In some houses, a *Stock Book* is kept, which shows the quantity and price of each article bought and sold; thus serving as a substitute for real accounts in the ledger; a purpose which is sometimes effected by the *Warehouse Book*. It should be observed, that the *Account Current Book* is universally necessary, as it shows the state of each personal account in the ledger drawn out in a detailed and simple form, in order to transmit a copy or du-

plicate of each person's account to him at the period of settlement.

FACTORAGE AND EXCHANGE ACCOUNTS.

When a merchant and his agent or factor reside in countries where different currencies are used, the factor keeps his employer's accounts in the currency of his own country, and the employer, that their books may agree, keeps the same accounts in the same currency; but he also allots an adjoining column in his ledger for the corresponding value in his own money, by which he ascertains what profits or losses may arise from the fluctuation of exchange.

In order to explain such an exchange account, the following has been selected from the ledger of a London merchant, who (as appears by the statement) remitted bills to his factor at Hamburgh, and drew upon him for his reimbursement or returns; he therefore debits his factor for the remittances, and credits him for the drafts; the different amounts are first entered in the inner columns in banco marks, and then in the outer columns in sterling, according to the rate of exchange at which they were negotiated, and hence arises the profit or loss: thus, if the merchant buys the bills which he remits at a cheaper rate of exchange than he sells the drafts which he draws on his factor, there is a gain; but if otherwise, a loss. On the same principle, if he had paid debts which he owed, or received debts due to him at a more advantageous rate of exchange than those debts were contracted for, there would have been a gain, but a loss if the contrary.

An exchange account is balanced by first comparing the inner columns; and when they are equal, there is nothing due from one party to the other. The difference between the outer columns is profit and loss; but if the inner columns be unequal, the balance is what one party owes to the other, which must be carried to the outer column at the

current rate of exchange, and then the difference between the outer columns is the profit or loss.

The letters M/A (my account) are used by the merchant in keeping the account which his factor likewise keeps, who, in stating the same transactions, annexes to his employer's name H/A (his account); and their ledgers are reversed with respect to the *Dr.* and *Cr.* sides. Thus, the factor, in his account of the following transaction, debits his employer for the drafts or bills drawn on him, and credits him for the remittances which he receives; and as all the bills were drawn in marks (the money of the place where they were to be paid), the factor has no concern with any other money; therefore, he debits his employer for commission, brokerage, discount, and postage, in marks, for which his employer also credits him, and values those marks at the rate of exchange which exists when the account is balanced.

There are other kinds of exchange accounts kept between

Cambists, or dealers in exchange, who reside in different countries, and who agree to transact each other's business (commission free), and divide the gains or losses. Such accounts, like all other partnership concerns, require interest calculations, according as one party may be in advance for the other: this is the case when bills remitted are at a long date, and drafts at a short one, or the contrary; but it frequently happens that one party may be in advance for sums which have not been received by the other party, who is therefore only answerable for the advances in his possession, and the interest on the remainder should be paid out of the general profits.

These exchange accounts are kept by both parties according to the following plan; and when they agree, the *Dr.* side of one account is equal to the *Cr.* of the other, and the inner columns of one to the outer columns of the other, and *vice versa*.

Dr.										Mr. JOHN FACTOR, of Hamburg, M ^a A.										Cr.									
		Banco Marks.	S.	P.	Rate.	£.	s.	d.				Banco Marks.	S.	P.	Rate.	£.	s.	d.											
1801.										1801.																			
Jan. 30.	To Balance of old account -	1182	11	0	31	101	14	9		July 17	By Draft, a 2½ Us -	9718	4	0	31	4	827	1	8										
18	To Remittance -	9500	—	—	31 8	800	0	0		24	By ditto, a 2 Us -	15002	8	0	31	3	1306	17	7										
25	To ditto -	14175	—	—	31 6	1200	0	0		Dec. 31	By Commission, Discount, Brokerage, &c. -	457	11	—	31 8	38	10	10											
Dec. 30	To Balance carried to new account -	320	12	0	31 8	27	0	0																					
31	To Profit and Loss gained by the re-exchange -					43	15	4																					
		25178	7	0		2172	10	1				25178	7	0		2172	10	1											
											By Balance brought down }	320	12	0		27	0	0											

Book of rates, is a book established in parliament, shewing at what value goods, which pay the duty of tonnage and poundage, are to be reckoned at the custom-house. See **CUSTOM, DUTY, POUNDAGE, and TONNAGE**.

The book of rates annexed to the act of tonnage and poundage made in the 12th year of king Charles II. was subscribed with the hand of sir Harbottle Grimstone, then speaker of the house of Commons. An additional book of rates of goods and merchandizes usually imported, and not particularly rated in the former, with rules, orders, &c. was signed by Spencer Compton, esq. speaker of the house of commons, 11 Geo. I. c. 7.

Aliens used to pay a larger proportion than natural subjects, generally called the aliens' duty; now repealed by stat. 24 Geo. III. sess. 2. c. 16. except as to scavage duties, granted to the city of London. By stat. 27 Geo. III. c. 13. called the "Consolidation Act," all the former statutes, imposing duties of customs and excise, were repealed with regard to the quantum of the duty; and the two books

of rates above-mentioned, were declared to be of no avail for the future; but all the former duties were consolidated, and were ordered to be paid according to a new book of rates annexed to that statute. By the improvement of this statute, the duty upon the exportation or importation of any article may be easily found, or the excise duty to which any commodity is subject, in an alphabetical table.

BOOK-SELLER, a professed trader in books; whether he prints them himself, or procures them to be printed by others, for sale.

Book-sellers, among us, are the same with *bibliopole* among the ancients, whose office was distinct from that of *librarii*. Petty dealers, or venders of small ware, like our publishers, were more particularly denominated *libelliones*. At Rome, the *Argiletum* was the mart of books, as St. Paul's Church-yard, or Fleet-street, and Paternoster-row, have been among us; whence that of Martial.

*Argiletanas mavis habitare tabernas,
Cum tibi, parve liber, scrinia nostro vacent.*

Book-sellers are a kind of agents, or curators in the republic of letters: in many places they are ranked among the members of universities, and entitled to the privileges of students: as at Tübingen, Salzburg, and Paris, where they have always been distinguished from the vulgar and mechanical traders, and exempted from divers taxes and impositions laid on other companies.

Formerly the offices of book-sellers and printers were united in the same persons. Paper, and all other materials, as well as labour, were, in the infancy of the art, exceedingly dear; and, on the other hand, the purchasers of books were few, partly because the price of them was high, and partly because knowledge being less widely diffused, they were not so generally read as at present. For these reasons, many of the principal printers, notwithstanding their learning or ingenuity, became poor. The printers were, therefore, induced to give up the book-selling part of the business, and to retain only that of printing. Sometimes, indeed, there were rich people of all conditions, particularly eminent merchants, more especially in Germany, who caused books, which they sold, to be printed at their own expence. Thus Henry Stephens was printer at Paris to Ulric Fugger at Augsbourg, from whom he received a salary for printing the many MSS. which he purchased. In some editions, from 1538 to 1567, he subscribes himself "Henricus Stephanus, illustris viri Huldrici Fuggeri typographus." In like manner, towards the beginning of the 17th century, a society of learned and rich citizens of Augsbourg printed a great number of books, which had commonly at the end these words: "Ad insigne pinus." Printing, therefore, thus gave rise to a new and important branch of trade, that of book-selling, which was established in Germany, chiefly at Frankfort on the Mayn, where is a street, consisting of several large book-sellers' shops, and called "Book-street."

Labbe gives a list of learned book-sellers, most of whom were also authors. Of late days, book-sellers have drawn their business into less compass, and leaving the labour of composing books to one set of persons, and that of printing them to another, content themselves with the gainful part; thus ministering to the republic of letters not with the head, or the hand, but the purse only.

In this view, they have been very important and useful agents between authors and the public; and have contributed, in no small degree, to the encouragement of genius and literary industry, and the spread of science. There are few authors, who have undertaken the printing and publishing of any work likely to be transmitted to posterity, without being connected with some book-seller or book-sellers, eminent in their profession.

The fairs of Frankfort and Leipzig are famous for the resort of book-sellers, not only from all parts of the empire, but Holland, Flanders, &c. They have each their shop or warehouse, over which is inscribed the name of some celebrated book-seller of former times; *officina Elzeviriana*, *Frobeniana*, *Morelliana*, *Janfoniana*, &c.

An acquaintance with the book-sellers' marks or signs, frequently expressed on the title pages of their books, is of some use; because many books, especially in the 17th century, have no other designation either of printer, book-seller, or even city. The *anchor* is the mark of Raphelengius at Leyden; and the same with a *dolphin* twisted round it, of the Manutii at Venice and Rome; the *Arion* denotes a book printed by Oporinus at Basil; the *caduceus*, or *serpafus*, by the Wecheluses at Paris and Frankfort; the *cranes*, by Cramoisy; the *compass*, by Plantin at Antwerp; the *fountain*, by Vascosan at Paris; the *sphere* in a balance, by Jansson or Blaeuw, at Amsterdam; the *lily*, by the Junta at Venice, Florence, Lyons, and Rome; the *mulberry-tree*, by

Morel at Paris; the *olive-tree*, by the Stephenfes at Paris and Geneva, and the Elzevirs at Amsterdam and Leyden; the *bird between two serpents*, by the Frobeniuses at Basil; the *truth*, by the Commelins at Heidelberg and Paris; the *Saturn*, by Collinæus; the *printing-press*, by Badius Ascensius, &c.

Chevillier shews, that the university of Paris had formerly the sole power of creating and appointing book-sellers, who were to take an oath to the university; and were reputed part of the academical body, and as such entitled to the exemptions of the other members thereof. They were to give security to the university for their behaviour, and produce attestations of their capacity for the discharge of their office: the university also deposed and expelled them at discretion: they were obliged to appear at all assemblies of the university, when summoned, and assisted at the public processions thereof: they were obliged to lend their books to be read, or even copied by such as were disposed to borrow, on certain conditions, prescribed by the university. If they kept any books by them which were not correct, the university punished them: they were not allowed to buy any book of a student, without leave of the rector; nor were they allowed to gain above four *deniers* in a *livre*, by any copies sold to the members of the university. Every book-seller was obliged to have a catalogue of all his books hung up in the shop, with the prices as rated by the university: no book-seller, who had not taken the oaths to the university, might sell a book of above ten *shells* value. Diff. de l'Orig. de l'Imprim. l. iv.

This state lasted from the thirteenth century to the invention of printing, and even till the end of the fifteenth century; during which time there were only allowed twenty-four book-sellers, two binders, two illuminers, and two sworn book-writers, or copyists. But from that time the kings of France began to take cognizance of them; Louis XI. thought fit to prescribe some new regulations in 1467. Under Francis I. the book-sellers were brought wholly under the royal authority, and received statutes from the king.

The chief science of book-sellers, is the knowledge of the titles, different editions, prices, and scarcity of books, without regard to their contents, or qualities, otherwise than as these affect the sale of them. See LITERARY PROPERTY.

BOOK-WORM, in *Entomology*. It would be no easy task to say of what precise description those creatures are, which the old writers meant by the indefinite expression of *Book-worm*. They speak of it as an insect of the mite kind, which afterwards becomes a fly, bred from eggs deposited in the month of August in books, especially in the leaves nearest the covers; and which, upon the whole, bears a strong resemblance to the mite or *blatta* found in *corn*. All this must naturally lead to a conclusion, that, under the general appellation of book-worm, they included every insect of whatsoever kind that was known to be destructive to books. Among this host of latent enemies to our libraries, the mite is highly injurious. When books are carelessly left exposed in damp places for any length of time, they seldom escape the ravages of this imperceptible creature. The species *destructor* is very detrimental, as is likewise *cruditus*; the latter of which directs its attacks to those parts which are sewed together, or glued down. Both species are invisible to the naked eye, but their presence is easily known by the ill effects they produce. Another mischievous creature is the larva of a small moth of the tineæ kind, which is insinuated in the egg state into the paper, and, hatching, the larva gnaws cylindrical cavities through the leaves, and spins a web, in which it lies secure, till after passing through the pupa state it becomes a moth. The larvæ of several species of the dermeites, in like manner, prey upon books, attacking the leather covers as

well as the paper. Of this kind, *Dermestes lardarius* is one of the most injurious. The mixture of the juice of worm-wood, and other bitter ingredients, in the paste employed by book-binders, as an expedient for the security of books against the attacks of those insects, is of no utility. Mineral salts are recommended for this purpose instead of it, under an idea, falsely conceived, that insects, in that case, would not prey upon them. Mr. Prediger, among other instructions to German book-binders, printed at Leipzig in 1741, advises their making paste of starch instead of flour: he wishes them to powder slightly the books, the covers, and even the shelves on which they stand, with a mixture of powdered alum and fine pepper; and is also of opinion, that in the months of March, July, and September, books should be rubbed with a piece of woollen cloth steeped in powdered alum. *Mélang. d'Hist. Nat.* t. v. 296. For the preservation of books from the depredations of the insects above described, it will be only requisite to attend occasionally to wipe and dust them, observing that the library be not kept in a damp situation. Wiping, and an exposure of the book to the heat of a good fire, will immediately destroy the mites contracted in the damp, and, of course, prevent farther injury from that race of vermin. Corrosive powders, even arsenic itself, would be employed in vain for the destruction of the larva either of the *tinæ*, or the *dermes*; but the fumigation of tobacco, a close heat, like that of a slow oven, or the scent of camphor, will effectually destroy them. The last remedy we are certain, from experience, to be excellent. Musk might, perhaps, answer nearly as well; or, lastly, if alum be preferred, let it be first burnt to a powder. When M. Prediger recommended his preparation of powder-alum, he did not seem to be aware, that if employed in a crude, unburnt state, it could produce no effect upon the insects intended to be destroyed.

BOOKING, among *Merchants*, &c. the making an entry of any matter in the journal. See **BOOK**, **BOOK-KEEPING**, and **JOURNAL**.

BOOM, in the *Sea-language*, a long pole employed in extending the sails of a ship, principally in moderate breezes of wind. Of these there are various kinds, according to the purposes for which they are intended.

Booms, simply so called, are those employed in extending the lower sails when the ship is going large; which is done by putting one end of the boom into the clew of the sail, and the other end to a butt against the side of the ship. These booms are retained in their proper positions by means of ropes called *guys*.

Driver-boom, is that which is used in extending the lower part of the driver.

Jib-boom, is a spar run out from the bowsprit, and is, therefore, a continuation of it, in the same manner as the top-mast is that of the mast. Upon this boom the jib, in square-rigged vessels, is set; and hence its name. In some vessels, the length of the boom is so much increased, as to carry a flying jib.

Main-boom, is that which serves to extend the lower part of the main-sail in vessels having only one mast: in brigs, &c. it extends the lower part of the fore and aft main-sail, the upper part, in either case, being extended by a gaff.

Spanker-boom, a boom projecting from the mizen-mast, considerably beyond the taffrail, by which a larger sail can be extended than by the common boom.

Studding-sail-booms, are booms run out from the yard arms, from which the studding-sails are suspended.

To Boom off, is to push any thing away, as a ship, &c. by means of a rod or boom.

Boom also denotes a pole with a bush or basket on the top, placed to direct ships how to steer into a channel; otherwise called a beacon.

Boom likewise is used, in *Marine Fortification*, to denote a cable or cables stretched athwart the mouth of a river, or harbour, with yards, top-masts, battlings, or spars of wood, lashed to it, and girded with iron hoops rivetted together and nailed to the spars, to prevent an enemy's entering. Such a boom M. Chateau Renault had with diligence and art prepared at Vigo, for the defence of the plate fleet lying there in 1702; but how strong soever, it was forced by Vice-Admiral Hopson, on the Torbay.

To lay a boom, provide a great number of wooden battlings or spars, of about 20, 30, or 40 feet length, and between 5 and 10 inches diameter; then moor two boats, having a sheet-anchor in each, in the place near one side of the river where it is intended the boom shall begin; bend two cables to these anchors, and round them place the spars or poles, frapping on each with rattling stuff, or with four-inch rope, until the boom is 7, 8, 9, 10, or more feet in diameter, according to the hands employed, the cables being in the middle; then, with iron hoops rivetted together, worm the boom, and drive through the hoop a nail into almost every spar. After having wrought a good birth for the anchors, drop them, and continue the work till it is brought near the other edge of the river, and there drop two anchors more, with the cables bent to them. Over all lash the spare yards and top-masts, with the top-chains, so far as the channel goes. To that part of the cable within the boom, over the channel, let two or more cables be fastened, and bent to anchors laid down the stream; over the clinch of these cables let battlings or spars be wrought for near 15 fathoms down the stream, that the enemy may not cut these cables. These will be serviceable when the enemy's ships come "stemlings" against the boom; for if he force it in one place, the whole will not be opened by that fracture. In places where wood is scarce, and spars cannot be readily procured, or in cases, where there is not time enough for preparing them, it may be sufficient to woad two cables together with old ropes, lashing to them the oars, top-masts, and yards, and worming the whole about with iron hoops; and let every part be well "payed" with pitch, and small gravel strowed in it while the pitch is warm. A boom so prepared cannot be easily cut. The boom should generally be so contrived, as to open at one end for the passage of vessels; and there are several ways of doing this. One is, to clinch one end of the cable to an end of a large mooring-chain, the other end floating with a buoy, and this end fixed to the ring of an anchor by a shackle. The chain being loosed from the anchor at the ebb, with a slack hawser fixed to it, the boom will swing down the stream during the ebb; and, upon the flood, the boom may be re-laid, if the enemy appear in sight, which he must do at the first of the tide, for, upon the ebb, there is no danger of his coming; because, if the wind is right in, a prudent enemy will not venture against the tide, a ship then making such wild steerage; and should the ground, she must lie there till flood, which may prove fatal to her from the batteries ashore; and, against both wind and tide, the enemy cannot come in. On the contrary, should the boom be carried up the flood, and the enemy appear at the beginning of the next flood, the boom cannot be re-laid till the ebb, and before that time the enemy may have accomplished his design. If access can be had to plenty of timber, a "stockado" may be made, by driving several rows of piles in the channel before the boom; or, if the depth of water should not allow of this work, the trees may be usefully applied in making a raft to ride before the boom by good anchors, so that the cables be made too fast for the enemy to cut them. These rafts may be of singular use, by making fires on them, when the enemy appears, which will produce a consternation, that may cause him to chop to anchor, and lose time, or his tide; and

and this may be done each flood, observing not to have the smoke drive into the works, which might give the enemy too great an advantage.

To lay a boom in a straight channel. If the wind for the most part blow obliquely across the river or channel, on the starboard quarter going up the river, and the boom be laid directly athwart the channel, which was the case at Londonderry in 1689, when it was forced, the ships coming with the tide of flood, and a leading gale, will run stemlings against it, and possibly break it, by striking with a direct force: whereas, if the boom could be laid obliquely athwart the river, nearly in a line with the wind, so that the ship must take it with her bow, the blow would be diverted by the ship's sailing; because, in this position, the enemy cannot run stemlings against it; for, in sailing up the river, the ship must be near before the helm; and to bring her head to a boom laid obliquely, the helm must be put down, and then it will be a great chance if she comes to so nicely as to take the boom: besides, mistakes may be committed in the confusion by the man at the helm, and by him upon the land, and by reason of the smoke; and, exclusively of all these, it may be taken for granted, that the ship would cast along-side the boom; and then the batteries at the end of the boom on the larboard side would rake it fore and aft, while the opposite batteries on the starboard side, playing on the broad-side with double-round and partridge, must make a great slaughter among the men cutting at the boom. And if it should not swing along-side the boom, but lie stemlings against it, the batteries on the starboard side of the river, which are to be made above the weather-end of the boom, will rake it fore and aft, while those on the larboard side play on its quarter, or broad-side. The ships within the boom, protected by it, should be moored in a kind of half-moon, with their broad sides flanking the boom: and several old, or, at least, useless ships, may be sunk, as soon as a signal is given from one of the forts, signifying that the boom will be cut. For this purpose, those ships should have large scuttles ready cut; and, for a farther security, it would be very proper to have a small boom to divert the enemy, that the ships may be sunk in the channel before he boards them. The chief strength, however, is in the boom; and if a double, triple, or four-fold boom, were laid, provided materials could be procured, and the value of the shipping and cargoes warranted the expence and labour, it would make the place so much the stronger, and the enterprize of the enemy more hazardous. In stretching these booms, the trouble of many anchors may be spared, by making all the cables fast to the first, and so let them float in a bight, and by a small anchor ride upon the cbb, to keep clear of one another.

To lay a boom in the bend of a river. From the point formed by its end, stretch two booms across the channel, one towards the middle of the opposite bight, and the other so much higher, as to lie directly athwart the channel, leaving a kind of angular space between them. Next the point from whence the two booms stretch, erect a proper fort or battery, to command the channel below and above the bend. On the other side of the river, erect another fort or battery against the bight a little above the end of the lower boom, and so disposed, that its cannon may rake the channel coming up, as well as command both the booms. From such a disposition, it is a great chance if a ship answer her helm so exactly as to time, in bearing or looking about the point, as to take the boom stemlings; and if she smite it with her bow, she casts; and, in either case, she will be raked fore and aft by one fort, and have her broadside battered by the other. Let some old vessels be fitted up for fire-ships, and placed be-

tween the two booms; from each ship let two hawfers be carried ashore, one on each side, and fixed to crabs, or capstans set up; so that as soon as the enemy has passed the first boom, these ships being set on fire, and heaved in their way, nothing can hinder the enemy's destruction. The ships to be defended may be moored in a half moon, with their broad-sides so laid as to batter the enemy when he attempts the boom. When no strong attacks by land are to be feared, the mooring of ships behind a point is best, on account of laying the boom. If the boom should be forced, which must be upon the flood, a fire-ship, instead of falling on board a ship thus moored, will, by the tide, be hurried beyond her; and if the place be favourable to the ships moored there, it will be found impracticable to board a ship thus moored, with such a wind and tide as the enemy must have to break the boom, unless he expose his boats in carrying out an anchor to warp over, which will be a very dangerous attempt, or some unaccountable accident intervene.

BOOM, drift, any yard, spar, &c. by which a boat may ride stem on to the sea in a gale of wind, and drive to leeward. The usual method is to make fast a rope, about twice the length of the spar, to each end of it, and to the middle of the spar the boat-rope is to be bent. By this contrivance, a boat, in a gale of wind, will drive stem on to the sea, and the drift-boom will prevent the sea from breaking over the boat. See **BOAT**.

BOOM-irons, in a *Ship*, are two flat iron rings formed into one piece one above the other, employed to connect the booms to the yards, &c.; the lower ring is the largest, and is driven on the yard. Some boom-irons fasten on the yards with a crotch or strap, secured by nails and hoops.

BOOM-Tackle. See **TACKLE**.

BOOM, in *Geography*, the principal place of a canton, in the department of Deux Neutres, and district of Anvers. The place contains 3428, and the canton 14,519 inhabitants. The territory comprehends 92½ kilometres and 11 communes.

BOOM-channel. See **BRANDARIES**.

BOOMAZOOSE, a river of Africa, in the province of Constantina, which bounds on one side the plain, in which are found the ruins of the ancient Thubuna, now Tubna; and the river Bareekah bounds it on the other side.

BOOMBANI, a town of Africa, in Ludamar, north-east of Jarra, and north-west of Benown. N. lat. 15° 10'. W. long. 7° 12'.

BOOMITES, a term used by some authors to express a kind of agate, of a very remarkable brightness and transparency, which represents the figures of shrubs, trees, mosses, &c. in the manner of the *dendrachates*, a common *mocho stone*. This is, however, very different in the degree of transparency and brightness.

BOOMKIN. See **BUMPKIN**.

BOOMLAND, or *Laland bank*, in *Geography*, is the second bank from the shore, ending nearly against Nieuport, on the coast of Flanders, betwixt that and Ostend. Between that and the first bank, called the Geer, a channel of eight or nine fathoms passes through. All the banks begin off Ostend, being four, and what are called the Flemish banks.

BOOMOE-Ofte-Sando, a small island near the coast of Norway, 12 miles W. of Suroy.

BOOMUGGAR, a district of Africa, in the province of Constantina, which is very fertile, and bears several traces of ancient buildings.

BOON, in *Ancient Geography*, a port of Cappadocia on the Euxine sea, between Cotyora and the promontory of Jason, according to Arrian.—Also, a village of Ethiopia, near the Nile, and on the west side of it. Ptolemy.

Boon-island, in *Geography*, an island of America, on the coast of the district of Maine, between the mouth of York river and Cape Neddock.

Boon's-Creek, a small north branch of Kentucky river.

Boon's-Point, the most northerly point of the island of Antigua. N. lat. $17^{\circ} 7'$ W. long. 62° .

BOONDY, or **BOONDEE**, a town of Hindoostan, in the country of Aginere, 84 miles S. E. of Agimere, and 65 S. S. W. of Raptampour. The town is situated on the southern declivity of a long range of hills, which runs nearly from E. to W. The palace of the rajah, a large and massy building of stone, is about half way up; and a kind of stone fortification runs to the top of the hill. The pass through the hill lies to the east of the town, and is secured by a gate at each end. The possessions of the rajah of Bondee have been reduced by the irruptions of the Mahrattas, and encroachments of the Korah family, to the revenue of six lacks, of which a fourth part, or chout, is paid to the Mahrattas.

BOONE BAY, lies on the western side of the island of Newfoundland, 22 leagues N. by E. from St. George's harbour. N. lat. $49^{\circ} 35'$.

BOONEN, ARNOLD, in *Biography*, a portrait painter, was born at Dort, in 1669; and after having been for some time a disciple of Arnold Verbuys, placed himself under Godfrey Schalcken, who recommended to him, after having received his instructions for six years, to study nature. By following this advice, Boonen obtained the reputation of a great master at the age of 25 years. His style of colouring was extremely good; the attitudes of his figures were elegantly disposed; his touch neat. The whole possessed such harmony, and his portraits maintained such a striking likeness, that he was ranked among the ablest artists of his time; he had a number of admirers, and a demand for works which he was unable to execute. He had the honour of painting the portraits of the czar of Muscovy, of Frederick I. king of Prussia, of the victorious duke of Marlborough, as well as of many of the princes of Germany, and most of the noblemen who attended the czar. His health was impaired by his excessive application, and he died rich in 1729. Pillington.

BOONERSCHANS, in *Geography*, a fortress of Groningen, on the borders of East Friesland, about a league from Dollart bay; 5 leagues S. of Embden.

BOONETON, a small post-town of America, in Suffex county, New Jersey, on the post-road between Rockaway, and Suffex court-house; 116 miles from Philadelphia.

BOONSBOROUGH, a town of America, in the county of Maddison, and state of Kentucky, seated at the mouth of Otter creek, 30 miles S. E. of Lexington, and as far N. E. from Danville. N. lat. $37^{\circ} 57'$.

BOO-ONK, or **LONG NECK**, in *Ornithology*, one of the names of the little Bittern, *Ardea minuta*. *Russell's Aleppo*.

BOOPHTHALMUS, derived from *βοη*, an ox, and *οφθαλμος*, eye, *Ox-eye stone*, in *Natural History*, a name given by Scheuchzer to a peculiar agate, in which there frequently appear circles of considerable size, resembling some large animal's eye. The ground colour of the stone is grey, and the circles of a deep bluish black.

BOOPS, in *Entomology*, a species of *SPHEX* that inhabits Germany, in the environs of Vienna. It is of a black colour, with three segments of the abdomen; and the tarsi of the legs testaceous. Schrank. Inf. Austr.—Obf. The eyes are large, the abdomen ovate.

Boops, in *Ichthyology*, a species of *LABRUS*, found in the seas about Japan. It is specifically distinguished by having the lower jaw rather longer than the upper one, and having two fins on the back. *Houttuyn ad Haarl.* The eyes

of this fish are very large; the teeth in the lower jaw large and acute.

Boops, a species of *SPARUS*, of the lineated kind, found in the Japan seas. The body is marked with obscure longitudinal lines, of which the four lowest are gold and silvery. Artedi describes this fish. Gmel.

Boops, in *Zoology*, the specific name of the *Pike-headed whale*; *Balena boops*, of Linnæus. It is distinguished by having double spiracles on the snout, and a horny protuberance at the extremity of the back. Linn. This is the Jupiter fish of Anderson; the French name it la Jubarte.

The pike-headed whale is a native both of the northern and southern ocean, and grows to the length of forty or fifty feet, and sometimes more. The body is round, especially towards the head, from whence it slopes gradually to the tail. The head is large, and of a somewhat lengthened form, though terminating in an obtuse tip. Before the nostrils are three rows of circular convexities, the utility of which has not yet been ascertained. Above these is the double spiracle through which the animal ejects the water in the same manner as the other whales. The eyes are situated beyond the spiracles on each side of the head. Just behind the orbit of the eyes are the ears, the apertures of which are scarcely perceptible. In the upper jaw are numerous laminae of black whalebone, not above a foot in length. The tongue is large, fat, spongy, and furnished with an appendage towards the throat, a kind of loose skin like an operculum. The lateral, or pectoral fins are large, oval, entire, on the posterior edge, but rounded and crenulated on the front. The dorsal fin is of a fatty cartilaginous substance; it is placed on the hind part of the back, above the vent, in a position nearly perpendicular. The tail, which is horizontal, is divided into two lobes, both of which are pointed at the extremity. The sides below the pectoral fin, together with the anterior part of the belly, is deeply wrinkled with a number of longitudinal plaits, or furrows, which may be contracted or dilated at the pleasure of the animal. All the upper parts of this kind of whale are of a dark brown, or black colour, obscurely marbled; the prevailing colour beneath is white, except the furrows between the abdominal plaits, which distend as the animal opens its mouth and then appear of a bright red.

This is represented as a very timid creature. There are occasions, however, in which it has evinced a considerable share of courage, such as being stranded on the shore in a storm, when it has been known to defend itself with great vigour, and do no small mischief before it could be overcome. When the male has been stranded with the female, of which instances do sometimes occur in the north, they will defend each other with uncommon spirit, emitting at the same time a most horrible grunting noise, somewhat similar to that of a pig when stuck for killing. Its greatest enemy in its native element is the physeter microps. This species lives principally on the salmo arcticus, the amodytes tobianus, and on the testaceous, and other vermes. Its flesh and oil are used like those of other whales. The Greenlanders, where those animals are most frequent, call this particular kind keporkak.

BOORS, in *Geography*, the appellation of a very numerous class of the inhabitants of Russia, usually called simply boors, but more accurately denominated vassal-boors, in order to distinguish them from the free-boors, or free-peasants. These latter, though often comprehended among the boors in state papers, and in the enumeration of the people, are really of a different class, and form a kind of middle station between the burghers and the vassal-boors. In virtue of their freedom, no man can alienate or sell them; they educate their children as they please; most of them possess im-

moveable

moveable property; what they earn cannot be taken from them, provided they duly pay their common taxes, or perform their stated tasks of labour; nor are they under any arbitrary command, but, like those of superior rank, own no authority besides that of the general laws of the state. Among these, however, there are various gradations, as all of them do not enjoy the same degree of liberty. Some are expressly called boors, and without violation of their freedom are treated as such, though with somewhat more gentleness than vassals. Others possess true civil liberty, and differ only by their place of abode and customary occupations from town's people. To this class belong the foreign colonists, settled here as husbandmen or farmers, so that by their occupation they are boors; but on account of the land which they possess, this appellation does not justly belong to them. To the free-peasants we may also refer the "Odnodvortzi," as they are called, or one-house owners, whose persons are free, and who possess their houses with the lands belonging to them, as real property, for which they neither perform feudal services nor give any of their products; but they are obliged to furnish recruits, to pay the pole tax, and obrok, and they are not allowed to buy villages nor to possess vassals as property. The kozaks, or cossacks, in all their stems and branches, the tartar tribes, the bashkirs, vogules, kalmucks, with most of the monadic tribes, and people of the steppes, possess their lands as real and heritable property, and therefore belong to the same class of free-peasants. This is also the case with respect to disbanded soldiers, who live in the country; emancipated serfs, who have either bought their freedom of their lord, or obtained it gratuitously in reward for faithful service; malo-Russian boors, or boors of Little Russia, who are neither cossacks nor vassals, but free people, and free-peasants, who belong to their land, and can neither be sold nor alienated separately from it.

The vassal-boors, as distinguished from those we have now described, have no civil liberty; their children belong not to them, but to their manorial lord, on whose will they depend; they also, with their children, singly or in families, may be alienated, sold, and exchanged; they possess no immoveable property, but they themselves are treated sometimes as the moveable, sometimes as the immoveable property of another. These boors were originally free, but in Great Russia they became gradually vassals, or heritable serfs. They are commonly divided into three kinds; but it will be more convenient to distribute them into four classes. The first consists of "crown-boors," called vulgarly, in Livonia, public-boors; who are very numerous, and are the people belonging to the crown. It is necessary, however, to distinguish between boors whom the crown can grant away, as its real vassals, and who possess no real property, and those tribes of people who are owners of immoveable possessions, and enjoy certain rights and privileges. But there are, exclusive of these real vassals, boors belonging to the crown, whom the crown cannot with propriety give away, being attached as workmen to the mines, either of the crown, or of private individuals. Most of the crown-boors pay, besides the head-money, the obrok, i. e. a sum of money for every male soul, and this is the only benefit which the crown derives from them. In some districts they do task-work, or pay of their products; or, in Livonia, they do both instead of the obrok. Among these there are some that are not only in good circumstances, but even rich; nor would they be sensible of their vassalage, if the crown did not possess the power of granting them away. Boors of this class are mentioned under several denominations; as boors of the black plough, boors of the empire, imperial boors, post-

boors, and court-boors. In the Russian laws and ukases, the following eight distinct kinds of crown-boors are mentioned, viz. empire-boors, who belong neither to the court, nor to the nobility, nor to the monasteries, but are members, or burghers of the empire; imperial-boors, who belong to the monarch personally, or rather to the court; boors of the black plough, inhabiting a great part of the northern Russia, as far as Archangel; post-boors, who are bound, in lieu of the imposts, to keep post-horses; court-boors, whose service and tributes are destined to the support of the imperial court; monastery-boors, who formerly belonged to the monasteries, but now every where in Great, Little, and White Russia, are under the kameral-hofs; economy-boors, who in Great Russia were those boors, who, about the year 1764, were taken from the monasteries and churches, and made subordinate to a particular college of economy, established for that purpose, but now abolished, so that the boors are under the kameral-hofs, retaining their former name; and peltry tribute paying boors, who deliver their tribute in peltry or furs. One privilege of the crown-boors consists in this, that they may buy of noblemen villages and lands, with the vassals belonging to them.

The second class of crown-boors bears the denomination of "crown-boors," who belonged formerly to the bishops, churches, and monasteries, but were taken from them in the year 1764; they are much the same with those of the crown-boors already mentioned, paying particular taxes, and enjoying certain privileges. The boors of the third class are, "boors of the mines," who can never be separated from particular mines, and can never be sold or exchanged apart, though they are transferrable with the works to another master. The fourth class comprehends "noble, or private-boors;" the condition of these depends very much on the humour or caprice of their lord; nevertheless, those of them who belong to wealthy lords, requiring neither task-service, nor deliveries of products, and contenting themselves with a moderate obrok, live happily, grow rich, and would hardly exchange their condition with that of many who enjoy nominal freedom. However, the dues from these boors to their lord are settled by no laws; some pay the obrok, others perform task-service, or, in lieu of it, deliver certain portions of their natural products; from others all these are demanded; but the obrok alone, where the lord is rich, is the most usual. Many take for every male head only three, others five, and some from the most opulent of the boors, twenty-five rubles, or even more. Those, who fare the worst, are the private boors, who are obliged to perform task-service, in lieu of the obrok, at the mine-works of their lord, which may be at a great distance, and with respect to whom the distance is not considered. The late empress declared it to be her wish and inclination, that vassalage should be abolished; or at least, that the condition of the boors might be ameliorated, and all oppressive abuses restrained. She actually adopted several measures for accomplishing her benevolent wishes, by instituting a regular tribunal for the boors, entirely chosen out of their own body; delivering the boors at the mines from oppression; appointing overseers and guardians to prevent every species of violence; and on every occasion recommending gentleness and humanity, of which she herself is said to have exhibited an illustrious example. Under her administration instances occurred of noblemen, who were brought to a severe account for cruelties exercised on their vassals. The most usual mode by which a vassal becomes such is, by being born of a vassal. By the common law of Livonia, every child born of an unmarried female vassal belongs, without regard to the father, to the estate on which it is born. Peter I., however, by an ukase,

ukase, in 1716, ordained, that such a child should be free, if a free man have caused it to be baptized in his name; as father. Vassal-boors pay poll-tax, and furnish recruits; but the obrok of the crown-boors is not to be considered as a public tax, but as a sort of rent for the occupancy of the lands allotted to them, or for permission to follow any trade they please. Some of the boors rise by their good behaviour to be officers in the army; and others of them live decently in their houses, have a sufficiency of wholesome food, are neatly dressed, and accumulate a trifling capital, though, as they have no unalienable security of possessing it, they frequently bury it in the ground. In some noble villages the boors display an opulence which would be looked for in vain in other countries. The Russian boor, indeed, may soon become rich, as he understands the art of turning every thing to profit, and of being content with a little; for his clothes cost him nothing, being wholly manufactured at home, and with his diet, which, during the long falls, is extremely meagre, he is supplied from his husbandry.

The value of an estate in Russia is estimated principally by the number of male boors belonging to it. The national lombard, in all mortgages, which it accepts, takes the boor at forty rubles; but in the sale of an estate they are seldom or never estimated at so low a price. In the government of St. Petersburg every soul is paid for, according to the quality of the estate, from 200 to 300 rubles: in other parts of the empire the price is commonly much lower, but at present hardly any where under 100 rubles. On many estates the boors work three or even four days in every week for the lord. The boors enrolled to the mines have their labours ascertained by an edict issued in 1782; and those belonging to the crown-mines have always experienced a milder lot, as the crown is always interested in their preservation. According to the enumeration of male inhabitants, made from 1781 to 1783, in the forty one viceroalties of which Russia at that time consisted, the number of crown-boors was 4,674,603, and of private boors 6,678,239. Tooke's View of the Russian empire.

BOOR-WORM, in *Natural History*, a name given by Rumphius to a sort of marine worm, that bores through the bottoms of ships; perhaps the *Teredo navalis*.

BOOS, in *Geography*, a town of France, in the department of the Lower Seine, the chief place of a canton, in the district of Rouen; the place contains 650, and the canton 11,144 inhabitants; the territory comprehends 107½ kilometres, and 21 communes.

BOOSE, in *Rural Economy*, a provincial term, signifying a cow-stall.

BOOSHOOANAS, in *Geography*, a tribe of the kassers, or caffres, inhabiting a finely cultivated and inclosed country in southern Africa. The capital, called Leetakoo, is very large and populous, containing, according to the estimation of some commissioners who visited it in 1801, between 2 and 3,000 houses, and from 10 to 15,000 people. It lies nearly in S. lat. 26° 30' and E. long. 27°. The men are of a tall athletic form; of simple pastoral manners; living almost entirely on milk and vegetables, and following the occupation of shepherds. The women, like other females in savage communities, perform all the drudgery of the family. They break up the ground with a kind of hoe made of iron, and afterwards plant it. They also construct their habitations, and collect the necessary materials. They reap the grain, clear it from the husk, and lay it up in the granaries, which, with other earthen pots and vessels, were the work of their own hands. The men prepare the skins and hides which serve for shoes, and make them up into cloaks for themselves, their wives, and

their children. They also attend the cattle, milk the cows, and hunt the antelopes and other game, with a weapon called the "hassagai," which is used also in battle.

The houses of these people are built in a circular form, being about sixteen feet in diameter. The lower part, to the height of four feet from the ground, is formed of stone laid in clay with wooden spars erected at certain distances. A fourth part of the house, on the east side, is open, and the other three-fourths entirely closed. The whole building is covered with a round pointed roof in the form of a tent, well thatched with long reeds, or the straws of the holcus. From the centre to the back part of the house, a circular apartment is separated, having a narrow entrance, and in this the head of the family takes his nightly rest; while the other members of the family sleep in the fore part, or between the large and small circles of the house. All the houses are enclosed by pallisades; and the space between these and the dwelling serves for a granary, and store for their grain and pulse. The granaries are constructed in the form of oil jars, of baked clay, each of them containing about 200 gallons; and these are supported on tripods, composed of the same material, which raise them about nine inches above the ground. They are covered with a round straw roof erected on poles, and of such a height as to admit an opening into the jars, the upper edges of which are from five to six feet from the ground.

To the north of the Booshooanas are situated, in a cultivated tract of country, under the southern tropic, a much more powerful tribe, called the "Baroloos." The manners of these people are kind and simple; they are said to be acquainted with the art of smelting copper and iron, for which they have erected furnaces; they are extremely rich in cattle; their lands and houses are much better than those of the Booshooanas; and their chief town is represented as so extensive, that it is said to be a day's journey in length, and extremely populous. Barrow's Travels into the Interior of Southern Africa, vol. ii.

BOOSSEGA, a river of Africa, in the empire of Morocco, near Tetuan, where the Morocco galleys anchor and winter, under the protection of a bad fort.

BOOSURA, in *Ancient Geography*, a small town of the isle of Cyprus, towards the south-west, between Curium to the east, and Palæ-paphos to the north-west. It is mentioned by Strabo.

BOOT, a leathern cover or defence for the leg, used chiefly on horse-back, both to keep the body more firm, and defend the part from the injuries of the weather.

Boots seem to have been called thus from their resemblance to a sort of jacks, or leathern bottles, formerly in use, and called *botta*, in the old French *bouts*. Borel derives the name from the ancient French word *bot*, a *stump*, because the boot gives the leg this appearance.

It is not long that the boots used on horse-back have been called by this name. In the reign of Charles VII. of France, they were called *houfes*, *hofs*.

The ancient monks usually wore boots; that is, the denomination of *botta*, or *botti*, was given to their buskins.

The Chinese had a kind of boots made of silk, or fine stuff, lined with cotton, a full inch thick, which they always wore at home and abroad.

There are also surgical boots, for the cure of *vari* & *valgi*, or crooked and distorted legs.

The boot was much used among the ancients, by the foot as well as horsemen.

The boot is the same with what was called by the ancient Romans, *ocrea*; in middle-age writers, *greva*, *gamberia*, *bainberga*, *bembarga*, or *beuberga*. Du-Cange Lat. Gloss. The

The boot is said to have been the invention of the Carians; it was at first made of leather, afterwards of brass and iron, and was proof both against cuts and thrusts. It was from this that Homer calls the Greeks brazen-booted. Plin. Hist. Nat. lib. vii. cap. 56. Homer. Il. vii. v. 41.

The boot only covered half the leg, some say only the right leg, which was more exposed than the left, it being advanced forwards in the attack with the sword; but in reality it appears to have been used on either leg, and sometimes on both. Those who fought with darts, or missile weapons, advanced the left leg foremost, so that this only was booted. Veget. lib. i. cap. 20. Pitisc. Lex. Ant. tom. ii. p. 309. and Aquin. Lex. Mil. tom. ii. p. 102.

Boots, *fishing*, are a thick strong sort used in dragging ponds, and the like. Hunting-boots, a thinner kind, used by sportsmen. Jack-boots, a kind of very strong boot, used by the troopers.

Boot, *lardoquin*, is likewise a kind of torture for criminals; to extort a confession, by means of a boot, stocking, or bulkin of parchment; which being put on the leg moist, and brought near the fire, in shrinking squeezes the leg violently, and occasions intolerable pain.

There is also another kind of boot, consisting of four thick strong boards bound round with cords; two of these are put between the criminal's legs, and the two others placed one on the outside of one leg, and the other on the other; then squeezing the legs against the boards by the cords, the criminal's bones are severely pinched or even broken, &c.

The boot is now disused in England; but it subsists still in some other countries.

Boot-housing. See HOUSING.

Boot Island, in *Geography*, the most westerly of some small islands, about 3 leagues on the north of Cajana, or Cayenne, opposite to the river so called, on the eastern coast of South America.

Boot-last, a wooden cylindric instrument, used by shoemakers for widening the leg of a boot. It is slit in two parts, between which a wedge is driven when it is put into the boot.

Boot-top, that part of the side of a ship which is contained between the light water mark and the lower edge of the wales. This part is commonly painted white, and, in that case, the ship is said to have white boot tops.

Boot-topping, in *Sea Language*, the act of cleaning the upper part of the ship's bottom, or that part which lies immediately under the surface of the water, and daubing it over with tallow, or with a coat or mixture of tallow, sulphur, resin, &c.

BOOT, GERARD, in *Biography*, of a noble family, was born at Gorcum, in Holland, in 1604. After taking his degree of doctor in medicine, he came to England, and was in such estimation for his skill in his profession, that he was made physician to king Charles I. On the death of that prince he settled in Dublin, but died soon after, viz. in 1650. In 1630, he published "*Heures de recreation*," 4to. in the Dutch language; and in 1640, "*Philosophia naturalis reformata*," which are not however much esteemed.

BOOT, ARNOLD, brother to Gerard, and of equal celebrity with him, was well versed in the Latin, Greek, Hebrew, and Syriac languages. After taking his degree of doctor in medicine he came also to London; but on the breaking out of the troubles here, he removed to Ireland, where he practised with success and reputation for some years. Tired at length with the hurry and confusion incident to civil commotions, and having experienced some losses, he went to Paris, and there passed the remainder of his life in

VOL. V.

retirement and study. He died in 1653. He published, in 1649, "*Observationes medicæ de affectibus a veteribus omisiss*," 12mo. Haller gives a particular account of this volume, which contains many interesting and curious observations. Haller Bib. Med. Eloy. Dict. Hist.

BOOTAN, in *Geography*, a country of Asia, occupying an interval of at least a degree of latitude, according to Mr. Rennell, between Bengal and Tibet. Tibet and Bootan are often confounded together; but the latter is a feudatory, or dependent province of the former, and borders on Bengal. The capital of this southern province of Tibet is Tassafudon, in N. lat. 27° 43', and beyond this is Paridrong, supposed to be in 28° at least, though placed by the map of the Lamas in 27°. This place, and the chain of mountains near it, have been regarded as the common boundary between Tibet and Bengal; but Mr. Bogle, who was sent by Mr. Hastings on an embassy to the grand Lama of Tibet, in 1774, assures us, that Paridrong is the frontier town of Tibet towards Bootan, and not towards Bengal. The western limits of Bootan have not been ascertained by Mr. Turner, to whom we are indebted for a particular account of this country and of Tibet in general. From Mr. Hardwicke's journey to Sirinagur it would seem, that the name of Bootan includes most of the south of Tibet, particularly those regions which are omitted in the doubtful map of the Lamas, who, in their account of these frontiers, use Chinese or Tartaric terms, or, perhaps, invented appellations equally useless, as they are alike unknown to the Hindoos and the natives. Bootan is a very mountainous district. The southernmost ridge of its mountains rises near 1½ mile perpendicular above the plains of Bengal, in a horizontal distance of only 15 miles; and from the summit, the astonished traveller looks back on the plains, as on an extensive ocean beneath him. Through this ridge there are not many passes, and all of them are fortified. The road between Bengal and Tassafudon lies chiefly over the summits of stupendous mountains, or along the borders of craggy precipices; so that it is difficult to ascertain the direct distance. Between Tassafudon and Paridrong is a chain of mountains still higher than the others; they are visible from the plains of Bengal at the distance of 150 miles, and are commonly covered with snow. These are a continuation of the mountains Emodus and Paropamisus of the ancients; and are sometimes by the moderns erroneously called Caucasus. In the Lamas' map, they are called Rimola, and by the people of Hindoostan Himmaleh. Mr. Rennell supposes them to be, in point of elevation, equal to any of the mountains of the old hemisphere. Bootan, however, with all its confused and shapeless mountains, is covered with eternal verdure, and abounds in forests of large lofty trees. The sides of the mountains are improved by the hand of industry, and crowned with orchards, fields, and villages. It has not many wild animals except monkeys, and a few pheasants. From Mr. Turner's journey, in 1783, we learn, that Bootan does not, probably, contain any metal except iron, and a small portion of copper. The climate of this province may be considered as temperate when compared with that of Tibet Proper; and yet its winters are very severe. The people of Bootan are said to differ essentially and radically from the Hindoos, and somewhat to resemble the Chinese; whence it may be concluded, with some degree of probability, that they belong to that grand race of men, which approaches the Tartaric, though they cannot be regarded as Mandchours, Monguls, or Tartars proper. See TIBET.

BOOTES, in *Astronomy*, a constellation of the northern hemisphere, being one of the 48 old ones; whose stars, in Ptolemy's catalogue, are 23; in Tycho's 25; in Bayer's

34; in Hevelius's 52; and in Mr. Flamsteed's catalogue 54; of which one, in the skirt of his coat, is of the first magnitude, and called Arcturus; which see. We have some account of the respective lustre of the stars in Bootes by Dr. Herschel in the *Phil. Trans.* for 1797, p. 309.

Bootes is represented as a man in a walking posture, with his right hand grasping a club, and his left extended upwards, and holding the cord of the two dogs which seem barking at the great bear. The Greeks give no certain account of the origin of this constellation. The poets say, that Bootes was Icarus, the father of Erigonus, whom Jupiter placed in the heavens. Others suppose him to be Arcas, the son of Callisto. Those, who, at a very early period, supposed the stars, which were afterwards formed into the great bear, to represent a waggon drawn by oxen, made this Bootes the driver of them; from which circumstance he was called the waggoner; others continued the office when the waggon was destroyed, and made it his office to drive the two bears round about the pole; and some, when the greater waggon was changed into the greater bear, wished still to preserve the form of that machine in the stars which constitute Bootes.

This constellation is called by various other names, as Arctas, Arctophylax, Arcturus Minor, Bubuleus, Bubulus, Clamator, Icarus, Lycaon, Plorans, Plautri-Custos, Philometus, Thegnis, and Vociferator; by others, Ceginus, Lanceator, Septentrio; by Hesychius, Orion; by others, Canis Latrans; by the Arabs, Aramech, or Arcamech. Schiller, instead of Bootes, makes the figure of St. Sylvester; Schickhard, that of Nimrod; and Weigelius, the three Swedish crowns. Wolf. *Lex. Math.* p. 266.

BOOTH, *Botba*, denotes a stall, or standing in a fair or market; the term is also applied to any temporary structure formed of boards and boughs, and designed for shade and shelter.

BOOTH, HENRY, in *Biography*, earl of Warrington, and baron Delamer, of Dunham Massey, an upright senator, and distinguished patriot, was descended from a family of great antiquity, and born in 1651. During the life of his father, he was Custos Rotulorum for the county palatine of Chester, and represented that county in several parliaments during the reign of Charles II. His zeal for the protestant religion, and for the liberties of his country, was conspicuous at an early period of his life. He was active in promoting the bill for excluding the duke of York from the throne; he also made a spirited speech in support of frequent parliaments, and against governing by favourites; and he opposed, with a manly firmness, the unjust and arbitrary power assumed by the privy-council, of imprisoning men contrary to law. He was anxious likewise for preserving parliament uncorrupt; and with this view contended for an act to punish those who had received bribes from the court, as members of the parliament denominated the pension-parliament. He also spoke in parliament against the corruption of the judges, charging them with having sold, denied, or delayed justice, and recommended an inquiry into their conduct, and that those who were found guilty might receive merited punishment. His zeal against the papists, and his vigorous opposition to the arbitrary measures of the court, rendered him particularly obnoxious to the governing powers; so that he was turned out of the commission of the peace, deprived of his office, as Custos Rotulorum of the county of Chester, and committed close prisoner to the tower of London, from which, however, he was after a few months released. After the accession of James II. he was twice committed to the tower; and in the beginning of the year 1686, brought to trial, under a charge of high treason. Judge Jefferies maintained, on this occasion, that it was not necessary, in point of law, that there

should be two positive witnesses, in order to convict a man of treason; and that if there was only one positive witness, additional circumstances might supply the place of a second. Lord Delamer, who came to the title in 1684 by the death of his father, made an able defence: and was unanimously acquitted. From this time he lived in retirement at his seat at Dunham Massey; but when matters became ripe for the revolution, he exerted himself in the promotion of that great event. In a note to Dr. Akenfide's ode addressed to the earl of Huntingdon, it is said, that at Whittington, a village on the edge of Scarfdale in Derbyshire, the earls of Devonshire and Danby, and the lord Delamer, privately concerted the plan of the revolution. The house in which they met is at present a farm house; and the country-people distinguish the room where they sat by the name of the "plotting-parlour." Lord Delamer appears to have been one of the first who took up arms in favour of the revolution. After he had joined the prince of Orange, he was deputed, in December 1688, together with the marquis of Halifax, and the earl of Shrewsbury, with a message to king James, intimating to him that he must remove from Whitehall. To the respectful manner in which he executed this commission, James bore testimony, after his retirement to France; observing that "the lord Delamer, whom he had used ill, had then treated him with much more regard than the other two lords, to whom he had been kind; and from whom he might better have expected it." His lordship, however, was fully convinced of the necessity of dethroning the king; and in a debate, relative to declaring the throne vacant, he said, that "it was long since he thought himself absolved from his allegiance to king James; that he owed him none, and never would pay him any; and if king James came again, he was resolved to fight against him, and would die single with his sword in his hand, rather than pay him any obedience." Such were his services in support of the revolution, that he was honoured with several official appointments at that period. The offices of lord lieutenant of the city and county of Chester, and of Custos Rotulorum of that county to which he was promoted, he enjoyed for life. Lord Delamer, however, seems to have been no favourite at court; his disposition did not seem to have been formed for a pliant courtier under any establishment; and with respect to his political sentiments, he seems to have been one of those who wished for more retrenchments of the regal prerogative than were made at the revolution. But though his lordship was removed from the administration, letters patent were issued, in 1690, for creating him earl of Warrington, in the county of Lancaster, to continue to him and the heirs male of his body; and a pension likewise of 2000*l.* per annum was granted to him, for the better support of that dignity; but it is said, that this pension was paid to him only for the first half year, and afterwards suffered to run in arrear. On the 3d of January 1692-3, the earl of Warrington signed a protest against the rejection of the bill for incapacitating persons in office under the crown, either civil or military, from sitting in the house of commons. This patriotic peer died at London on the 2d of January 1693-4, in the 42d year of his age. He left four sons and two daughters; but his second son dying in 1758, without heirs male, the earldom became extinct. Mr. Granger says, that lord Delamer was "a man of a generous and noble nature, which disdained, upon any terms, to submit to servitude; and whose passions seemed to centre in the love of civil and religious liberty." In every part of his life, indeed, he seems to have been actuated by the same principles; and in his "Advice to his children," printed in his works, he says, "There never yet was any good man, who had not an ardent

ardent zeal for his country." In private life, he was a man of great worth, learning, and humanity. His works were published in 1694, in one volume 8vo. They consist chiefly of speeches made by him in parliament, prayers used by his lordship in his family, some short political tracts, and the case of William earl of Devonshire. Biog. Brit.

BOOTH, BARTON, an applauded tragic actor, was descended from an ancient and respectable family in Lancashire, born in 1681, and educated under Dr. Busby at Westminster school. Whilst he was at school, he exhibited early indications of those talents which qualified him for his future profession; as, besides his fondness for Latin poetry, he was distinguished by the grace and energy with which he recited several passages selected from it and committed to memory. Flattered by the applause which he received in acting a part in a Latin play, performed at school, he acquired, or at least indulged, an inclination for the stage; and, eloping from school, at the age of 17, very much to the disappointment and grief of his father, who designed him for the university and the church, he accompanied the manager of an Irish theatre to Dublin. On the Dublin stage he performed for three seasons with very distinguished applause; recommending himself, particularly in tragedy, by a grave countenance, good person, an air of dignity in his aspect and manner, a fine voice, and a very manly action. Besides, he spoke very justly, his pronunciation was very correct, and the cadence of his voice was extremely grateful to the ear. The theatrical reputation which he acquired in Ireland, determined him to return to London in 1701; and being recommended to Mr. Betterton, he was treated by him with kindness, and had important parts assigned to him at his theatre. After the death of Betterton, he was received into the Drury-lane company, and, by his acknowledged abilities, he rose to the highest rank in his profession, as a tragic actor. When Mr. Addison's famous play of *Cato* was introduced on the stage in 1712, as it is said, with political views, and to support the cause of the whigs, the part of *Cato* was assigned to Mr. Booth, and it was performed so much to the satisfaction of the house, that both the whigs and Tories of that period concurred in bestowing upon him unusual and unprecedented rewards. On this occasion, it is said, that lord Bolingbroke made him a present of fifty guineas from the Exchequer, and that the managers afterwards presented him with the same donation. By the patronage and influence of lord Bolingbroke, he was associated, in 1713, to the patentees of the theatre; and for twenty years conducted himself, both as a manager and an actor, with such distinguished integrity and abilities, as to secure the uninterrupted approbation of the public. He married for his second wife, Mrs. Santlowe, a favourite actress, with whom he lived in great harmony, and to whom, in token of his affection, he left his whole fortune, which, according to his own declaration, amounted to no more than two-thirds of what he had received with his wife upon the day of marriage. At length his health began to decline; but such was the high estimation in which he was held by the public, that his appearance drew together crowded audiences, whenever the intervals of his distemper permitted him to tread the stage. But his constitution rapidly decayed, and he sunk under a complication of diseases, May 10, 1733. He was buried privately, according to his own direction, at the parish church of Cowley, near Unbridge, the constant place of his summer retirement, and no monument was erected to his memory. His wife, however, who survived him forty years, caused a monument to be erected in Westminster abbey, in 1772.

As an actor, Booth distinguished himself by that solemn dignity, and rotundity of declamation, which served to

mark distinctly the cadence and melody of the versification. Without altogether neglecting the expression of passion, his manner seems to have been better suited to poetical and sentimental parts, such as that of *Cato*, and the heroes of Rowe's tragedies, than to the highly impassioned. Cibber, however, says, that the master-piece of Booth was *Othello*, a character abounding with sudden turns of passion, united with elevated sentiment and striking imagery. There, says Cibber, he was more in character, and seemed not more to animate or please himself in it than his spectators. To his *Cato* he gives qualified praise, and he ascribes the reputation acquired by it to several temporary and incidental circumstances; but in *Othello*, he adds, we may see him in the variety of nature. Mr. Victor hath taken pains to do justice to Mr. Booth, in opposition to the lukewarm praise of Cibber, and to the reflection contained in Pope's epithet of "well-mouthed," and in the severe illustration of it by his right reverend annotator; and yet, perhaps, Pope's epithet, though invidiously employed, gives a just idea of his general manner.

As a man of letters, Booth appears in a respectable light; though his indolence prevented him from exerting himself much in this way. He translated some odes of Horace, and wrote several songs and other small pieces of poetry, which were well received; and he composed for the stage a mask, entitled "*Dido and Æneas*." In his private character, he was just and upright; ready to acknowledge and reward merit wherever he found it; somewhat rough in his manner, and hasty in his temper, but frank and sincere in declaring his sentiments; kind and liberal in his conduct as a manager; respectful to his parents; affectionate to his brother and sister; and polite and generous to his friends and acquaintance. He was generally esteemed by those who knew him; and his death was much regretted. Biog. Brit.

BOOTH BAY, in *Geography*, a town and bay of America, on the coast of Lincoln county, in the district of Maine, about two miles west of Pemaquid point. N. lat. 43° 42'. The bay stretches within the land about 12 miles, and receives two small streams. On it is a town, having 997 inhabitants; the town and bay were originally called "Townsend."

BOOTIA, in *Botany* (De Neck). See *SAPONARIA officinalis*.

BOOTY, in the *Military Art*, the moveables taken from an enemy in war, which belonged to the conquerors. Among the Greeks, the booty was divided in common among the army, the general only claiming a larger share. The right of making a distribution of it was always considered as one of the prerogatives of the general. During the Trojan war, it was laid at his feet; one part he reserved for himself, and divided the remainder either among the chiefs or the soldiers. As soon as a victory was obtained, the armour was seized by the conquerors, or great commanders; and the common soldiers were permitted to gather the spoils of the dead. Hom. Il. x. 458. §. 66.

The Lacedæmonians were forbidden to meddle with the spoils of the conquered; and the Spartans had always 300 men appointed to observe their actions. Instances, however, occur of their dedicating part of their booty to the gods. When any booty of great value was taken, the soldiers presented their general or commander with it; but before the distribution of the spoils, they selected the best as an offering to the gods. Eight hundred years after the Trojan war, the generals regulated the partition of the spoils taken from the Persians after the battle of Platæa. They were shared among the soldiers, after setting apart a certain portion to decorate the temples of Greece, and decreeing proportionable re-

wards to those who had distinguished themselves in the action. From that time, the Grecian generals disposed of the sums arising from the sale of the plunder; sometimes depositing them in the public treasury; at other times assigning them to defray the expence of public works, or the decoration of temples; enriching their friends and soldiers with them; adding them to their own wealth; or at least appropriating to themselves the third part, which in certain countries was regularly assigned them by constant usage. Polyb. Hist. l. ii. p. 147.

By the military discipline of the Romans, spoils taken from the enemy belonged to the republic; particular persons having no right to them. The generals who piqued themselves on their probity, carried it wholly to the public treasury. Sometimes, indeed, they divided it among the soldiery, to animate them, and serve in lieu of reward. But this distribution depended on the generals, who were to conduct themselves herein with great equity and moderation; otherwise it became a crime of peculation to lay hands on the pillage, as regularly belonging only to the state. The consuls Romulus and Veturius were condemned for having sold the booty taken from the Æqui. Liv. lib. iii.

Among the Jews, the booty was divided equally between the army and the people, though under the kings a different kind of distribution obtained. Numb. xxxi. 27.

Among the Mahometans, two-thirds of the spoils are allowed to the army; the other third to God, to Mahomet, and his relations, and to the orphans, the poor, and the pilgrims. Calmet. Dict. Bib. tom. i. p. 321.

Among us, formerly, the booty was sometimes divided among the soldiery. If the general be in the field, every body takes what he can lay hold on: if the general be absent, the booty is distributed among the soldiers, two parts being allowed to the cavalry, and one to the infantry. A captain is allowed ten shares, a lieutenant six, and a cornet four. See PRIZE.

BOOOUROU, in *Geography*, an island near the east coast of Otaheite.

BOPAL, or BOPALTOL, a town of Hindoostan, in a district of the same name, in the country of Malwa; placed by Mr. Rennell in N. lat. $23^{\circ} 14'$ E. long. $77^{\circ} 28'$. The town is extensive, and surrounded with a stone wall; the streets are wide and straight. On a rising ground, to the south-west of the town, is a fort called "Futteh-gurh," newly erected, and not quite finished. It has a stone wall, with square towers, but no ditch. The spot on which it is erected is a solid rock. To the south-west, under the walls of this fort, is a very extensive tank or pond, formed by an embankment, at the confluence of five streams issuing from the neighbouring hills, which form a kind of amphitheatre round the lake. Its length is about six miles; and from it the town has the addition of "Tal" to its name. These hills, and others in the neighbourhood, contain a soft free stone, and a reddish granite, the latter of which seems well fitted for buildings that will resist water, and the injuries of the weather; and it is accordingly used in the new embankment which is building at the east end of the lake. From this part issues the small river "Patara;" and it is said that the "Betwah" takes its rise from another part of the same. The town and territory of Bopal are occupied by a colony of Patans, to whom they were assigned by Aurungzebe. The revenue of Bopal is estimated at 10 or 12 lacs of rupees. It does not pay any regular tribute to the Mahrattas; but a handsome present is occasionally sent to conciliate their friendship. The people seem to be happy under their present government; and the Dewan, by his hospitality, and the protection afforded to strangers, has

induced the caravans, and travellers in general, to take this road between the Deccan and Hindoostan. Asiatic Researches, vol. vi. p. 31.

BOPPART, or BOPPARD, an ancient town of Germany, in the circle of the Lower Rhine, and lower electorate, once imperial, seated on the banks of the Rhine, and formerly belonging to the archbishop of Treves. Since the French revolution, it is the chief place of a canton, in the department of the Rhine and Moselle, and in the district of Coblenz, from which it is distant 8 miles south. The place contains 2220, and the canton 7232 inhabitants. At this town a toll used to be exacted of vessels which passed along the Rhine. Near the river the town is surrounded by high mountains, the summits of which are richly covered with woods; and when the foliage appears upon the trees, the country about it forms a scene truly picturesque and extremely luxuriant. On a mountain behind the town was a Benedictine nunnery, called the abbey of Marienberg; and besides this, there were a convent of Carmelites, and another of Franciscans, in very romantic situations.

BOPPINGEN, an imperial town of Germany, in the circle of Swabia, and county of Oettingen, on the Eger; 5 miles west of Nordlingen, and 28 N.N.E. of Ulm.

BOPQUAM, or *M'Quam* bay, lies on the east side of lake Champlain, in Swanton, Vermont, and has Hog island on the north at the mouth of Michiscoui river.

BOQUET, a river of America, which passes through the town of Willsborough, in Clinton county, New York, and is navigable for boats about two miles, and there interrupted by falls on which are mills.

BOQUINEN, a town of Spain, in Arragon; 18 miles N.W. of Saragossa.

BOQUINI, in *Ecclesiastical History*, a sort of Sacramentarians, who asserted that the body of Christ was present only in the eucharist to those for whom he died, that is, the elect. They took the denomination from one Boquimus, a Lutheran divine, who was one of the chief of the party.

BORA, in *Ancient Geography*, a mountain of Macedonia, mentioned by Livy, between Illyria and Epirus.

BORÆTA, a town of India, placed by Ptolemy on the other side of the Ganges.

BORABASSOU, in *Geography*, a town of the island of Celebes, where are manufactures of cotton and silk stuffs.

BORACIC ACID, *Acide Boracique*, *Boraxsaure*. This substance was first discovered in 1702, by Homberg; who, by heating together in a subliming vessel a mixture of borax and sulphat of iron, obtained a white crystalline salt, which from its supposed medical properties he named *volatile narcotic salt of vitriol*, or *sedative salt*. The term *boracic acid* was appropriated to this salt by Lavoisier and his associates, at the general reformation of the chemical nomenclature.

Boracic acid may be prepared in two ways; either by sublimation or precipitation. The best method of obtaining it, according to the former of these processes, is as follows:

Take two parts of purified borax reduced to a fine powder, and mix them in a glass alembic with one part of sulphuric acid previously diluted with an equal weight of water. On the application of a gentle heat, the borax will dissolve; and at a boiling temperature, there will first arise an acidulous water, and afterwards, when the mafs in the alembic begins to grow thick, a light, white, glittering micaceous salt will collect in the capital, which is the boracic acid. As this salt sublimes only while the last portions of moisture are evaporating, it is necessary to return back the acidulous water repeatedly upon the mafs in the alembic, in order to obtain the whole of the boracic acid; but this being a tedious operation, and generally terminating with the fracture of the

the alembic, is at present but little practised. The most expeditious and economical way of preparing the boracic acid, is by precipitation; for this purpose, take a boiling hot saturated solution of purified borax in water, and add to it, by a little at a time, so much sulphuric acid as to make the solution slightly acidulous. The liquor, when cold, will be found to have deposited a considerable quantity of thin crystalline plates of boracic acid, and more may be obtained by successive evaporation and cooling, till crystals of sulphated soda begin to make their appearance. The sulphuric acid is on several accounts preferable to any other for the decomposition of the borax; yet the nitric, muriatic, or even the acetic acids may be made use of, and will effect a separation of the boracic acid from the soda with which it was united in the borax. The proportion of acid obtained by precipitation, amounts, according to Beaumé, to nearly one half of the borax made use of; and it is this kind of boracic acid that has been used by most chemists in their experiments on this substance. The precipitated acid is, however, by no means pure, as it retains, according to Cadet, a portion of the acid made use of in its precipitation, and consists, according to Beaumé, of about

56 boracic acid
14 an impure unsublimable salt
30 water of crystallization
100

Sublimed boracic acid is in the form of very minute thin plates, with a shining silvery lustre, and remarkably voluminous in proportion to its weight. The crystallized acid has the same general appearance, only it is in larger plates, and of considerably greater specific gravity.

The taste of boracic acid is slightly subsaline; it reddens syrup of violets, but exhibits very feeble acid characters. It is very difficultly soluble in cold water, and requires a considerable proportion of hot water; as the hot solution cools, it deposits, in crystalline plates nearly the whole of the acid which it had taken up. Alcohol takes up a larger quantity of this salt than water does, and burns in consequence with a green flame. On this account boracic acid has been supposed by some chemists to contain copper. But if a piece of paper is dipped in the alcoholic solution, and then dried, it will burn with a deep yellow flame; hence it is obvious, that the green tinge in question is only caused by a mixture of the yellow flame of the boracic acid with the blue one of the alcohol.

When boracic acid is heated to redness in a silver crucible, it becomes first of a pasty consistence, and then melts into a tenacious glass perfectly colourless and transparent. By exposure to the air, this glass becomes opalescent, but does not undergo any other change; it is soluble in water, and may be obtained, by cooling and evaporation, in the state of crystalline plates as before. When fused in an earthen crucible, it dissolves some of the earth, and forms a semi-transparent glass considerably less fusible than the pure acid; and when dissolved in water, and evaporated, it becomes a gelatinous mass, superficially covered with a few crystals of boracic acid.

Neither the oxygenating nor deoxygenating processes appear to have the least effect on this acid; and all attempts to raise it to a higher degree of oxygenation, or to decompose it, numerous as they have been, have not been attended with the smallest success. It unites in the moist way by single affinity with the caustic alkalies, and by compound affinity also with the earths and metallic oxides; its attraction, however, is so feeble, that it is incapable, when in solution, of

dislodging even the carbonic acid from its basis. But weak as boracic acid is in the moist way, its fixity in the fire enables it to separate, in a high heat, the sulphuric, nitric, muriatic, and all the other volatilizable acids from their bases, forming with them a genus of salts called *borats*, none of which, except the sub-borat of soda, or common BORAX, has hitherto been made the object of chemical investigation.

Boracic acid, besides being obtained from the decomposition of borax, is also found native in certain hot springs and lakes in Tuscany. It is not applied to any medical, chemical, or economical use.

BORACITE, *Borazit*, *Wurfelslein*; *Magnésie boratée*, Haüy. The colour of this mineral is yellowish, smoky or ash-grey, passing into greyish or greenish-white. It occurs in small cubic crystals truncated on the angles. The crystals are for the most part opaque, some are semi-transparent, and a few of the smallest are entirely transparent. Their lustre internally is considerable, and of the vitreous kind. The fracture is small and flat conchoidal, passing into uneven and splintery. The crystals are often corroded more or less, and then are easily pulverizable: but when perfect, they are hard enough to give brisk and lively sparks when struck against the steel. Sp. gr. 256.

The boracite, when exposed to a full red heat, becomes opaque, and loses about $\frac{1}{2}$ per cent. of its weight, but undergoes no other change; when intensely heated in a clay-crucible, it runs into a yellowish glass. It is entirely, though with difficulty, soluble in muriatic acid by long digestion. According to the analysis of Welter, it consists of

68 boracic acid
13.5 magnesia
11 lime
1 alumine
0.75 oxyd of iron
2 silica

96.25

Some later experiments, however, of Vauquelin make the proportion of lime to be much smaller; and it appears probable, that the only essential ingredients of this mineral are boracic acid and magnesia.

Boracite is found near Lunenburg, in the duchy of Brunswick, lining the sides of a vein in a hill of sulphat of lime. The crystals from their shape were known in the neighbourhood by the name of wurfelspath, or cubic spar, and were supposed by some mineralogists to be a variety of quartz. The presence of boracic acid in them was not suspected, till the analysis of Welter, published in 1788, in the Transactions of the Society Nat. Curios. Emmerling. Haüy. An. de Chim. v. 11.

BORAGE, in *Botany*. See BORAGO.

BORAGINÆÆ, the ninth order of the eighth class of Jussieu, of which he gives the following natural character. *Calyx* five-parted, permanent. *Corolla* most commonly regular. *Stamens* generally five. *Germ* simple, or four-lobed. *Style* one. *Stigma* either bifid, furrowed, or simple. *Seeds* most frequently four, either in a capsule or a berry; or else apparently naked, obliquely attached to the style, and for the most part inclosed in the permanent calyx. *Corculum* without a perisperm. *Stem* in most herbaceous; in a few, a shrub or a tree. *Leaves* alternate, often rough.

The genera are thrown into five divisions. 1. Fruit, a berry, item, a shrub or a tree. Patagonula, cordia, chretia, menais, varronia, tournefortia. 2. Fruit, one or two-capsular, herbaceous. Hydrophyllum, phacelia, ellisia, dichondra?

chondra? messerschmidia, cerinthe. 3. Fruit, four naked seeds; throat of the corolla naked; for the most part herbaceous and rough. Coldenia, heliotropium, echium, lithospermum, pulmonaria, onosma. 4. Fruit, four naked seeds; throat of the corolla closed; herbaceous, and generally rough-leaved. Symphytum, lycopsis, myosotis, anchusa, borago, asperugo, cynoglossum. Obs. The last two divisions would more logically have been thrown into one, with two subdivisions. They constitute Linnæus's natural order, asperifolia. 5. Allied to the boraginæ; herbaceous. Nolana, siphonanthus? falkia, the connecting link between the boraginæ and convolvuli.

La Marck (Encyc. Method.) gives the boraginæ a character which belongs almost exclusively to the asperifolia of Linnæus. He has only three divisions: 1. Four germs, or one, four-parted; the proper asperifolia. 2. Five germs, or one with five divisions; nolina, monniera, raputia. The natural situation of the last two was left undetermined by Jussieu. 3. One undivided germ; comprehending the first and second division of Jussieu. He has placed this division last, apprehending, and surely not without reason, that it ought to form a distinct order between the boraginæ and convolvuli.

The boraginæ compose the twelfth family of the eighth class of Venterat, in his "Tableau du regne vegetal." It contains only the asperifolia, with the Linnæan character, except that, in concurrence with Gærtner, the fruit is considered as consisting of two or four nuts; in the former case each two-celled and two-seeded; in the latter, each one-celled and one-seeded; the seeds attached either to the inner side or base of the nut by a filiform or capillary peduncle or placenta.

BORAGO (derivation of the name uncertain). Linn. gen. 188. Reich. 200. Schreb. 248. Willd. 283. Juss. 131. Gært. tom. i. 415. Smith Flor. Brit. 78. Class, Pentandria Monogynia. Nat. Ord. Asperifolia—Boraginæ Juss.

Gen. Charac. Cal. perianth five-parted, permanent. Cor. monopetalous, wheel-shaped; border five-parted, flat; segments acute; throat crowned with five emarginate, obtuse prominences. Stam. five, awl-shaped, converging; anthers oblong, fixed to the inside of the filaments in the middle, converging. Pist. germs four; style filiform, longer than the stamens; stigma simple. Pericarp none; calyx larger, inflated, containing the seeds. Linn. Schreb. La Marck, Juss. Pericarp, nuts four, bony, ovate, a little compressed, slightly convex on one side, smooth, shining, light chestnut, obsoletely angular, marked with a longitudinal furrow in the middle, and with parallel, transverse wrinkles, imperforate, one-celled, without valves. Seed solitary, ovate-acuminate, almost black. Gært.

Ess. Char. Cor. wheel-shaped; border spreading, acute; throat closed with rays.

Species, 1. B. officinalis. Eng. Bot. 36. common borage. "All the leaves alternate; calyxes spreading." Linn. Root long, fleshy, tender, white, fibrous; stem about a foot and a half high, branched, hollow, succulent, cylindric; leaves alternate, large, oval-lanceolate, obtuse, wrinkled, deep green, and, as well as the stem, rough, with sharp, rigid, white bristles; the lower on petioles, the upper sessile; flowers terminating on branched peduncles, blue, flesh-coloured, or white; calyx and corolla divided to the base; tube short and white; filaments short, white, springing from the claws of the petal, with a sharp blue process, where the dark purple or blackish anthers are inserted. Said to have come originally from Aleppo, but now naturalized in many parts of Europe, and not uncommon in the neighbourhood of Lon-

don on dunghills and among rubbish, where it is scarcely more than biennial. It was formerly cultivated in gardens, on account of the supposed cordial virtues of its flowers, but they have long lost their reputation, having neither warmth, pungency, smell, nor any other indication of active qualities. Its root, stem, and leaves contain an insipid viscous juice, which, on being boiled a considerable time, form crystals of nitre. A clarified syrup formed from it is prescribed by the French physicians in pleuritis, and other disorders which require a cool treatment. In Italy its young and tender leaves are in common use, both as a pot-herb and a salad. In France its flowers, with those of nasturtium (tropæolum), are put into salads as an ornament. In England the flowers and upper leaves are used as an ingredient in that summer beverage composed of wine, water, lemon-juice, and sugar, called a cool tankard to which they seem to give an additional coolness. 2. B. indica. "Leaves of the ramifications opposite, embracing the stem; folioles of the calyx sagittate." Linn. "Peduncles one-flowered." Miller. An annual plant, rarely rising a foot high. Stem branching, rough, with small, white, stiffish hairs; leaves lanceolate, rugged, only the lower ones opposite; flowers axillary, shorter than the leaves; folioles of the calyx five-angled, hispid, expanding at the base into two remarkable sharp-pointed auricles; corolla white, pale-blue, or flesh colour, with five rust-coloured spots. A native of the East Indies. 3. B. africana. "Leaves of the ramifications petiolate; folioles of the calyx ovate, acute, erect." Linn. "Peduncles many-flowered." Mur. Whole plant hispid, with stiff, fragil bristles, seven or eight inches high, more branching than B. indica. Leaves large, ovate, and opposite; floral leaves small and alternate; corolla small, blue, yellow within, with five purplish spots; peduncles terminating, divided, and almost racemed; folioles of the calyx entire. Native of the cape of Good Hope, cultivated by Mr. Miller in 1759. 4. B. zeylanica. "Leaves of the ramifications sessile; peduncles one-flowered; calyx without ears." Linn. Mant. Stem hispid, branching about a foot high; leaves of the stem opposite, lanceolate, hispid; of the branches alternate, more numerous, smaller, and more acute; peduncles axillary, filiform, solitary, longer than the leaves; calyx the length of the corolla, erect. A native of the East Indies. 5. B. longifolia. Poir. Barbary. "Leaves linear-lanceolate, sessile, alternate; calyx very hairy at the base." Willd. Allied to the foregoing, but sufficiently distinct. Segments of the calyx linear, without ears. A native of Barbary. 6. B. orientalis. "Calyxes shorter than the tube of the corolla; leaves cordate." Linn. Petiolate; peduncles many-flowered; stamens longer than the corolla, hairy. La Marck. Root large, fleshy, black without, whitish within, full of an insipid viscous juice; stem more than two feet high; root leaves large, on long peduncles, cordate; stem leaves alternate, small, ovate, on membranous petioles, channelled at the base; flowers axillary, and terminating, panicled; tube of the corolla longer than the calyx, white; border white, reflexed. A native of the country about Constantinople. 7. B. cretica. "Calyxes the length of the tube of the corolla; leaves ovate." Willden. Taken up from Tournefort, cor. 6, and described from a dried specimen. Segments of the calyx ovate rhomboid, very entire; flowers red.

Propagation and Culture. The first is a hardy annual, which will sow its own seeds, and come up without care. The seeds of the second, third, and fourth should be sown upon a hot-bed in March, and the plants should afterwards be separately planted in a small pot, with light earth, and plunged in a new hot-bed; in hot weather they should be allowed

allowed a good deal of air. The sixth is a perennial, easily propagated by the root, which may be parted in autumn, and planted in a dry soil and warm situation.

BORAGO (Morison). See CYNOGLOSSUM *omphalodes*.

BORAH, Lat. *Boerofia*, in *Geography*, a town of Sweden, in the province of West Gothland, situate in a mild and mountainous country, on the river Wiska. It was founded by Gultavus Adolphus, and in 1622 endowed with several privileges. Its inhabitants are a sort of itinerant pedlars, who deal in linen, and traverse the kingdom for this purpose. This town was destroyed by fire in 1727; but was afterwards rebuilt, and continues in a good condition. It has a spring of medicinal water; and has the forty-third vote in the diet.

BORAK, among *Mahometans*, a fabulous animal, supposed to be of a middle kind between an ass and a mule, whereon the prophet was carried in his nocturnal flight from Jerusalem into the Heavens.

This animal the Arabs called *Al Borak*, q. d. *skining*. The night when the journey was performed is called *Leilat al Meirage*, i. e. *the night of ascension*; and the flight itself *Al Mejra*, concerning which there is a multitude of traditions.

BORANA, in *Entomology*, a species of *TORTRIX* that inhabits Sweden. This is of a large size, with the head cinereous, and thorax fuscous. Fabricius, who describes it in his *Mantissa*, thus defines it specifically: wings varied with cinereous and fuscous, with elevated scattered dots.

BORANI, in *Ancient Geography*, a people of Scythia, who, after having inhabited the borders of the Danube, passed the Cimmerian Bosphorus, under the empire Justinian, and established themselves in Asia.

BORANO, CAPE, in *Geography*, lies near the N. W. extremity of the large gulf of Venice, and forms the N. E. point to the cluster of islands that impede the entrance into that city. N. lat. about $45^{\circ} 16'$. E. long. $12^{\circ} 30'$. An island of the same name lies within the cape.

BORASSUS, in *Botany* (*Borassus*; Dioscorides). Linn. 1220. Reich. 1336. Schreb. 1689. Clafs. *Appendix Palmæ*. Linn. *Diacia Hexandria*, Thunb.

Gen. Char. Male, *ampana*, Rheede Hort. Mal. Cal. spathe universal, compound; spadix amentaceous, imbricate; perianth proper, three-leaved; leaves ovate, concave. Cor. none. Stam. filaments six, thickish; anthers thicker, *filament*.

Female on a distinct plant, *carimpana*, Rheede. Cal. spathe and spadix as in the male; perianth proper, three-leaved, permanent; leaves roundish, obtuse. Cor. petals three, roundish, permanent; in La Marck's figure exactly similar in form and size to the leaves of the calyx. Pist. germ roundish; styles three, small; stigmas simple. Pericarp. drupe, roundish, obtuse, rigid, one-celled. Seeds three, sub-ovate, compressed, distinct, filamentose.

Species, B. *flabelliformis*. La Marck Illust. Pl. 898. "Fronds palmate, cowed; stipes serrate." Linn. A tree twenty-five or thirty feet high; two feet thick at bottom, and one at top. Trunk, bark of a dark colour; wood dark rufous, red, with a soft pith in the middle; fronds about eight, decussate (umbellate, La Marck), at the top of the trunk; stipe near six feet long, round, and near a span in breadth below, flat, somewhat concave, and not more than a palm above, rough with spines along the edges. The leafy part large, widely expanded, folded like a fan, and used as such in its native countries; at the edges of the folds, furnished with prominent rough ribs; gashed at the extremity; of a dense and thick texture, striated lengthways with close

veins; fruit size of a child's head; external rind or shell, when ripe, blackish and shining near the calyx, longitudinally striated with furrows and fissures, greenish yellow above; containing a dense pulp, at first soft and white, afterwards filamentous and succulent, of a sweetish not unpleasant taste, and strong smell. In the pulp are separately imbedded two or three oblong flat nuts, with a thick woody shell, containing, when young, a blue, gelatinous, esculent kernel, of a sweet, pleasant flavour, which finally becomes too hard to be eaten. Ray Hist. Plant. A wine and a sugar are made from the sap of the tree. Native of the East Indies.

BORAX, in *Chemistry*, sub-borat of soda.

Borax is a saline substance, which has hitherto been found only in Tibet, an extensive mountainous district to the north of Hindoeistan. According to the most authentic recent accounts, especially the report of Mr. Saunders, who visited Tibet, in company with Mr. Turner, in the year 1783, borax is procured from a mountain lake, fifteen days' journey from the capital of Tibet. This lake is encompassed by rocky hills, and is entirely supplied by springs, no stream either falling into it or flowing from it. The water has a salt taste, and contains both borax and common salt; and, on account of its elevated situation, is frozen for a great part of the year. The edges and shallows of the lake are covered with a stratum of borax, which is dug up in considerable masses, and the holes thus made are gradually filled by a fresh deposition; from the deeper parts of the lake, rock salt is procured. The borax, in its rough state, is called tincal, and is brought to Europe in the form of a brownish grey impure amorphous salt, or in detached crystals, about an inch in length, of the form of compressed hexahedral prisms.

The purification of borax is an art which was first appropriated by the Venetians, afterwards passed to the Dutch, and is now practised in great perfection by some English chemists. The process is as yet kept a secret, but in all probability consists of calcination and solution.

The crude borax is often covered with an oily or greasy matter, to prevent it from efflorescing, and, on this account, is not easily acted on by hot water. It appears, however, that by exposing the tincal to a calcining heat, lower than its point of fusion, the grease may be burned off, and other inflammable impurities may be got rid of; the residue being then reduced to a fine powder, and digested in boiling water, the saline parts will be dissolved, leaving most of the impurities behind. The further completion of the purification is probably effected by the common clarifying substances, and repeated solution and crystallization.

Borax, when quite pure, is in colourless crystalline masses, very slightly efflorescent on exposure to the air. Its sp. gr. according to Kirwan, is 1.74. Its taste is somewhat sweetish, and sensibly alkaline. It turns syrup of violets green; shewing, therefore, an excess of alkali in its composition. It contains, according to Kirwan,

34	boracic acid
17	soda
47	water of crystallization
—	
98	

Borax, when exposed to a dry heat, speedily dissolves in its water of crystallization; it then, as the moisture evaporates, becomes of an opaque white colour, and a voluminous spongy texture, like burnt alum. If the heat is increased to a moderate redness, it liquefies, and when cool, appears as a colourless transparent glass. If poured out of the crucible in order to cool, it should be transferred, as soon as it becomes solid, to a covered basin, or other proper vessel, for it always cracks

cracks and flies to pieces before it grows cold. Borax, when thus fused, is called glass of borax; by exposure to the air, it acquires the appearance of chalcedony, on account of the partial efflorescence that it undergoes. If made in a silver crucible, or if *hastily* melted in an earthen one, it is perfectly resolvable in water; but when kept fluid for a long time in a common crucible, it dissolves a portion of the earth of the vessel, and becomes little, if at all, soluble in water.

Crytallized borax requires twelve parts of water at the common temperature for its solution, but only six parts of boiling water; it therefore deposits crystals by mere cooling. Borax is decomposable by all the mineral and vegetable acids when added to excess, the boracic acid being separated, and the soda uniting with the other acid; but if only the excess of soda is combined with the other acid, the whole, by evaporation and cooling, forms a confusedly crystallized mass, consisting of the three ingredients in mutual combination. Borax will also dissolve and combine with nearly half its weight of boracic acid, forming borat of soda. In this salt the acid and alkaline parts completely saturate each other; so that it produces no change on syrup of violets, neither does it possess any longer an alkaline taste; it does not effloresce like common borax, nor are the forms of its crystals the same. The affinity of soda for boracic acid is not so great as that of barytes, strontian, lime, and magnesia. These alkaline earths, therefore, decompose borax; the pure alkali remaining in solution, and the earthy borats forming pulverulent insoluble salts. Potash is also capable of decomposing borax; but borat of potash being very soluble in soda, no precipitation takes place.

Silex and alumine combine in the dry way with borax, the former into a transparent, the latter into an opaque glass. If the ingredients are in nearly equal proportions, the glass is insoluble in the mineral acids; but if a considerable excess of borax is employed, the result is a soluble glass. Of this circumstance Mr. Chenevix has ingeniously taken advantage by substituting borax for caustic potash in the analysis of the more refractory stony compounds, the use of the former salt being much more convenient, on many accounts, than of the latter. Borax will also dissolve most of the metallic oxyds, receiving from each peculiar tinges of colour.

The uses of borax are considerable; it is employed in the laboratory as a very active flux, and as producing a more perfectly limpid fusion than any other substance. For the same reason it is an ingredient in some of the finer kinds of glass; though its dearthness prevents it from being employed so often as it otherwise might be to great advantage. Borax is also highly useful to the jewellers and goldsmiths, as a flux for the folder, by which pieces of gold and silver are cemented together; and in the East Indies it is employed in the moist way as a solvent for gum lac.

BORBETOMAGUS, in *Ancient Geography*, *Worms*, a town of Germany, according to Ptolemy, who says, it belonged to the Vangioni. It was their capital. See **WORMS**.

BORBO, in *Geography*, a river of Piedmont, which discharges itself into the Tanaro at Asti.

BORBONIA, in *Botany*, (in honour of Gaston Bourbon, duke of Orleans,) a name first given by Plumier to plants of different characters, afterwards transferred by Linnæus to a genus in his class *diadelphia decandria*, which is obscurely defined, and, concerning which there are in authors much confusion and inconsistency. La Marck says, that it differs from *genista*, only in having the segments of its calyx a little longer and sharper, which is surely a slight and indeterminate circumstance; and from *apalathus*, in not having its

leaves fasciculated, which is certainly no generic character at all. He follows Linnæus, however, in keeping these three genera distinct, but unites it with *liparia*, from which he finds no reason to separate it. Linnæus attributes to it only nine stamens, all united, and observes, that *liparia* (a genus formed by him, late in life, from Thunberg's plants, collected at the Cape of Good Hope) differs from it in having a tenth separate stamen. Bosc says, that the *Borbonia* has either nine or ten stamens, eight or nine of which are united at their base. La Marck, without noticing Linnæus's distinction, ascribes to his united genera ten diadelphous stamens; but it ought to be remarked, that all his descriptions are confessedly made from dried specimens, and Bosc informs us that none of the species are now cultivated in the Paris gardens. In this state of uncertainty we shall follow Willdenow in retaining the Linnæan distribution. Linn. 857. Schreb. 1165. Willden. 1329. Juss. 853. Nat. Ord. *Papilionacea*—*Leguminosæ*. Juss.

Gen. Char. *Cal.* perianth one-leafed, semiquinquefid, turbinate, half the length of the corolla; segments lanceolate, acuminate, rigid, pungent, nearly equal, the lower one the longest. *Cor.* pentapetalous, papilionaceous, hirsute on the outside, banner reflected, obtuse, claw the length of the calyx; wings semicordate, a little shorter than the banner; keel two-petalled, lunulate, obtuse. *Stam.* filaments nine, united into a cylinder, dehiscient longitudinally above, rising at the end; anthers small. *Pist.* germ subulate; style very short, ascending; stigma obtuse, emarginate. *Pericarp.* legume roundish, acuminate, one celled, mucronate with a spine. *Seed* kidney-form.

Ess. Char. *Cal.* acuminate-spiny. *Stigma* emarginate. *Legume* mucronate.

Species. 1. *B. ericifolia*. Linn. "Leaves nearly linear, acute, villous beneath, heads terminal." A small, rather villous shrub; leaves alternate, pointed, nerveless and smooth above, villous and channelled beneath; flowers yellow, small; legumes short, very villous within. Its specific name is not a happy one. 2. *B. trinervia*. Linn. "Leaves lanceolate, three-nerved, very entire." Flowers yellow, terminating, each on a separate peduncle. 3. *B. angustifolia*. La Marck, with a doubt whether it may not be *trinervia* of Linnæus. "Leaves narrow-lanceolate, five-nerved, smooth; legumes oblong, pedunculate." A small shrub; stems slender, interruptedly angular; peduncles two or three at the end of each branch. 4. *B. barbata*. La Marck (Illustr. t. 619). "Leaves lanceolate, many-nerved, close-set, ciliate, bearded, very acute; flowers villous, subsessile." Stem cylindric, with diverging branches; leaves imbricated, embracing the stem at their base. 5. *B. ciliata*. Willden. "Leaves cordate, embracing the stem, obtuse, many-nerved very entire, ciliate." Stem cylindric, smooth; leaves an inch long, deeply cordate, ciliate at their margin, with long, slender hairs. Nearly allied to the foregoing, if it be more than a variety. 6. *B. lanceolata*. Linn. "Leaves lanceolate, many-nerved, very entire." 7. *B. cordata*. Linn. *cordifolia*; La Marck, who asserts that Linnæus's synonyms to *lanceolata* belong to this species. "Leaves cordate, many-nerved, very entire, smooth; flowers tomentose, subsessile." Branches villous; leaves terminated by a thorny point, crowded; segments of the calyx with thorny points; flowers covered externally with a white and silky down; banner brown within. 8. *B. crenata*. Linn. "Leaves cordate, many-nerved, toothed." Stems with triangular, smooth branches; leaves sessile, or a little embracing the stem, reticularly veined, ending in a point; flowers smooth, pedunculate, three or four in a kind of raceme at the extremity of each branch; bractes setaceous. 9. *B. parviflora*. L. Marck.

Marck. "Leaves cordate, many-nerved, smooth, a little toothed; flowers small, sessile, terminating." Branches smooth and angular; leaves sessile, acuminate; flowers two or three together; calyces smooth, with pointed, not spinous teeth; bractes setaceous. 10. *B. perfoliata*. Willd. (*La Marck Illust. pl. 619.*) "Leaves embracing the stem, very entire." Thun. Branches cylindric, angular towards the end, with scattered hairs; leaves alternate, nerved, veined, denticulate, smooth, terminated by a short point which bends outward, almost perfoliate, terminating; flowers four or six together in a kind of umbel, peduncled; segments of the calyces very sharp-pointed; bractes setaceous. 11. *B. undulata*. Willd. "Leaves embracing the stem, waved with a reflexed point." All the species are natives of the Cape of Good Hope.

Propagation and Culture. Mr. Miller succeeded only by laying down their young shoots, which are commonly two years before they are fit to be separated from the old plant. The best time for laying them down is the beginning of September. *B. crenata* was introduced into Kew garden from the Cape in 1774, by F. Masson.

BORBONIA, *Lavigata*, and *Tomentosa*. See LIPARIA.

BORBONIA, (*Plumier*). See RHUS, METOPIMUM, and HISTERIA COCCINEA.

BORBONIA *Astra*, in *Astronomy*, a denomination formerly given by some writers to the solar facula, on a supposition that they were satellites, or secondary planets. See FACULÆ.

Fromundus mentions a Frenchman, named Tarde, who had written a book exprets under the title "*Astra Borbonia*." Phil. Trans. N° 330. p. 287.

BORBONICA, in *Ornithology*, a species of MOTACILLA, of a greyish fuscous colour, beneath a yellowish fordid grey; quill and tail-feathers brown, edged with grey. This is the *icedula borbonica* of Brisson. Buffon calls it *petit sinon*, and *figuer de l'isle de Bourbon*. It is the *Bourbon warbler* of Latham. Inhabits the islands of Bourbon and Madagascar.

BORBONICUS, a species of TURDUS, of a cinereous olive colour; crown black; abdomen and vent olivaceous yellow; tail fuscous, with two obsolete bands near the tip. This inhabits the isle of Bourbon. Its length is about eight inches; beak and legs yellowish; abdomen in the middle white; quill-feathers brown, edged with reddish. This is the *Bourbon thrush* of Latham.

BORBORITÆ, or BORBORIANI, in *Ecclesiastical History*, a branch of the ancient Gnostics, in the 11th century, who, to the other errors of that sect, added this, of denying a future judgment. Their name is derived from *β-ρ-ρ-ο-ι-τ-α*, *broi*, on account, as it is said, of a custom they had of besmearing their faces and bodies with it. Epiphian. Heres. 25, an. 26. August. de Heres. c. 5.

Some also have given this appellation, by way of reproach, to the Mennonites.

BORBORUS, in *Ancient Geography*, a river of Macedonia, which, according to Plutarch, encompassed the city of Pella.

BORBORYGMUS, in *Medicine*, a term employed to denote the rumbling noise produced by air pent up in the intestinal canal; from *βορβορύγῃ*, *strepitum edo*. It is a common symptom in cases of disordered bowels.

BORBOTHIA, in *Ichthyology*, a name given by some writers to the eel pout or burbot, *gadus lota*, or, as Willughby names it, *mustella fluviatilis*.

BORCINI, in *Ancient Geography*, a people of Apulia, according to Pliny.

BORCEÛTE, in *Geography*, the chief place of a canton, in the department of Roer, and district of Aix-la-Chapelle;

the place contains 3534, and the canton 17054 inhabitants; it has 39 communes.

BORCH a town of Germany, in the circle of Lower Saxony, and duchy of Magdeburg; 4 leagues from Magdeburg.

BORCHEN, or BORREN, a town of Germany, in the circle of Westphalia, and bishopric of Munster, seated on the Aa, having a manufacture of cloth; 30 miles west of Munster.

BORCHLOEN, or LOOSZ, a town of Germany, in the circle of Westphalia, and bishopric of Liege, the capital of the county of Loosz; 12 miles N.W. of Liege.

BORCHOLZ, a town of Germany, in the circle of Westphalia, and bishopric of Paderborn; 8 miles N.N.W. of Warburg.

BORCHT, HENRY VANDER, in *Biography*, a painter and engraver, was born at Brussels in 1583, became a disciple of Giles Valkenburg, and completed his studies in Italy. He was employed by the earl of Arundel in collecting antique curiosities for his lordship in Italy, and retained in his service as long as he lived. After the death of this noble patron, he was employed by the prince of Wales, afterwards Charles II., and continued for several years in England, where his paintings were well esteemed. But retiring to Antwerp, he died there in 1660. His chief excellence consisted in painting fruit and flowers. Among the few etchings which he executed are the "*Virgin and Child*," from Parmigiano, engraved at London, and dated 1637; a "*Dead Christ*, supported by Joseph of Arimathea," from the same master; and "*Apollo and Cupid*," from Perin del Vago. Pilkington and Strutt.

BORCHWORM, or BORGWORM, or WAREM, in *Geography*, a town of Germany, in the circle of Westphalia, and bishopric of Liege; 10 miles W. of Liege.

BORCKELOE, or BORCKLO, a town of the united states of Holland, in the county of Zutphen, on the confines of the bishopric of Munster; seated on the river Berckel; 15 miles E.N.E. of Zutphen, and 42 W.N.W. of Munster.

BORCUM, a small island in the German ocean, near the coast of East Friesland: about N.N.W. from the point of Embden, at its S.W. entrance into the port and river, and about 2 leagues N.E. by E. from the island Rottum. Between them is a channel called the West Channel of the Embs. N. lat. 53° 36'. E. long. 6° 18'.

BORDA, CHARLES, in *Biography*, formerly *Chevalier de Borda*, and a *chef d'Escadre*, in the royal navy under the old French government, was born at Dax, May 4, 1733, and distinguished himself in early life as an able mathematician. Of his knowledge in this department of science ample evidence may be found in the Memoirs of the Academy of Sciences, for 1763 and 1767, of which he was admitted a member in 1754. These memoirs contain many excellent papers communicated by Borda, on different objects of hydraulics; on the resistance of fluids; on water wheels and pumps; on the projections of bombs; on the method of determining curve lines; on the properties of maxima and minima; and on the best method of choosing by lot. In the years 1771 and 1772, he performed a voyage, by command of the king, with Verdun de la Craune and Pingré, in the *Flora frigate*, in which he had the rank of "*Lieutenant de Vaisseau*," to various parts of Europe, Africa, and America, for the purpose of improving the sciences of geography and navigation, and of making experiments with various nautical instruments and time-pieces, with a view of ascertaining accurate methods for determining the longitude. The result of the observations of these three

navigators was afterwards published at Paris in 1778, in 2 vols. 4to., under the title of "Voyage fait par ordre du Roi, in 1771 and 1772, &c." in which Borda's share was not the least considerable. An account of the result of this expedition may be also found in the Memoirs of the Paris Academy for 1773. To Borda the public are likewise indebted for the best chart of the Canary islands, which served as a model for the valuable map of those islands, published in Spain in 1788. In 1774, he undertook a voyage to the Azores, the cape Verd islands, and the coast of Africa. In the year 1787, he published a valuable work, entitled "Description et usage du cercle de Reflexion," in which he revived the use of the reflecting circle proposed by Tobias Mayer in 1756. He was the first founder of the schools of naval architecture in France, and formed the plan of education, and the regulations to be adopted in these seminaries. He also applied the principles of Euler to the uniform construction of ships, so that all those of the French navy might be equal with respect to sailing. And the advantages, in point of form, with regard to quick sailing and manœuvring, possessed by French ships, which are constructed on true mathematical principles, and actually acknowledged by experienced British officers, have been principally owing to the genius, knowledge, and exertions of Borda. He likewise brought into use Mayer's old method of measuring terrestrial angles, after it had been long neglected; applied it to astronomical observations; and invented a circle on a new construction, with moveable telescopes, together with other instruments: such as metallic rules for measuring bases, which were used in the new measurement of an arc of the meridian in France; and to the labours of Borda the accuracy of this measurement has been justly ascribed. He took the most active part in the late reform of weights and measures introduced in France; and he caused to be calculated and printed at his own expence, the logarithms of the decimal parts of the circle, according to the new division into 400 parts. In 1792, he invented instruments and methods for determining, with a precision before unknown, the length of a pendulum, swinging seconds at Paris. M. Lalande has published, in his Abridgment of Navigation, Borda's new method for gauging vessels, together with the tables. Borda was inspector of the dock-yards, in which situation government put great confidence in his talents; and, in 1797, he was one of the candidates for the office of director of the French republic. Although his health had been much impaired, in consequence of serving in the American war with d'Estaing in 1777 and 1778, he continued to employ himself in a variety of useful labours. At length, however, a dropy of the breast proved fatal to him, on the 20th of February, 1799, in the 64th year of his age. Lalande's Hist. Astron. for 1799.

BORDAGE, the condition or service of the *bordarii*. Du-Cange. Gloss. Lat.

BORDARII, often mentioned in the Domesday inquisition, were distinct from the *servi* and *villani*, and seem to be those of a less servile condition, who had a *bord*, or cottage, with a small parcel of land allowed to them, on condition they should supply the lord with poultry and eggs, and other small provisions for his board and entertainment. Though, according to Spelman, the *bordarii* were inferior to *villani*, as being admitted to a small number of acres.

BORDARII also denote servants, or workmen, employed about the house in the necessary offices of fetching wood, drawing water, grinding corn, cleaning yards, and the like; by which they stand distinguished from *villani*, employed in the tillage of lands. See **VILLAIN**.

BORDAT, in *Commerce* a small narrow stuff which is

manufactured in some parts of Egypt, particularly at Cairo, Alexandria, and Damietta.

BORD-BRIGCH, *Borg-bryce*, or *Burgh-brych*, Sax. in *English Antiquity*, a breach, or violation of suretyship, pledge, breach, or breach of mutual fidelity.

BORDE, **ANDREW**, or, as he calls himself, *Andreas Perforatus*, in *Biography*, was born at Pevensey in Sussex, in the early part of the 16th century; and entered early among the Carthusians. Quitting his monastery, he went to Montpellier, and applied himself to the study of medicine, and in 1542, was made a doctor in that faculty. He now returned to England, and having been admitted of the university of Oxford, he came to London, and was made fellow of the Royal College of Physicians, which had been lately established here, and one of the physicians to king Henry VIII. at Winchester, where he principally resided and practised. Though advanced to these honours, his works, full of gross and barbarous errors, shew he was but moderately skilled in languages. He, however, affected to be learned, generally beginning his accounts of diseases, with giving the Greek, Latin, and Arabic names by which they were known. His "Breviary of Health," containing a short account of all diseases and their remedies, was published in 1547. This was republished in London in 4to. in 1575, with some additions which the author had called the extravagants. He was also author of a compendious regimēte, or dietary of health, made in mount Pyllor, which was published in 1562, and of a book on prognostics, and on urines. Borde was also a wit and a poet. He published "Tales of the mad men of Gotham," a book still remembered; and a very singular work, partly prose, partly in verse, which he called "The Introduction of Knowledge, &c." dedicated to the princess, afterwards queen Mary. Before the first chapter is a wooden print of a naked man, with a piece of cloth and a pair of shears, with this inscription:

"I am an Englishman, and naked I stand here,
Mating in my mind what raiment I shall wear:
For now I will wear thy, and now I will wear that,
And now I will wear I cannot tell what, &c."

The thought, Dr. Aikin says, is taken from the Venetians' description of a Frenchman. It was probably in consequence of his having taken more liberty than was allowed at that time with some person in power, that he was thrown into the Fleet prison, where he died in 1549. Haller. Bib. Med. Aikin's Biog. Mem.

BORDEAUX, in *Geography*, a town of France, in the department of the Drôme, and chief place of a canton, in the district of Die, 10 miles S. W. of Die; the place contains 1181, and the canton 3835 inhabitants: the territory comprehends 132½ kilometres and 9 communes.

BORDEKOW, a town of Poland, in the palatinate of Lemberg; 36 miles S. of Lemberg.

BORDELIERE, in *Ichthyology*, the common French name of a fish included in the *CYPRINUS* genus, that is found in the lakes of cold mountainous countries. This appellation appears to be indifferently applied to the *cyprinus ballerus*, and *cyprinus llicca* of Bloch.

BORDENAVE, **TOUSSAINT**, in *Biography*, was born at Paris in 1728. Having distinguished himself for his industry and skill in his profession, he was admitted member of the college of surgeons there in 1750, and professor of physiology in the school of St. Come. He was also, in succession, made honorary member of several foreign academies, to whose transactions or memoirs he was a frequent and liberal contributor. His works are "Essai sur la physiologie," 12mo. published in 1756, and again in 1764. An elementary work,

work, composed for the benefit of his pupils: "Remarques sur l'insensibilité de quelques parties," 12mo. 1757. He reckons the tendons and aponeuroses of the muscles among the insensible parts. In 1768, he published a translation of Haller's Elements of Physiology into French; in 1769, "Dissertation sur les antiseptiques," 8vo.; and in 1774, "Mémoires sur le danger des caustiques pour la cure radicale des hernies," 12mo. For the titles and account of his dissertations, published by the academies with which he corresponded, see Haller. Bib. Chirug. Eloy. Dict. Hist.

BORDENTOWN, in *Geography*, a pleasant town of America, in Burlington county, New Jersey, situate at the mouth of Crosswick's creek, on the east bank of a great bend of Delaware river; 6 miles below Trenton, 9 N.E. from Burlington by water, and 15 by land, and 24 miles N. E. from Philadelphia. This town contains about 100 houses, and is a thoroughfare from New York to Philadelphia.

BORDER, in *Gardening*, a narrow stripe or portion of ground running along the sides of the walls, or other fences that inclose gardens, and ornamented lands, and which bound the walks, or serve to separate the different principal divisions of the former, the earth being generally laid out in a gently sloping manner from the front to the back parts. These compartments are either of the useful or ornamental description. Those of the first kind, are such as are carried round the walls of garden-grounds, and which are mostly employed, especially where the aspect is to the south, in planting out various sorts of fruit-trees upon, such as cherries, figs, plums, apples, pears, peaches, nectarines, apricots, &c. in order to their being trained to the walls or fences, so as to form wall-trees, as well as extremely useful in raising different early esculent herbs, roots, and leguminous crops; and on the other aspects, for the sowing, rearing, and pricking out of many sorts of seeds and plants upon, in the summer season, that require a cool situation, or a degree of shade at particular periods of their growth. The general rule in laying out these borders is, that of making them with a breadth in proportion to the height of the walls, or palings towards which they are formed, which should never be less than eight or twelve feet. They were formerly made not more than five or six feet in breadth, which is much too narrow for convenience in the culture of the plants, or the management of the trees that may be planted on them. Where trees are to be planted as espaliers, ten or twelve feet are the breadths that should, in most cases, be allowed.

As to borders intended for the raising and growth of different sorts of flowers, or for small shrubs and herbaceous plants; or flowers being planted out in assemblage or mixture with each other, five or six feet in the former, and eight in the latter, may be proper breadths for the purpose.

Their depths, where trees are to be planted, should never be less than two feet at the walk, gradually increasing to three at the backs or fences. Some fruit-trees, however, require much more, as pears and apples. In other cases, one foot at the walks, and two at the backs, may form a sufficient depth and slope for the perfect culture of the crops that may be grown upon them. For flowers, and the smaller sorts of shrubs, it is often convenient to have them a little rounded on the surface. Where the situations in which the borders are made are of the more moist and retentive kinds, having clayey, or gravelly and cankery bottoms, proper drains should be formed, and conducted along the fronts of borders to the full depth of the subsoils, in order, effectually, to convey off the injurious wetness that may take place, and allow of a suitable bed being formed for the upper soil. This is often effected by paving the bottoms

of the beds with tiles or bricks. But a much less expensive, and at the same time, equally effectual method is advised by the author of the "Scotch Forcing Gardener," which is that of letting the bottom be laid in a sloping direction from the walls to the drains, a fall of six inches being given, first with a layer of good loam, two inches in thickness, being spread evenly, and well rolled down; then a similar stratum of clear pit or river gravel applied over it, and forced down in the same manner; upon this, another coat of loamy earth is to be deposited to the thickness of an inch or more, and well pressed down; the whole being executed while the materials are in a rather dry condition. These should be afterwards a little moistened, and well rolled down till the surface becomes glazed, the waterings and rollings being continued alternately, till the whole acquires a shining hardness, and the gravel begins to show itself clearly through the loamy coat. In this way, it is asserted, bottoms may be formed, through which the roots of no trees can penetrate, and which are at the same time perfectly favourable to the growth of trees and plants.

In constituting the borders, those substances and mixtures of different materials, which are most adapted to the growth and success of particular sorts of trees or plants, will be explained in describing the culture which they require. Where the raising and growth of most sorts of culinary vegetables are the principal object of borders, there should be constantly a due proportion of good vegetable mould, in combination with a proper quantity of rich, mellow, loamy earth, a suitable portion of well-rotted stable dung, according to circumstances, being incorporated with them, which produce them in the greatest perfection.

There is another sort of useful border, which is that which divides or surrounds the principal compartments or divisions of kitchen-garden grounds, and which immediately bounds or verges the main walks, as being convenient for planting ranges of dwarf-apple, pear, plum, cherry, medlar, and other trees upon, as espaliers, as well as for the culture of many herbaceous, esculent plants. The line of espalier trees, in these cases, should be planted at least three or four feet from the outer edges, so that there may be three or four feet borders on the outside next the walks, and a smaller one on the inside of the espaliers, the broader outside borders serving for the rearing and culture of many low-growing, esculent plants; and sometimes, where the kitchen and flower-garden are united, as flower borders. The smaller inward borders may be found useful in raising many sorts of small plants and herbs, as lettuces, &c.

Borders of the latter, or ornamental sort, as those of pleasure or other grounds, must be formed according to circumstances. It was formerly the taste, in many places, to have almost every walk bounded on each side by a border embellished with various ornamental plants; this taste has now, however, in a great measure, given way to that of planting only on one side. A fine walk, ornamented on each side by spacious borders, fully planted out with curious flowering shrubs, and other plants, have, notwithstanding, a fine appearance and good effect in many situations.

Borders of curious flowers, carried along the boundaries of grass plats, or lawns contiguous to the house, whether formed in a straight or serpentine manner, produce an agreeable effect, and much variety. The borders for particular kinds of flowers, such as the curious sorts of hyacinths, tulips, ranunculuses, anemones, carnations, and various others, may be made either along the sides of walks, or detached in other parts of gardens, or ornamented grounds. Such borders as immediately bound or verge gravel, or sandy walks, should be planted on the sides, with edgings of

some dwarf-evergreen sort of plants, such as those of box, thrift, daisies, pinks, &c.; but the first is the neatest and most durable plant for the purpose. See *Buxus*, and *ENGINE*.

These sorts of borders should always be raised two or three inches or more above the common surface level; such as are detached being generally finished off in a gently swelling or rounding form, in order that they may afford the fullest effects.

BORDER, in *Heraldry*. See *BORDURE*.

BORDE'ES, in *Geography*, a town of France, in the department of the higher Pyrenees, and chief place of a canton, in the district of Bagnères, four leagues S. of La Barthe; the place contains 398, and the canton 2822 inhabitants; the territory comprehends $207\frac{1}{2}$ kilometres, and 21 communes.

BORDERS, among *Florists*, are such leaves as stand about the middle thrum of a flower.

BORDES, in *Geography*, a town of France, in the department of the Arriege; $7\frac{1}{2}$ leagues W. of Mirepoix.

BORDEU, ANTHONY, in *Biography*, a physician of considerable eminence, was born at Heste, in Bearn, in 1693. After being initiated in the study of medicine by his father, he went to Montpellier, where he was admitted doctor in that faculty in 1719. Invited, in 1723, to Pau, the capital of the province, he acquired so much reputation, as to procure him the offices of physician to the military hospital at Bares, and of inspector of the mineral waters there. To the waters he paid great attention, and in 1750, he published a small treatise, shewing the effects he had experienced from them in a variety of diseases. He lived to an advanced age, but the precise time of his death has not been noted.

BORDEU, THEOPHILUS DE, following the steps of his father, attained to a still higher degree of professional eminence. He was born in 1722; and having passed through his studies with singular credit, was created doctor in medicine at Montpellier, in 1743. In 1745, he was appointed to succeed his father, as inspector of the mineral waters, and professor in anatomy, which was his favourite study. In 1747, he was made corresponding member of the Royal Academy of Sciences at Paris, whither he soon after went; and after passing through the usual course of studies, he was admitted doctor in medicine there, in 1754. He was taken off suddenly by a stroke of apoplexy in 1776, being in the 55th year of his age. He was through life diligent and attentive to his professional duties, and seems to have been actuated by a desire of improving his art, and of leaving memorials of his industry and ingenuity. The principal of his works are, "*Chylificationis historia*," his inaugural thesis, 1742, re-printed at Paris, 1752, 12mo. with his "*Recherches sur les glandes*." He thought he observed a duct passing from the thyroid gland to the trachæa; an opinion, which he repeats in another of his works, but without sufficient ground. "*Dissertatio physiologica de sensu genericè considerato*," Montpelier, 1743, 8vo.; 1751, Paris, with his "*Chylificationis historia*." "*Lettres contenant des essais sur l'histoire des eaux minerales du Bearn*, &c. 12mo. 1746." In these he treats of the properties of the waters, and of the geography of Bearn. "*Recherches anatomiques sur la position des glandes et sur leur actions*," Paris, 1751, 8vo. "*Recherches sur le poulx par raport aux crises*," Paris, 1756, 12mo.; in which he has gone much beyond Solano in his discrimination of pulses, and beyond what can be followed in practice. "*Recherches sur le tissu muqueux, et l'organe cellulaire*," Paris, 1766, 12mo. Haller accuses him of dissingenuity in attributing to himself the discovery of some properties of the cellular membrane, which had been

before described by him and others, but does not deny the work to have on the whole considerable merit. Hall. Bib. Anat. Eloy. Dict. Hist. Aikin's Gen. Biog.

BORDEU, FRANCIS, brother to Theophilus, and educated under his father and him, was born at Pau, in 1737. Having taken his degree of doctor in medicine at Montpellier, in 1756, he returned to Pau, and was appointed to supply the place of his brother, as inspector of the waters there. In 1757, he published "*De sensibilitate et contractibilitate partium in corpore humano sano*," Montpelier; and in 1760, "*Precis d'observations sur les eaux de Bares*," &c. 12mo. collected principally from the works of his father, brother, and other writers on the subject. "*Recherches sur les maladies chroniques, leur rapports avec les maladies aigues*," &c. 1775, 8vo.; principally with the view of shewing the utility and the manner of administering mineral waters in the cure of chronic complaints. Haller. Bib. Chirurg. Eloy. Dict. Hist.

BORD-FREE. See *FREE*.

BORD-HALFPENNY, or *BROD-HALFPENNY*, money paid in markets and fairs, for setting up boards, tables, and stalls, for the sale of wares.

BORDIGHERA, in *Geography*, a town of Italy, in the state of Genoa, 3 miles E.N.E. of Ventimiglia.

BORD-LANDS, the demesnes anciently kept by the lords in their hands for the maintenance of their board or table. This was anciently called *bordage*.

BORDO NUOVA, in *Geography*, a town of Servia, 18 miles E.S.E. of Pistrina.

BORDOE, one of the Faroe islands, having a harbour on the N.W. coast.

BORDONE, PARIS, in *Biography*, a painter of history, portrait, and architecture, was born at Trevigi, in 1513, and at a proper age became a disciple of Titian, whose uncommunicative disposition he had occasion to regret. He studied and imitated the style of Giorgione, and acquired such reputation, that at the age of 18 years he was employed in painting a picture in the church of St. Nicholas. From Venice he removed to Vincenza, in consequence of an invitation to adorn a gallery with paintings in fresco, in which Titian had exhibited a design representing the judgment of Solomon. Bordone composed the history of Noah and his sons, which he finished with such care, that it was not esteemed inferior to the work of Titian. Having finished several considerable works at Venice and Trevigi, he entered, in 1538, into the service of Francis I. of France; and gained additional reputation by various historical subjects and portraits, which were excellently designed, and recommended by a charming tone of colour. On quitting France he visited several cities of Italy, in which he left a number of memorable works, as monuments of his extraordinary abilities. His colouring resembles nature, and his portraits have been very much admired; several of them are still preserved in the Palazzo Pitti at Florence, the colouring of which is clear, fresh, and beautiful. This artist died in 1588, at the age of 75, according to Vasari; but according to Felibien, at the age of 65 years. Pilkington.

BORD-SERVICE, called also *BORDAGE*, the tenure of lands on condition of furnishing provision for the lord's board or table.

Some lands in the manor of Fulham, and elsewhere, are still held of the bishop of London, by the service, that the tenants pay sixpence per acre in lieu of finding provision for their lord's table.

BORDURE, or *BORDER*, in *Heraldry*, is a partition line running all round the inside of the field, of an equal width, taking up one-fifth from the outer edge of the field, and without any shadow. Arms having a plain bordure, are emblazoned

Barazon argent, a bordure gules; but if indented, engrailed, embattled, &c. *argent a bordure indented, gules*. The bordure always gives place to the *chief*, the *quarter*, and the *canton*: for example, *or, a bordure, azure, and a chief, gules*. The chief, therefore, is always placed over the bordure, as are also the quarter and canton. The bordure is continued under the chief, but with the quarter and canton it continues round, until it touches them, and there finishes; but with other ordinaries, as the chevron, fess, bend, &c. the bordure always passes over. In arms empaled with another having a bordure, the bordure must finish at the empaled line, and not round the coat, as is too often practised. When the bordure is charged with bezants, plates, billets, or pellets, it is termed a bordure, gules, bezantée, platée, billettée, or pelletée; all other charges are expressly mentioned as to number and colour. The bordure is borne different ways, as gobone, cheque, vair, bend, &c. which are explained under the different terms. See GObONE, &c.

The bordure is not considered as one of the honourable ordinaries, but as a mark of difference, to distinguish one family from another.

BORDURE, *Per*, an inner bordure, appearing as two bordures: bordure indented, with the middle line indented.

BORDURE, *point in point* indented, differs from the bordure per bordure indented, as the indents must be from line to line, that is, must touch both sides of the bordure.

BORDURE of the field, is merely a partition line, of the colour of the field, running round the arms. This bearing is never used in English armory, but is often borne both in France and Germany.

BORDURE Entier, commonly called entoyer, or entoire, a term when charged with inanimate things, as escallops, shells, &c.

BORDURE Enaluron, so called when charged with birds.

BORDURE Enurny, when charged with lions.

BORDURE Verdoy, when charged with vegetables.

BORDURE Purpleved, when it is shaped like vair.

BORDUUN, *German*, probably from *Bourden*, Fr. a stop in an organ so called, of which the sounds are an octave lower than the diapason, to which this stop is in the same proportion as the double-bass to the violoncello. In an organ, of which the longest pipe in the diapason is sixteen feet, that of the borduun would require thirty-two feet. See ORGAN and DIAPASON.

BORE, in *Geography*, a town of Asiatic Turkey, in the province of Caramania, 70 miles E.N.E. of Cogni.

BORE, a term used to denote a sudden and abrupt influx of the tide into a river or narrow strait. This prevails to a considerable degree in the principal branches of the Ganges, and in the Megna; but the Hoogly river, and the passages between the islands and sands situated in the gulf, formed by the confluence of the Ganges and Megna, are more subject to it than the other rivers. This may be owing partly to their having greater "embouchures," in proportion to their channels, than the others have: by which means a larger proportion of tide is forced through a passage comparatively smaller; and partly to the want of capital openings near them, by which any considerable portion of the accumulating tide might be drawn off. In the Hoogly or Calcutta river, the bore commences at Hoogly point, where the river first contracts itself, and is perceptible above Hoogly town; and its motion is so quick, that it hardly takes up four hours in passing from one to the other, although the distance is near 70 miles. At Calcutta it sometimes occasions an instantaneous rise of five feet; and both here, and in every other part of its track, the boats on its approach, immediately quit the shore, and seek safety in the middle of the river. In the

channels, between the islands, in the mouth of the Megna, &c. the height of the bore is said to exceed twelve feet; and it is so terrific in its appearance, and dangerous in its consequences, that no boat will venture to pass at spring-tide. After the tide has passed the islands, no vestige of a bore is seen, which may be owing to the great width of the Megna, in comparison with the passages between the islands; but the effects of it are visible enough, by the sudden rising of the tides.

The bores are also high and dangerous in the mouths of the river Indus. To this sudden influx of the tide, in a body of water elevated above the common surface of the sea, may be ascribed the injury suffered by Alexander's fleet, and described by Arrian. He says, those ships that lay upon the land were swept away by the fury of the tide, while those that stuck in the mud were set afloat again without damage. In order to account for this fact it should be considered, that the bottoms of channels, in great rivers, are muddy, while the shallows are formed of sand; and it is the property of the bore to take the shortest cut up a river, instead of following the windings of the channel; consequently it must cross the sand-banks it meets in its way; and it will also prove more destructive to whatever it meets with aground than what is afloat. Rennell's Memoir.

BORE, in *Gunnery*; the bore of a gun, or piece of ordnance, is used for the chase or barrel; though it seems rather to denote the diameter of the chase. See CALIBER, and CANNON.

BORE square, in *Smithery*, denotes a square steel point, or shank, well tempered, fitted in a square socket in an iron wimble, serving to wind holes, and make them truly round and smooth within.

BOREA, an ancient name for a species of JASPER of a bluish green colour.

BOREADES, in *Mythology*, the patronymic names of Zethes and Calais, the sons of Boreas. Hyginus (fab. xl.) says, that they had wings to their heads and feet.

BOREAL Signs, in *Astronomy*, the first six signs of the zodiac, or those on the northern side of the equinoctial.

BOREALIS, AURORA. See AURORA borealis.

BOREALIS, in *Conchology*, a species of VENUS. This shell is lentiform, with very remote, erect, membranaceous transverse striae. Gmel. This is a small shell measuring about an inch and a half in length; colour dirty white. Inhabits the north of Europe. Donov. Brit. Shells, &c.

BOREALIS, in *Entomology*, a species of TABANUS, distinguished by having the eyes with three purplish bands; abdomen black, the segments whitish at the edges. Size of T. pluvialis. Inhabits Norway. Gmel. Fabr. The thorax of this insect is brown; abdomen black with a pale glaucous spot on each side of every segment; legs black. This is a rare species.

BOREALIS, a species of COCCINELLA, of a reddish, or yellowish colour, with twelve black dots on the wing-cases, and four on the thorax. Thunberg, Fabr. &c. This is a native of the Cape of Good Hope. Shape gibbous, beneath of a yellow colour.

BOREALIS, in *Natural History*, a species of CLIO, of a whitish colour, having the lobes of the head terminated in a flesh coloured pointed papilla; tentacula three, fleshy, and thick at the mouth. Inhabits the north seas. Pallas, &c. This is nearly allied to *Clio retusa*. Gmelin suspects that it may be the same.

BOREALIS, a species of ECHINORHYNCHUS, found in the intestines of the Eider duck. Gmel. This is called *Sipunculus lendix*, by Phips. it.

BOREALIS, in *Ornithology*, a species of ANAS, with a narrow bill, the head green, throat and abdomen white. Gmel.

This is the *Gauland duck* of Latham, who informs us it is a native of Iceland, where it inhabits fens, and is very scarce.

BOREALIS, a species of *TRINGA*, the belly and legs of which are fuscous; body above cinereous, beneath white; tail and wings dusky. Found in King George's bay. This is the *Boreal sand-piper* of Latham. The bill is short, black, and somewhat gibbous at the tip; eye-brows white.

BOREALIS, a species of *MOTACILLA*, of a green colour; beneath yellow; front, throat, and temples ferruginous; tail rotund, feathers on the sides and at the tips white. A native of Kamtschatka, called by Latham the *Rufly-headed warbler*.

Obf. The bill is pale; legs black; and the whole body tinged with olivaceous colour.

BOREAS, a Greek name now in popular use, for the north wind. Etymologists usually derive the word from *βον*, clamor, noise; or from *βορρ*, food, because it creates an appetite.

Pezron observes, that anciently, and with much greater propriety, *Boreas* signified the north-east wind, blowing at the time of the summer solstice; he adds, that the word comes from the Celtic *bore*, morning; because their principal light, in that season, came from that quarter, whence also the winds then usually blew.

The Greeks erected an altar to Boreas, whom they considered as a deity, the son of Astræus and Aurora, whose seat was in Thrace. He is represented on the temple of the eight winds at Athens with his robe before his mouth, as if he felt the cold of the climate over which he presides, agreeably to the description of Ovid, who calls him *gelidus tyrannus*, the shivering tyrant. Met. vi. ver. 711. But he is usually described by the Roman poets as violent and impetuous. Ibid. ver. 686—ver. 707.

The qualities allowed by naturalists to this wind are coldness and dryness.

BOREAS, in *Entomology*, a species of *BOMBYX*, (*Phal.* Linn.) the wings of which are tailed, and varied with cinereous and fuscous; on the first, or anterior pair two dots, on the posterior wings a single transparent one. Fabricius, &c. This is a native of America, and has the anterior wings falcated.

BOREAS, a species of *CANCER*, in the family *Asacus*, that inhabits the north seas; it is distinguished by having the thorax aculeated, and the second and third pair of legs filiform. Fabr.

Obf. The beak of this kind is short, depressed, acute, grooved on each side with a strong tooth beneath.

BOREAS, in *Ancient Geography*, a mountain of Arcadia on which are the remains of an old temple, which, it is pretended, was built by Ulysses after his return from Troy.

BOREASMI, were feasts instituted at Athens in honour of Boreas, who was thought to bear some relation to the Athenians, as he had married Orithya, the daughter of Erechtheus; for which reason, when, in a sea fight, many of the ships of their enemies were destroyed by a north wind, the Athenians imputed it to the kindness manifested by Boreas to the native country of his wife. Pausanias Attic. We are informed by the same author (Arcad.) that solemn sacrifices were offered to Boreas at Megalopolis in Arcadia, where he had a temple, and divine honours.

BORECH, in *Natural History*, a kind of salt brought from Persia.

BORECOLE, or **BOORCOLE**, in *Agriculture*, a plant of the cabbage kind, sometimes cultivated in the field for the purpose of a green winter food for cattle stock. There are

three sorts of it, the common borecole, the green borecole, and the Siberian borecole, or curled cole, or kale. The last sort is the most hardy.

These plants are grown to most advantage in the field, where the soils are rather strong, fresh, rich, and deep, whether of the clayey or loamy kind; and where they have been deeply stirred by the plough, and had a good proportion of manure turned in. See **BRASSICA**.

In Mr. Baker's experiments in planting them in rows at the distance of two feet each way, for the use of the horse hoe; the produce was very considerable. And he supposes that it would be still greater, if they were cultivated at the distance of eighteen inches. If the crops were equally good, there would be, he asserts, from the produce he has already obtained, in the first method, seventeen tons fifteen hundred weight on the acre; and in the latter more than twenty-three tons twelve hundred. On this account, as well as that of their being capable of being cut over two or three times, and their standing the severest frost, it is concluded that they are highly deserving the grazing farmer's attention as a winter food for cattle and sheep, though it is confessed that the first produce may not be so great as in the common cabbage, but that deficiency is made up by the succeeding ones. There is likewise rather more trouble in collecting the food and conveying it to the animals.

It is suggested, without having been subjected to the test of actual experiment, that the best mode of consuming this sort of food by sheep flock, would be to have two small fields under this kind of crop, proportionate to the number of animals; and to turn the ewes or other sheep into one of them about the beginning of September, or the following month, for a few hours in the mornings and evenings for five or six weeks; lodging them on a portion of grass or fallow ground near it for the rest of the time, in order that they may evacuate themselves, by which much improvement may be produced in such lands; and when all the more luxuriant leaves of this piece have been cropped and consumed, the other field should be managed in the same way. In this method it is supposed that a stock of store sheep might be kept a whole winter at a very moderate expence: and while the produce of one piece was consuming, the other would be coming forward. It is remarked, that the stock should not be kept so long upon the crops as to injure the stems of the plants, as that might check the succeeding growth of the leaves. This plan is obviously confined to ewes or store sheep.

It is doubtful, however, whether the expence of cultivating this sort of crop, except in particular soils, situations, and severe seasons, will admit of its being used as a winter sheep food in preference to turnips, or other similar articles of fodder.

BORECOLE, in *Botany*. See **BRASSICA**.

BOREE. See **BOURREE**.

BOREELI CODEX, in *Biblical History*, a MS. noted F. in the first part of Wetstein's N.T. which contains the four gospels, beginning with Matth. vii. 6. and having the two following chasms, Matth. xiii. 25—58. and Mark vi. 6—16. It was formerly in the possession of John Boreel, Dutch ambassador at the court of London, in the reign of James I. Its present situation is unknown.

BOREK, in *Geography*, a town of Poland, in the palatinate of Kalish; 28 miles W. of Kalish. Here is a famous image of the virgin Mary, to which pilgrims resort.—Also a small town of Bohemia, in the circle of Saaz.

BOREL, PETER, in *Biography*, born at Castres in Languedoc, about the year 1620, after being initiated in classical literature by his father, James Borel, from whom he also re-

ceived a taste for poetry, and for antiquarian researches, prosecuted his medical studies at Montpellier, where he was admitted doctor in medicine, in 1641. Returning to Castres, he acquired so much reputation by his practice there, that in 1653 he was invited to Paris, and made physician in ordinary to the king; and, in 1673, member of the royal academy of sciences. Borel was a diligent collector of natural and artificial rarities, of which he left a cabinet well stored. His publications are, "Les Antiquites, raretés, plantes, minéraux, &c. de la ville et comté Castres, et un recueil des inscriptions Romaines du Languedoc et de Provence, avec la liste de principaux cabinets et autres raretés de l'Europe." Castres, 1649, 8vo. The titles of the articles in his own cabinet are here given. "Historiarum et observationum medico-physicarum, centurie quatuor," Castres, 1653, 12mo. A few of the cases are curious and interesting, but far the greater number of them are too insignificant to deserve notice, or too extravagant to be credited by persons who are only moderately instructed in the principles of medicine. To this volume are usually joined the observations of Cattier, of Rhodius, of Arnold Boot, and the consultations of Rossius. "Bibliotheca chymica, seu catalogus librorum philosophicorum hermeticorum," Parisiis, 1654, 12mo. "De vero inventore telescopii, cum brevi omnium conspiciendorum historia," Hagæ Comitum, 1655, 4to. "Trésor des recherches et antiquités Gauloises." "A dictionary of words and phrases, which had become obsolete," 1655, 4to. "Discours prouvant la pluralité des mondes," Genève, 1657, 8vo. "Hortus, seu armausentarium simplicium plantarum et animalium, ad artem medicam spectantium," Parisiis, 1666, 8vo. To each of the articles, which are arranged alphabetically, the author has given a short account of its medical properties. Borel died at Paris in 1678. Haller. Bib. Anat. Med. Botan. Eloy. Dict. Hist.

BORELLI, JOHN ALPHONSUS, distinguished for his profound skill in mathematics, and in medicine, was born at Castelluovo in Naples, the 28th of January 1608. Under the tuition of Castelli, at Rome, where he was sent to complete his education, he made such progress, that he was, at an early age, invited to Messina to teach the mathematics. As he had made medicine, as well as philosophy, his study, he there published an account of a malignant fever which had raged in Sicily, in the years 1647 and 1648. "Delle ragioni delle febbri maligni di Sicilia," Cosenza, 1649, 12mo. Disgusted, at length, with his employers, he accepted the offer of the professor's chair at Pisa, in 1656, where he lectured with great applause and success. The fame of his abilities had now conciliated to him the favour of the grand duke Ferdinand, and prince Leopold, who procured him to be elected member of the academy del cimento. It was here probably he first conceived the design of employing mathematical principles, in explaining the functions of animal bodies. He now applied himself diligently to the dissection of animals. Several of his letters, on the subject of anatomy, are published in Malpighi's posthumous works, written between the years 1659 and 1664. In 1658 he published, at Pisa, a second tract on the nature and treatment of malignant fevers. "Della cause, delle febbri maligne," 4to. His first physiological work, "De rerum usu judicium," appeared in 1664, with the treatise of Bellini, "De structura rerum," printed at Strasbourg, 8vo. In 1669, he gave a dissertation, shewing that in most men the eyes have unequal powers, the one shewing objects more distinctly than the other. "Osservazioni intorno alla virtù ineguale degli occhi," Giorn. de Lit. In 1667 he published, "Trattatus de vi percussionis," Bonon. 4to.; and in 1669, "Osser-

vations on a remarkable eruption of mount Ætna," at which he had been present, having the preceding year quitted Pisa, and returned again to Messina. This account was written at the desire of the royal society of London, with which he corresponded, and was printed in their transactions. In 1770, he gave his treatise "De motionibus naturalibus a gravitate pendentibus," a prelude to his great work, "De motu animalium," which did not appear until after his death. At the revolt of Messina, being supposed to have favoured the insurgents, he was obliged to quit that place. Christina, queen of Sweden, who resided, at that time, at Rome, invited him thither, and he continued to enjoy her patronage to the time of his death. That he was not, however, much enriched by her favour, nor had acquired much by his lectures, and by the works he had published, appears by his being obliged, during the two last years of his life, to undergo the drudgery of instructing youth in mathematics, at the convent of St. Pantaleon, called the pious schools, where he died of a pleurisy, December 31, 1679, in the 72d year of his age. The first volume of his work, "De motu animalium," appeared in 1680, Rom. 4to. It is dedicated to Christina, and was printed at her expense; and the second, which completed his design, in the following year. Borelli's principal intention in this work, was to explain the functions of animal bodies, on mechanical principles. He describes the fibres of the muscles, which he supposes to be vesicular; and that these vesicles become inflated by a portion of the nervous juice falling into them, and mixing and fermenting with the blood they contain, whence the muscle becomes swelled, and its fibres shortened. He measures the degree of force or power each of the fibres possess, and the power of them collectively, which, according to his estimate, is immense. He shews how that power is increased or diminished, by the manner in which the fleshy fibres are joined to the tendons. He calculated the power of the heart, in propelling the blood, which he supposed was equal to 180,000 pounds in weight. Though Borelli in this and other of his calculations was shewn to have erred considerably, yet his general principles were for a long time after acknowledged and adopted, and even the operations or effects of medicines, on the human body, were supposed to be explicable on mechanical principles. He also invented an apparatus by which persons might go down a considerable depth under water, remain there, move from place to place, and sink or raise themselves at their discretion; also a boat in which two or more persons might row themselves under water. Haller. Bib. Anat. Gen. Biog. Philos. Transactions abridged, vol. ii.

BORER, in *Rural Economy*, an implement invented for the purpose of searching or exploring the nature of soils. This instrument is composed of two rods of iron, each six feet long, and an inch in diameter. The end *a* of *fig. 1.* in Plate on draining implements, screws into the end *b*, of *fig. 2.* after taking out the stopper *c*, the use of which is to hinder dirt or dust from getting into the screw. The screw is an inch and a half long, and three quarters of an inch in diameter: *d*, *fig. 1.* is a steel point somewhat blunt, to pierce the earth or any substance it may meet with. It should be about three inches long, and made with three, four, or more, sides, as may be thought most convenient. It is screwed into the rod *a* in the same manner, and with a screw of the same size as *a* is screwed into the rod *b*. It has a groove six inches long, a third of an inch wide, and three quarters of an inch deep, rounded in the bottom, and intended to bring up part of each different layer of materials through which it passes. When springs are sought for, a bit of sponge is put into the groove. At the end of the rod, *fig. 2.* is a screw to fix into another rod of the same kind, if it be found necessary.

tary to lengthen the instrument; and this may be repeated, by the addition of more rods, to any depth desired; *g h*, *fig. 1.* is the handle of this instrument, two feet and a half long; this handle is fastened to the rod by means of a clasp, *i*, lined with steel, fixed at one end by a hinge, and at the other by the screw *b*, so that it may be placed at any height. *Fig. 3.* is the handle separated from the rod, and marked with the rod, with the same letters as before. *Fig. 4.* is another handle, or rather lever like the handle already described, except its having only one branch, or lever, marked *g*. This serves to stop the borer in bringing it up from a considerable depth; and also to screw and unscrew the several bars or joints as occasion requires, and to put on and take off the steel point at the bottom. The handle *g h*, *fig. 1.* is that by which the rod is held, and wrought into the earth, either by twining it round, especially at first, or, after it has penetrated to some depth, by lifting it up, and letting it fall again, which it does with such force as to pierce even the hardest rocks; especially if it works at any considerable depth, and has of course been lengthened accordingly; for every foot of this rod weighs three pounds. Two men will easily sound the depth of twelve feet in less than a quarter of an hour, if they do not meet with many stones. When the rod becomes too heavy to be properly managed by hand, it may be raised by a rope fastened at one end of the handle, and at the other to a roller, or kind of windlass, erected at a proper height, perpendicularly over the hole, and turned with either one or two handles. This will cost but a trifle, and easily raise the rod, which, when let go, will fall with such weight as to strike each time very deep into the earth. The marquis de Turbilly observes, that he has seen it wrought in this manner to the depth of more than a hundred feet.

The toughest iron is the best for making this instrument, which should be well hammered, till its surface is quite smooth and even; for the least roughness and inequality would occasion friction, which would greatly retard its working. For the same reason, and also to increase the force of its fall, it is necessary that it should be perfectly straight; nor should it ever be struck with a mallet, hammer, &c. to force it down, because a blow might bend it, and it would easily break afterwards. The female screw must be turned like that in the breech of a gun-barrel, in a separate piece of iron, cross-ways to the grain; and this piece must be afterwards well soldered on to one of the ends of the rod. The reason for this is, that if the female screw were bored only at the end of the rod, it would, by being hammered out in the same direction with the grain, be stringy and porous, and consequently so weak as to give way, or burst, in the working of the rod; whereas, when made of a separate piece, taken cross-ways of the grain, the threads of the screw will run with the grain of the iron, and be thence considerably strengthened. A bit, like that of an augre, proportioned to the thickness of the rod, may at any time, when necessary, be substituted instead of the steel point, to draw up a sample of the substance from the very bottom of the sounding.

If the only thing wanted be to know the nature of the under soil, and layers of earth, so far as they may affect the vegetation of plants, it will be quite sufficient to bore eight or ten feet deep. A greater depth is only requisite, when water, marble, ore, &c. is sought for, but the common augre may do very well for shallow boring.

By either of these implements there is a certainty of discovering, without much charge or any hazard, not only what earths are under the upper soil, but also whether any other substance of value lies concealed there, such as marble, chalk, fullers' earth, fossil shells, coals, quarries of slate or

stone, ores, &c. many of which lie hid and entirely unthought of in places where their value, was it known, would be ten times more than that of the estate which covers them.

BORETIUS, MATTHEW ERNEST, a learned physician and anatomist of Berlin, published in 1724, "*Anatomie plantarum et animalium analogia*," Regiom. 4to; and in 1739, "*Museum Boretium, et catalogus preparatorum anatomicorum rerumque naturalium*," Regiom. 8vo. Haller. Bib. Anat.

BOREUM, in *Ancient Geography*, a mountain of Greece, in the Peloponnesus, placed by Pausanias, in Arcadia.—Also, the name of a port in the isle of Tenedos, according to Arrian.—Also, a promontory of Africa, in the Cyrenaica, at the extremity of the gulf of the Syrtis Major. Ptolemy.

BORG, or **BURG**, in *Geography*, a town of Denmark, in the island of Femern. N. lat. 54° 30'. E. long. 11° 8'.

BORGARUCCI, PROSPER, in *Biography*, an Italian physician of eminence, who flourished about the middle of the 16th century. After attending the lectures of Vesalius for some years, he travelled into France, Holland, and England, to improve himself in medical knowledge. On his return he published "*Della contemplazione anatomica sopra tutte le parti del corpo umano, libro cinque*," 8vo. 1564, Venet. Some useful observations are made, in this volume, on the great anatomical work of Vesalius, whom our author, however, every where treats with respect. "*Trattato di peste*," Venet. 1565, 8vo. "*De morbo Gallico methodus*." Though he describes the method of curing the lues with mercury, he prefers the use of guaiacum, believing that men from using mercury were rendered incapable of procreating. He makes no mention of sarsaparilla, or the China root, though well known in his time. This tract is inserted by Leusinius in his collection of treatises on the disease. Borgarucci taught anatomy and medicine at Padua for some years. In the year 1567, he was called to France, where he was honoured with the title of physician to the king, which he afterwards used. The time of his death is not known. Astruc. de Morb. Ven. Haller. Bib. Anat. Eloy. Dict. Hist.

BORGE, in *Geography*, a town in the island of Cephalonia; 2 miles S. of Cephalonia.

BORGE-FIORDS, or **BORGAN-FIORDER**, a fýssel or district of Iceland, in which are warm baths, built in the 13th century, by the famous historian Snorro Sturlason. They are so spacious and so well contrived, that 100 persons may bathe in them at the same time. Near these is the cross-bath, in which the inhabitants of the western parts of Iceland were baptized, in A. D. 1000; whence its name.

BORGENTRICK, or **BORRENRIK**, a town of Germany, in the circle of Westphalia, and bishopric of Paderborn; 5 miles N. N. E. of Warburg.

BORGETTO, a town of Italy, in the Lodofan, 7½ miles S. of Lodi.—Also, a town of Italy in the state of Genoa, 8 miles N. E. of Albenga.

BORGHINI, VINCENT, in *Biography*, a learned Benedictine, was born of a noble family at Florence in 1515; and entered among the Benedictines in 1531, devoting himself to study and the offices of a religious life. Duke Cosimo appointed him prior to the hospital Sta. Maria degli Innocenti at Florence; and he performed the duties of this station with great benefit to the institution, declining the archbishopric of Pisa, till his death in 1680. His reputation for acquaintance with the purity of the Tuscan dialect was such, that he was entrusted with the publication of a corrected edition of the decameron of Boccaccio in 1573; and to him are ascribed the annotations and discourses that accompany it. His own principal work consisted of two volumes of "*Discorsi*,"

printed at Florence in 1584 and 1585, 4to. which comprehended twelve dissertations on the origin and ancient state of that city, and of others in Tuscany, abounding with a variety of curious erudition. He was likewise well skilled in painting and architecture; and he was entrusted by duke Cosmo with the decorations for the nuptials of his son Francis, and named by him as his substitute in the academy of design. Several of his letters are published in various collections. Gen. Biog.

BORGHOLM, in *Geography*, a town of Sweden, in the island of Oeland. Near it is the commodious harbour of Borgia.

BORGHOLZHAUSEN, a town of Germany, in the circle of Westphalia, and county of Ravensberg, 6 miles S.W. of Hervorden.

BORGHORST, a town of Germany, in the circle of Westphalia, and bishopric of Munster; 3 miles E. of Steinfort.

BORGÍ, in *Ancient Geography*, a people of Asia, placed by Ptolemy in Aria.

BORGIA, *CÆSAR*, in *Biography*, a man whose dire ambition deserves to be consigned to perpetual infamy in the pages of history, was the second son of cardinal Roderigo, (afterwards pope Alexander VI.) by his mistress, the artful Vanozza. As he was designed for the church, he was invested, whilst a child, with the archbishopric of Pamplona, and sent to Pisa for his education. As soon as his father was elected to the papal see, in 1492, Borgia hastened to Rome, expecting to share in those dignities which his father's elevated station empowered him to bestow. On his arrival, Alexander received him with a grave aspect, and with a lecture on the necessity of restraining his ambitious views, and of seeking honour in the path of virtue. This mode of reception was neither suited to the character of the father nor to the disposition of the son: but the mother of Borgia soon quieted his mind, by ascribing it to its true cause, the artifice and hypocrisy which Alexander thought it necessary to practise on his elevation to the papal throne. Notwithstanding this lesson of moderation, Borgia was immediately made archbishop of Valentia, and, in the following year, promoted to the dignity of cardinal. When the French army, under Charles VIII. entered Rome, in their expedition against Naples, and compelled the pope to a treaty, Borgia was obliged to accompany the king as apostolical legate, or rather as a hostage for the performance of the stipulated conditions; but finding an opportunity to make his escape, and to return to Rome, the treaty was broken, and the king was under a necessity of leaving Italy. About this time Vanozza urged a complaint against the French for having plundered her property, and excited both Alexander and her son to revenge the injury she had suffered. Accordingly they began with administering poison to Gême, brother to Bajazet, who had fled to Italy, as to a sanctuary, from that sultan, and whom the French wished to have in their possession, because, after the taking of Naples, they projected an expedition against the Turks. Not satisfied with this violation of the obligations of hospitality, they proceeded, by means of assassins, to destroy the French who remained at Rome. Borgia, conceiving that his elder brother, the duke of Gandia, obstructed him in the career of his ambition, and that he was his rival in an amour with a lady, said by some to be their own sister, Lucretia Borgia, who was also a very particular favourite of her father, determined to get rid of his competitor. Accordingly, on the eve of his departure to the king of Naples, under the character of his legate a latere, he contrived means to assassinate his brother. This event happened in the year 1497. After the accession of

Lewis XII. to the throne of France, pope Alexander entered into a negotiation with him, particularly with a view to the promotion of his son. For the more effectual attainment of the objects of his ambition, Borgia resigned his dignity of cardinal; and proceeded as ambassador to France, where Lewis created him duke of Valentinois, granted him a pension, and appointed him to a command of cavalry. At this time Lewis had solicited the pope for a dispensation to divorce his wife, and to marry Anne, duchess of Burgundy; and the dispensation for this purpose was conveyed by Borgia. Borgia, however, retained it in his possession, in order to enforce his interest with the king, for obtaining Charlotta, daughter of the king of Naples, who was intended by his father Alexander for his wife. But pretending that he was in daily expectation of receiving the dispensation from Rome, and delaying the delivery of it, the king became impatient; and applying to the bishop of Setta, who was then the pope's nuncio at Paris, he was informed, that Borgia had brought it with him to France. Upon this Lewis convened a number of divines, who authorized him to divorce his wife, and to marry Anne of Burgundy. The marriage having been concluded, Borgia was at length obliged to deliver the dispensation to the king; but he revenged himself on the nuncio by a dose of poison, which proved fatal. Charlotta rejecting his addresses, on account of his infamous character, he married the daughter of the king of Navarre, and was honoured by Lewis with the order of St. Michael. The father and the son, powerfully protected by France, co-operated in a variety of barbarous assassinations, partly for the purpose of revenge for real or imagined injury, and partly with a view of seizing the property of those whom they dispatched, in order to carry on an unjust war, which they had undertaken. The pope, having formed a design of reducing the territory of Romagna to the obedience of the holy see, intended to form it into a principality for his son. Borgia, now duke of Valentinois, came from France with a considerable force, in order to accomplish the purposes of his father; and began his campaign with the siege of Imola and Forli, which soon surrendered; and he afterwards reduced Pefaro, Rimini, and Faenza. In 1501, Borgia obtained from his father the title of duke of Romagna. In the course of this war, conducted with a ferocity and spirit of rapine and revenge seldom paralleled, he proceeded with such success, that the Italian powers were at length alarmed, and formed a confederacy against him. He contrived, however, to defeat this combination, to detach some parties from the alliance, and, with his accustomed perfidy and cruelty, to invite three of the heads of the association to Senigaglia, under a pretence of establishing peace, and there to cause them to be strangled. Borgia and his father concurred in all these detestable measures, and by their united arts, alternately courted the powers of France and Spain, as each appeared to have the greatest influence in the affairs of Italy. In 1503, Borgia lost his father, who was supposed to have died by poison, which they had prepared for a rich cardinal, whose estate they wished to appropriate to themselves, but which they both took by mistake. It proved fatal to the father; but the son, by strength of constitution, escaped with his life, though he long experienced its pernicious effects. Upon the accession of pope Pius III. Borgia came to Rome with a great retinue; but being universally detested, he avoided the assaults of his enemies by sheltering himself in the Vatican; and his life was preserved by the protection of the king of France; but he afterwards, with base ingratitude, quitted his party, and joined that of Spain. During this interval, many of the towns in his territory of Romagna were seized by the Venetians; and pope

Julius II. seized him at Ostia, and confined him in prison, in order to compel him to surrender the rest. As soon as he made his escape from this confinement, he sought refuge in Naples, and was at first treated with respect by the Spanish general, Gonzalvo de Cordova; but in consequence of an order from the king of Spain, he was sent thither, and condemned to perpetual imprisonment in the castle of Medina del Campo. Here he remained two years; but escaping out of a window, by means of a rope, he fled to Navarre, seeking the protection of king John, his wife's brother. From hence it was his intention to have visited France, and to have engaged the assistance of king Lewis in retrieving his fortune: but that king refused to receive him, confiscated his duchy of Valentinois, and withdrew his pension. In this state of humiliation and distress, without territory or revenue, not only friendless but generally detested, he was under a necessity of depending upon his brother-in-law for a subsistence; and being engaged as a volunteer in his service, on occasion of a civil war with one of his rebellious subjects, he was killed in a skirmish before the walls of Viana, in 1507. His body was stripped by the victors; but being afterwards recognized by his servants, it was carried upon a horse, and interred in the cathedral of Pamplona. "Such," says one of his biographers, "was the end of this man, who, for his abilities in forming, and vigour in executing, great schemes for his aggrandizement, unmoved from his purpose by any considerations of justice, honour, or humanity, has been held up to admiration by Machiavel, as the perfect specimen of a "great man." Hated in prosperity, detested in adversity, stripped of all his honours and possessions, even such as he might fairly have claimed, and leaving behind him a name consigned to universal detestation, it would seem that he gained little by being a villain." Borgia's motto was "Aut Cæsar, aut nihil." Mod. Un. Hist. vol. xxiii. Gen. Dict. Gen. Biog.

BORGIAN MS. in *Biblical History*, a fragment of a Coptic-Greek MS. brought by an ignorant monk from Egypt, consisting of about 12 leaves, sent to Stephen Borgia, secretary to the Society de propaganda fide. It begins with John vi. 28. and ends vii. 23.; and is divided into two columns, the first containing the Greek text in uncial letters, and without intervals between the words, and the other containing the Coptic. It is an important specimen, says Michaelis, of the Alexandrine edition; and he greatly laments that so much of it is lost. Professor Birch, who collated this MS. described it in his *Prolegomena*, p. 49, and communicated its various readings in his *Greek Testament*. The whole of it is printed in "Georgii Fragmentum Græco-Copto-Thebaicum," Romæ, 1789, 4to. Birch has likewise described and communicated the readings of two other Borgan MSS.; one supposed to be of the 11th century, containing the four gospels, and the other of the 12th, containing detached parts of the gospels, and of St. Paul's epistles.

BORGIAN, in *Geography*, a town of Persia, in the province of Sestean, 90 leagues south of Zareng.

BORGIANI, **ORAZIO**, or **HORAZIO**, in *Biography*, a painter of history and portraits, and an engraver, was born at Rome in 1630; instructed in the art of painting by his brother, Giulio Borgiani, called Scalzo; and by studying the capital performances of ancient and modern artists in his native city, he made such progress in his art, that his works were held in high estimation in Spain, where he resided for some time. Upon his return to Rome, he was employed in considerable works for chapels and convents, and also in painting portraits, by which he acquired honour, and lived in affluence. His etchings were performed in a bold and free manner; and more finished than usual, when considered as

the works of a painter. His drawing is not correct; but the style is masterly, and the effect agreeable. His most finished etching is said to be a "dead Christ," with the figure very much fore-shortened, and behind the two Mariæ and St. John, who is kissing one of the hands of our Saviour; from a composition of his own, dated 1615. His death, which happened in 1681, was occasioned by the malicious treatment of an envious competitor and contemporary, whose name was Celio. Pilkington and Strutt.

BORGIE, in *Geography*, a town of Africa, in the province of Zeb or Zeeb, about 5 leagues from Biscara; a town much more populous than the latter, and the residence of a great number of merchants, mechanics, and labourers of all kinds.

BORGLUM, a prefecture of Denmark, in the diocese of Aalborg, including 14 parishes.

BORGNE, **LE**, a town on the north side of the northern peninsula of the island of St. Domingo, 3 leagues west by north from port Margot, and 8 east by south from Port de Paix. N. lat. 19° 49'.

BORGO, a town of Sweden, in the province of Nyland, in the gulf of Finland, 21 miles N.E. of Helsingfors. This is an ancient sea-port, with an indifferent harbour, a bishop's see, and a good seminary. The inhabitants trade in all kinds of linen. Borgo gives name to a district.

BORGO, a town of the Tyrol. N. lat. 46°. E. long. 11° 30'.

BORGODES, in *Ancient Geography*, a people placed by Pliny in Arabia Felix.

BORGOFORTE, in *Geography*, a town of Italy, in the duchy of Mantua, at the conflux of the Oglio and the Po; 8 miles S.S.W. of Mantua.

BORGOFRANCA, a place of small note in the principality of Piedmont, and marquissate of Ivrea, 2½ miles north of Ivrea.

BORGO DI FORNARI, a town of Italy, in the republic of Genoa; 10 miles north of Genoa.

BORGO MANERO, a small place in the duchy of Milan, and district of Novarese; 12 miles N.N.W. of Novara.

BORGO DI ST. DOMINO, a small town of the duchy of Placentia, though it is the see of a bishop, suffragan of the archbishop of Bologna, and the capital of the district; 12 miles N.W. of Parma.

BORGO DI ST. SEPOLERO, a town of the duchy of Tuscany, situate near the source of the Tiber, on the borders of the ecclesiastical state, with a fort on a rock; the see of a bishop, suffragan of Florence, and chief of the pope; 48 miles E.S.E. of Florence, and 12 N.E. of Arezzo.

BORGO DI SESIA, a town of the duchy of Milan, in a district called "Val di Sesia;" 22 miles N. W. of Novara.

BORGO DI VAL DI TARO, a town of the duchy of Placentia, seated on the river Taro, in the district called "Val di Taro;" 23 miles S.W. of Parma.

BORGSTALL, a town and bailiwick of Germany, in the circle of Upper Saxony, and Old Marck of Brandenburg; 12 miles S.S.W. of Stendal.

BORIA, or **BORJA**, a town of Spain in Arragon, seated at the foot of an eminence near Cayo, and in a country which produces plenty of grain, wine, oil, hemp, flax, and most kinds of esculent plants; 34 miles W. N. W. of Saragossa.

BORJA, a town of Peru, situate on the head waters of the Amazon river.—Also, a town in Brazil, on the south-eastern bank of Uruguay river. S. lat. 29° 15'. W. long. 56° 30'.

BORIN, in *Ornithology*. Under this name Aldrovandus, Ray,

Ray, Willaghy, and other old writers describe the passerine warbler, *motacilla passerina*, Gmel.

BORING, the act of perforating a solid body, or making a hole throughout its whole length or thickness.

Surgeons speak of boring the bones of the skull, properly called trepanning.

BORING birds, and other trees, is practised in the spring for their juice, called also *tapping* and *bleeding*. Phil. Trans. N^o 44. p. 880. See **BETULA**.

BORING, in *Furriery*, an operation formerly practised for the cure of horses whose shoulders are wrenched. The method is thus: they cut a hole through the skin in the middle of the shoulder, and with the shank of a tobacco pipe, blow it as a butcher does a shoulder of veal; then they run a cold flat iron, like a horseman's sword-blade, eight or ten inches up, between the shoulder blade and the ribs, which they call boring; after that they burn him round his shoulder with a hot iron. This, says Bartlett, is an absurd and useless, as well as a cruel practice.

BORING of Cannon, in *Foundry*. See **CANNON**.

BORING of Mast, from top to bottom, is proposed by Dr. Hook, as a means of strengthening and preserving them; as this would make them dry and harden the better, and prevent their cleaving and cracking. For want of this the outside drying, when the inside does not, the former shrinks faster than the latter; the consequence of which is prejudicial.

BORING, in *Mineralogy*, a method of piercing the earth by a set of scooping irons, made with joints so as to be lengthened at pleasure. The skilful mineralist will be able to guess where a vein of ore may lie, though there are none of the common outward signs of it upon the surface of the earth; and in this case he has recourse to boring; the scooping irons are drawn back at proper times, and the samples of earth and mineral matters they bring up, are examined; and hence it is known whether it will be worth while or not to open a mine in the place. See **COAL**.

BORING, in *Rural Economy*, a practice sometimes employed in order to ascertain the nature of the different strata that lie beneath the surface soil; and also for the purpose of discovering springs, and tapping them, so as to draw off the water that injures the grounds below, or in the neighbourhood. When this last object is in view, boring is generally performed in the bottoms of ditches or drains, previously made in the land, to the depth of several feet. See **DRAINING of Land**.

BORING Augre, an implement employed for the purpose of boring the soil, and letting off water confined beneath it, &c. See **BORER**.

BORING of Water-pipes. The method of boring alder poles for water-pipes is thus: being furnished with poles of a fit size, horses, or tressels are procured of a due height both to lay the poles, and rest the augre on in boring; they also set up a lath, whereby to turn the lesser ends of the poles, and adapt them to the cavities of the greater ends of others, in order to make the joint shut each pair of poles together. The outer, or concave part, is called the female, and the other, or inner, the male part of the joint. In turning the male part, they make a channel, or small groove in it, at a proper distance from the end; and in the female part, bore a small hole to fit over this channel; they then bore through their poles, sticking up great nails at each end to guide them right; but they commonly bore a pole at both ends; so that if it be crooked one way, they can nevertheless bore it through, and not spoil it. Neve Build. Dict. in voc. Alder.

This operation is now performed with a horse-mill, as at Dorset Stairs for the New River company.

Belidor, in his *Hydraulics*, has described a machine, in which a water-wheel is made use of both to turn the augre, and to bring forward the carriage on which the pipe to be bored rests. This machine (see *Tab. II. Mechanics*, fig. 67.) is put into motion by the water-wheel A, in the axis of which there is a cog-wheel B, that turns the lanterns C and D; the trundles of D turn two small wheels E and F; the first of which is vertical and turns the augre; the other is horizontal and moves the carriage by means of the two arms H and I. H draws the wheel G towards F; and I pushes it in a contrary direction; and these combined actions cause the carriage to advance towards F, and the augre to bore the pipe. The augre being about twelve feet long and proportionally heavy, is supported by the pieces L L; and they are prepared so as to give no obstruction, in the following manner: CC, (fig. 68.) are two planks of wood which are fastened to the timber-work of the mill; these encompass another plank, hung by a cord, at the bottom of which are fixed the pieces bb, with joints at e and e, and, that they may not move out of the vertical plane, they are joined by tenons to the plank a, in which they may work freely: on the side of one of these pieces is fixed a spring, g, in order to hinder them from uniting, by forcing them into a mortise, in d; in this situation the two pieces are penetrated with a hole through which the augre is to pass. The cord is fastened to the plank a, as in fig. 69, and goes over the two pulleys bb; at the other end of the cord there is hung a weight e, resting on the piece N, which is supported at one end by the piece O, and fixed to the other by a joint to the lever K, which has its centre of motion in the piece of wood H; so that, leaning against the extremity M of the lever, N quits the support O, the weight sinks down, and draws up the piece a; then the sides bb, fig. 68, quit the mortise d, and the spring g separates them: and thus the supporter does not in the least hinder the motion of the augre.

BORJOKFIT, in *Geography*, a town of Poland, in the palatinate of Podolia; 28 miles east of Kaminiec.

BORIQUN. See **BIKA**.

BORQUETTA, a province of South America, in the country of Terra Firma.

BORISSOGLEBSK. See **BARISSOGLEBSK**.

BORITH, in the *Holy Scriptures*, an herb thought to be the kali, or saltwort; of the ashes of which some make soap, and a very good ley to wash linen with. It is mentioned in Jeremiah, chap. ii. ver. 22.

BORKAH, or **ARDU**, in *Geography*, an ancient empire of the Asconian Turks, which extended on this side of the Volga from Uvieck, near Saratof, quite to mount Caucasus. Some of these were called Kumani or Komani, from the river Kuma, and their town was named Kumager.

BORKAN, a town of Persia, in the province of Laristan; 64 miles S.W. of Lar.

BORKELOE. See **BORCKELOE**.

BORKEN. See **BORCHAN**.

BORKEN, a bailiwick of Germany, in the landgraviate of Hesse, consisting of eight villages, and a small town of the same name, become almost extinct.

BORKZOWKA, a town of Poland in the palatinate of Podolia, 20 miles W.N.W. of Kaminiec.

BORLASE, WILLIAM, in *Biography*, an eminent topographical writer, was born of an ancient family at Penenden, in the parish of St. Just, Cornwall, in 1696; and having finished his grammatical education at Penzance, Tiverton, and Plymouth, was entered at Exeter college, Ox-

ford; in 1713; where, in 1719, he took the degree of master of arts. In the following year he took priests' orders, and in 1722 was inducted to the rectory of Ludgvan in Cornwall, on the presentation of the duke of Bolton; and this, with the vicarage of his native parish, was the only preferment he ever obtained. At Ludgvan his situation was pleasant and retired; and he applied with exemplary assiduity to the duties of his profession, and to those studies of natural history and antiquities, to which his inclination led him. The parish of Ludgvan abounded with mineral and metallic fossils; and the various parts of Cornwall presented to his research many druidical remains. To these objects his attention was directed; and he commenced his literary career with "An Essay on Cornish Crystals," which he communicated to the Royal Society, and which produced his election into that society in 1749. In 1754, he published, in folio, his "Antiquities, historical and monumental, of the county of Cornwall, consisting of several essays on the ancient inhabitants, Druid superstition, customs and remains of the most remote antiquity in Britain and the British isles, exemplified and proved by monuments now extant in Cornwall and the Scilly islands; with a vocabulary of the Cornu-British language;" a learned and judicious work, free from those long digressions and fanciful hypotheses, in which antiquarian writers have indulged themselves. A second edition of this valuable work, with several additions; a map of Cornwall, and two new plates, was published at London, in 1769. His next publication was "Observations on the ancient and present state of the islands of Scilly; and their importance to the trade of Great Britain," 4to. 1756. This was followed, in 1758, by his "Natural History of Cornwall," which was justly considered, at the time of its publication, as a very important accession to the mineralogical history of Great Britain. Soon after this publication he presented to the Ashmolean museum at Oxford, a variety of fossils and remains of antiquity, for which he received the thanks of the university, and the honour of the degree of doctor of divinity. Having completed his three principal works, and attained the age of more than 60 years, he persevered in his application to his favourite studies, and in his diligent discharge of the duties of his profession. His communications to the Royal Society were very numerous; and some or other of his papers may be found in its Transactions from the year 1750 to 1772. With a view to his own amusement and improvement, rather than with any design of publication, he composed paraphrases on the books of Job and of Solomon, and wrote other pieces of a religious kind; and he prepared for the press a treatise, which he had written some years before, concerning the "Creation and Deluge;" but increasing infirmities prevented its being printed. His decline commenced with a severe illness in the beginning of the year 1771, and terminated in his decease on the 31st of August 1772, in the 77th year of his age. He was much esteemed by all who knew him, as a kind father, affectionate brother, sincere friend, instructive pastor, and good citizen; and as a man of erudition whose life had been devoted to important and useful pursuits. He had six sons, two of whom survived him, and they were both in the church. Dr. Borlase furnished Mr. Pope's grotto at Twickenham with a great number of the materials that were used in forming it. In Mr. Pope's letter of acknowledgment, he says, "I am much obliged to you for your valuable collection of Cornish diamonds. I have placed them, where they may best represent yourself, *in a shade, but shining*;" alluding to the obscurity of the donor's situation, and the brilliancy of his talents. Biogr. Brit.

BORMES, in *Geography*, a town of France, in the de-

partment of the Var, seated on the coast of the Mediterranean, near a flat shore, which serves for a port, whither the vessels, which cannot reach the gulf of Hieres before a tempest, retire; 3 leagues E. of Hieres.

BORMIDA, or Bormia, a river of Italy, which runs into the Tanaro, near Alexandria.

BORMIO, a county in the territory of the Grisons, lying at the foot and in the midst of the Rhetian Alps, and bordering upon Engadina, the valley of Munster, the Valteline, Tyrol, Trent, and the Venetian territories. It is entirely inclosed within the mountains, except a narrow opening, which connects it with the Valteline; the other accesses to it lie across the rugged Alps, and in winter are frequently impassable. This country, which was once a part of the Milanese, became subject to the Grisons in 1512. (See VALTELINE.) It is divided into five districts; viz. Bormio, comprising the capital and several dependent villages; the valley of Furba; the valley of Pedinofa; the valley of Cepino; and the valley of Luvino. In the new division of Switzerland, since the French revolution, the county of Bormio, with the Valteline and Chiavenna, form a part of the Cisalpine republic. Whilst it remained under the government of the Grisons, its inhabitants were exempt from the oppressions exercised by the Grison governors in the other countries subject to their dominion. They paid a fixed and moderate contribution; they collected and enjoyed their own duties upon exports and imports, and were thus secured from injudicious and oppressive taxes; the fines for criminal offences belonged to the community; and as no part was assigned to the governor, he was not interested in convicting criminals; and the chief privilege, which distinguished this country from the Valteline, was the freedom of its government, and the limitation of the podesta's authority.

The supreme magistrate of Bormio, called "Podesta," was sent from the Grisons, and continued two years in office; his authority was very circumscribed, and his power was almost wholly dependent on the concurrence of the councils. In those councils he never gave a vote, except in case of equality; he possessed not the power of arresting a criminal, nor of pardoning or lessening the punishment. His annual stipend of about 80*l.* arose partly from a payment of money, partly from an allowance of rye, and partly from the costs of suit in civil and criminal causes. The supreme authority resided in the podesta, and councils, consisting of a civil and criminal tribunal, the members of which were annually chosen by the people. The criminal court, or council of sixteen, changed every four months, consisted of two regents, the treasurer, the notary, and 16 counsellors, of whom ten were taken from the town, and two from each of the vallies Furba, Pedinofa, and Cepino. This council was convened by the podesta, at the request of the two regents. In order to arrest a criminal, it was necessary to assemble the whole council, or at least seven of the members; in other important cases, the podesta and two regents might give an order of arrest; but this was deemed contrary to law. The process, conducted by the podesta and two regents, was laid before the council; and upon conviction of the criminal, provided he did not confess his crime, the majority of the council determined whether the evidence was sufficient to justify torture: which was applied in the presence of the podesta, the two regents, the treasurer, and notary. If the proofs were insufficient for conviction, the podesta and counsellors received nothing for their attendance; a regulation, which sometimes induced the judges to strain slight circumstances into proofs of guilt, and not unfrequently occasioned the infliction of torture.

The civil tribunal consisted of twelve members taken from
the

the town of Bormio; and from their decision an appeal lay to the syndicate of the Grisons.

The members of these councils were chosen annually by the assembly of the people. In the choice of the two regents, six persons selected in a peculiar manner by the regent last in office and the treasurer, chose six members of the assembly, three from the district of Bormio, and three from the vallies, who appointed six candidates; the names were then thrown into six bags, and ballotted for; and the two who had the greatest number of ballots, were regents, who remained in office only four months. The revenue of the country amounted in one year to 222l. 14s. 4d.; and the average expences to 212l. 2s. 2d. The expences and receipts are submitted, when the regents retire from office, to the council of sixteen, and cannot pass without their approbation.

The county of Bormio is about 15 miles in length, and 14 in breadth; and the inhabitants are estimated at about 14,000. The mountainous parts produce only pasturage and wood; the lower district about Bormio yields corn, but not sufficient for domestic consumption. The inhabitants export cattle, a small quantity of cheese, and iron obtained from the mines of Frelì, in the valley of Pedinofò, wrought at the expence and for the profit of a private person, who pays to the community a small annual rent. The honey produced in Bormio is esteemed excellent. Wine is imported from the Valteline, corn from the Tyrol, corn and rice from Milan, linen from Bergamo and Appenzel, and cloth from Germany. The air is cool, but pure and healthy. The established religion is the Roman catholic; and the exercise of every other worship is prohibited. Spiritual affairs are under the jurisdiction of the bishop of Coire, who has a vicar's court at Bormio, in which all ecclesiastical causes are tried. The priests have peculiar privileges, which are extended even to those who wear a clerical dress. Most of the peasants possess a small portion of land, and, in consequence of the freedom of the government, are happier than the people of the Valteline and Chiavenna. Coxe's Travels, vol. iii.

BORMIO, the capital of the county of the same name, is situated at the foot of the mountains, close to the torrent Fredolfo, which falls at a small distance into the Adda. It contains about 1000 inhabitants, but has a desolate appearance; the houses are of plaistered stone, of which some few make a tolerable figure, amidst many with paper windows; and several, like the Italian cottages, have only wooden window shutters. The palazzo, or town-house, contains a suite of wretched rooms for the residence of the podesta, a chamber for the courts of judicature, and an apartment where the representatives of the people assemble. In one of the rooms is an engine of torture, which, in defiance of common sense as well as humanity, is still used in these countries to force confession. The archives are kept in an apartment, the door of which has several keys; so that all the magistrates, who are entrusted with them, must be present, whenever it is opened. The most important of the papers kept in these archives, is the charter, by which the Grisons confirm, in the most ample manner, the immunities granted to this country by the dukes of Milan; it was passed in the diet of Iluntz, under Paul, bishop of Coire, in 1513, the year succeeding that in which the Grisons annexed Bormio to their dominions. Many circumstances have concurred to deter the Grisons from infringing this charter; the two principal are, the situation of Bormio on the confines of the Tyrol, whence they might receive assistance from the house of Austria; and the spirit of freedom which distinguishes the inhabitants, who have watched with a jealous eye the slight-

est advances of encroachment, and never failed to remonstrate with great unanimity and resolution, whenever the podesta has discovered the least inclination to exceed the bounds of his authority. About a mile from the town are the baths of St. Martin Melma, recommended for rheumatic complaints, &c. N. lat. 46° 17'. E. long. 10° 21'.

BORN, IGNA TIUS, *Baron*, in *Biography*, an eminent mineralogist and philologer, was born of a noble family at Carlsburg, in Transylvania, December 26th, 1742. Having studied in the college of the Jesuits at Vienna, he entered into this society, but continued a member only one year and a half. At Prague he studied the law; and, after an extensive tour on the continent, he devoted himself to natural history and mining; and, in 1770, was admitted into the department of the mines and mint of that city. At this period he visited the principal mining districts of Hungary and Transylvania, and kept up a correspondence with the celebrated Ferber, who afterwards published his letters. In this journey he very nearly lost his life, and did permanent injury to his health, by descending into a mine at Felső-Banya, which was full of arsenical vapours that had been raised by the heat employed to detach the ore. Upon his return to Prague, he published in 1771, a small work of the Jesuit Pada, on the machinery used in mines; and, in 1772, he printed his "Lithophylacium Bornianum," or catalogue of his collection of fossils, which he afterwards sold to Mr. Greville for one thousand pounds. His reputation, as a mineralogist, was now generally known; and he was admitted into various learned societies, among which were those of Stockholm, Vienna, Padua, and London. Unconfined to one branch of study, he engaged in various plans for the advancement of literature and science in Bohemia. He took a part in the work entitled "Portraits of learned men and artists of Bohemia and Moravia;" he engaged in the "Acta Literaria Bohemæ et Moraviæ;" and in 1775, he laid the foundation of a private literary society in Prague, which has published several volumes of Memoirs. In 1776, he was summoned by the empress Maria Theresa to Vienna, to arrange the imperial collection of natural history; and, two years after, he published, with the assistance of the empress, the "Conchology" of it. But it was discontinued on the accession of the Emperor Joseph. Born was appointed to instruct the archduchess Maria Anna in natural history; and, as a recompence for his services, the office of counsellor of the mines and mint was conferred upon him in 1779, which obliged him to reside constantly at Vienna. However, he felt severely the consequences of the injury he had sustained at Felső Banya; so that he became a martyr to the most excruciating colics; and in one of his attacks he swallowed such a quantity of opium as threw him into a lethargy for twenty-four hours. The disorder then fixed in his legs and feet, and he became lame for the rest of his life. Nevertheless, his mind was vigorous and active, and he entered with zeal into every measure that was calculated to enlarge the boundaries of science, and to enlighten and improve mankind. Restricted, under an arbitrary government, from free discussions on the subjects of religion and politics, he connected himself with the society of free-masons, and united with others of a similar turn of mind, in carrying on a kind of masked attack upon superstition and various kinds of error. Born was also a member of the new society of the "Illuminati," whose views at first were directed to the improvement of mankind, and not to the destruction of society. During the reign of popery and arbitrary power, we may reasonably suppose, that their projects of reform were less hostile to religion and government in general, than what has been charged upon their principles, since they have been al-

lied with those of the French revolution. The emperor Joseph seems at this time not to have been adverse to such coadjutors; and he appeared to be pleased with a witty and popular publication of Born, in 1783, entitled "*Monachologia*," which was a severe attack on the monks, whom he characterized in the technical language of natural history, under the regular divisions of order, genus, and species, used in the Linnæan school. The clergy complained, and their complaints were retorted by Born with more bitter satires, exceeding the bounds of prudence and candour. He defended his associates, the "*Illuminati*," with great zeal; and when the elector of Bavaria issued an order to dismiss all of this fraternity from his service, Born returned to the academy of Munich the diploma by which he had been admitted as one of its members. The emperor Joseph gradually withdrew his support from these reformers, whom he had at first encouraged; and Born's continued influence was principally owing to his skill in mineralogy and metallurgy, by which he was capable of rendering service to the state. In the process of extracting the noble metals from their ores, by amalgamation with quicksilver, he manifested his superior skill; and to this purpose, a decisive experiment was performed at Chemnitz, by the emperor's order, in the presence of Charpentier from Saxony, Feiber from Russia, Elhujar from Spain, Poda, and other celebrated chemists, which met with universal approbation, and established the utility of his discovery. In 1786, Born published, at the desire of the emperor, his treatise on amalgamation; and in the following year, a farther account of it was published by his friend Ferber. As a considerable saving in wood, time, and labour, attended his process, the emperor gave orders that it should be employed in the Hungarian mines; and as a recompence to the inventor, a third of the sum that should be saved by adopting his method was granted to him for ten years, and for ten years more the interest of that sum. Such, however, was the hospitality of Born, and his readiness to admit and entertain all travellers, and to patronize distressed talents of every kind, that his expences exceeded his income, and he was at last reduced to a state of insolvency. Amidst all his bodily infirmities and pecuniary embarrassments, and notwithstanding the variety of his official avocations, he was indefatigable in his literary pursuits; and in 1795, he published in two volumes, a "*Catalogue methodique raisonné*," of Mifs Raab's collection of fossils, which is regarded as a classical work on that subject. He employed himself also in bleaching wax by a new chemical process, and in boiling salt with half the wood commonly used for that purpose. Whilst he was engaged in writing the "*Fasti Leopoldini*," or a history of the reign of Leopold II. in classical Latin, and a work on mineralogy, his disease rapidly advanced, and being attended with violent spasms, terminated his life on the 28th of August, 1791. Townson's Travels in Hungary, 4to. 1796.

BORN, in *Geography*, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the district of Villeneuve d'Agen; $1\frac{1}{2}$ league N.N.W. of Montsaquin.

BORNA, a town of Germany, in the circle of Upper Saxony, and territory of Leipzig, seated on an island formed by the rivers Wichru and Pleiss. The inhabitants are chiefly employed in manufacturing stuffs; 12 miles S.E. of Leipzig.

BORNE, a river of England, which runs into the Tame, about a mile S.W. of Tamworth.—Also, a river of Savoy, which runs into the Aroe, about two miles north from Bonnevill.

BORNEO, an island of the East Indies, which, before

the discovery of New Holland, was considered as the largest island in the world. This island seems to have been the Greater Java of Marco Paolo, which, he says, is about 3000 miles in circuit, being above 900 miles in length by 600 at its greatest breadth. The latest and best account that has yet been given of this island is published in the Transactions of the Batavian Society. The island of Borneo extends from the 4th degree of S. lat. to the 8th of N. lat. and from 109° to 119° E. long. It is about 780 miles in length, and 720 in breadth. Its climate is almost the same as that of Java; but Borneo is less mountainous, and the land, for 12 or 15 miles, and sometimes more, from the coast, is almost every where marshy, and covered with forests of trees of large size, and of various kinds. The remaining part of the island is sufficiently fertile, and would be productive, if the inhabitants were not too indolent to cultivate the soil, and fonder of searching for gold and diamonds, which they barter with the Javanese for various necessaries of life. The middle of the island is occupied by an extensive ridge of mountains, called the "*Crystal mountains*," because a great quantity of crystal is found in them. At the foot of these mountains is a large inland lake, which is the source of all the rivers that traverse the whole island. The real natives of this island are the Biadjoos, or Bijaos, or Dajakkefe, who live in the interior parts of the country. The sea-coast is inhabited by Malays, Moors, Macassers from Celebes, and Javanese. We have accounts, on which we may depend, only of the countries situated along the coast; the interior parts of the island being little known. The largest kingdom in the island, and the most important on account of its connection with the Dutch East India company, is that of Banjer-massing on the southern coast. The great river Pontiana, which is navigable for ships that draw from 12 to 13 feet of water, is very convenient for trade. The sultan Sufuhuan Natahalam, since the year 1771, has transferred his residence from Cagu-Langie to Martapura, where he caused a large city to be built, and a canal to be dug, which passes through the middle of it, and at the same time he changed the name Martapura into Bunie-Kintjana. The inhabitants of the city, as well as those who reside in places at a distance from the coast, are Mahometans, mixed with a great many Biadjoos, or Dajakkefe, who are Pagans. These Biadjoos, who inhabit villages, amounting in number to 784, are subject to various petty princes, who acknowledge the sultan as their superior. The factory of the Dutch East India company is situated at the end of the village of Tatas, or Banjer massing. Their fort is of an octagonal form, surrounded by pallisades, which on the east side next the river is furnished with three, and on the west, or land side, with two bastions. The productions of the country, which are sought for as articles of commerce, are pepper, gold (chiefly gold-dust, not very abundant in metal), diamonds, canes, birds-nests, wax, *pedra del porco*, dragon's blood, and iron. For these the Dutch give in exchange agates of a longish form, rings of red agate, different kinds of coral, all sorts of Chinese articles, such as coarse porcelain, red and other kinds of silk, all sorts of cotton cloth, such as is worn by the Indians, various productions of Java, and also opium, which, being prohibited by the sultan, is privately introduced. See BANJER-MASSING.

Succatana lies in $0^{\circ} 50'$ S. lat.; and a little north of it is the river Pontiana, which discharges itself into the sea under the line, through a great many mouths. At its mouth it is 12 feet in depth, and at high water 16, so that sloops and small vessels can proceed with great ease in about 12 hours to the company's factory. The river, at the distance of about seven or eight miles from its mouth, separates into

two branches; the southernmost of which flows through the country governed by Pangerang (a term of dignity) Jolep, who, in 1778, was advanced by the company, to be sultan of Safango and Pontiana, under the name of Sarief Abdulla Rachmann. These two kingdoms extend far into the country; and produce excellent gold, wax, birds-nests, pearls, sago, diamonds, tin, and iron, which are bartered for provisions of all kinds and cotton cloth, but particularly rice and salt. Heavy rains prevail here from November till May; and the thermometer is never lower than 82° , nor higher than 94° .

Landac lies on the northern arm of the river Pontiana, in N. lat. $0^{\circ} 35'$. The Dutch had a resident here 150 years ago. After that period their possessions were destroyed, till the king of Bantam, to whom Landac and Succatana had for many years belonged, made a grant, either voluntary or by compulsion, to the company of all these lands in 1778. From this time the Dutch have considered these lands as their property, and the princes who govern them as their vassals; they then built a fort at Pontiana, between Landac and Succatana, and appointed Pangerang Saidja Nata, as regent of the whole district. The residence of the prince of Landac is situated on the projecting point of a mountain, to which there is an ascent by 118 steps. Two rivers, which are so full of rocks that no vessels can be navigated in them, flow on the right and left of this mountain; and the place is naturally impregnable. It is also well furnished with artillery. In this kingdom there are gold and diamond mines of considerable importance.

Between Landac and Borneo, the most northern kingdom of the island, and from which, probably, the whole country took its name, there are several smaller kingdoms, not yet sufficiently known. Their regents are, in part, vassals of the sultan of Borneo. A small trade is carried on in these districts with gold, diamonds, canes, wax, and other articles of the like kind, which are given in exchange for the productions of Java; but the traffic is unimportant and precarious, as the princes of this part of the country live by piracy.

Borneo is governed by a sultan, who resides in this place, where a considerable trade is carried on with the productions of the country, which are pearls, birds-nests, wax, slaves, rice, and camphor. The camphor of this island is preferred even to that of Sumatra. The camphor of Borneo and Sumatra is produced by a tree with oval, sharp-pointed leaves, and large tulip-like flowers. It is thus distinguished both from the camphor-tree of Japan, and from the other species of the laurel. An hundred weight of the camphor of Borneo costs 3000, and one of that of Sumatra 2000 six-dollars, but the Japanese costs scarcely 50. Of the camphor of Borneo about 4375 pounds are annually exported. The articles imported are tin, cotton-cloth, and all the productions of Java, except rice, which is cultivated here in great abundance.

The sultan of Borneo lives in great state, and is more feared by his subjects than that of Banjer; but he is said, by those who frequent this part of the coast in small vessels to exchange cotton-cloth for pepper, to be more constant in his friendship, and more faithful in fulfilling his engagements.

Between Borneo and Tidore lie the two small kingdoms of Balangan and Baraon, where birds-nests, wax, &c. are exchanged for Japanese productions, and a sort of coarse cotton-cloth. Next to these is Dannur, and a little farther are Sammuntia, and Cottee. Between the two last are many villages, the names of which are not known. The same articles are exported and imported here as at Borneo.

The next place is Appar Karrang, and the last kingdom is Passier. The articles of trade in this country are gold, birds-nests, wax, and canes, which are exchanged for the productions of Java. The inhabitants of Passier are few in number, and therefore they have been unable to expel the Buginese, who have made themselves masters of the river, and also of the trade. Further south lies Simpanahan; and the whole country from this place to the extreme boundaries of Salatang belongs to the king of Banjer-massing, who possesses also the great and small island Pulu-Lauts. There appear to be no other kingdoms in the interior part of Borneo; or, at least, they are not known. The inhabitants of the mountains bring the productions of their lands, and their different articles of manufacture, to the nearest part of the coast for sale.

The most productive diamond mines of Borneo are at Ambauwang, beyond Molucco, in the district of Banjer-massing, and at Landac and Pontiana. Besides these mines, which lie among the mountains, diamonds are also searched for on the banks of various rivers; but they are so scarce that ten or twelve persons may dig and search sometimes for a whole month before they find diamonds to the value of 20 Spanish rials. With regard to the gold mines, the ignorance of the natives as to everything relative to mining is such, that little advantage is derived from them, though they are supposed to be very rich. In Banjer-massing the gold is found at the depth of about three fathoms; the veins properly so called are of a reddish kind of marl. At Landac the ore is found at the depth of about ten feet, under a crust resembling rotten wood. Of the animals of Borneo the most remarkable is the orang outang.

The Biadjoos or Dajakkefe, who are the native inhabitants of this island, and principally occupy an extensive district in the interior part of the country on the west side of the river Banjer, are of large stature, and well formed, and their women, whom they never bring to the places of trade, are said to be fair and handsome. In their dresses they resemble the Malays. The women, and even the wives of their princes, are naked to the middle, and generally wear round the body only a short gown. The men paint their bodies with various kinds of figures. They come to Banjer to sell their gold, canes, and rice, for which they receive in exchange coarse Chinese porcelain, copper, and earthen vessels or tampayangs, on which are represented dragons, snakes, and other figures suited to their taste. Before any one of the Biadjoos can succeed in obtaining a female for his wife, he must give proof of his courage by cutting off the head of an enemy; and when he is accepted by the parents, he carries to his bride a present, which consists of a male or female slave, two dresses, and a water-pot, on which some of their favourite figures are exhibited. On the wedding day, the bride and bridegroom give each a feast at their respective houses; at the conclusion of which, the bridegroom, in his best apparel, is conducted to the residence of the bride, at whose door is one of her relations, who smears him with the blood of a cock, which has been killed for that purpose; and the bride is smeared in like manner with the blood of a hen. They then present to each other their bloody hands, and the solemnity is closed with a second entertainment. If the wife die, the husband cannot contract a second marriage until he has cut off the head of some individual of another nation, and thus avenged the death of his wife. When a married woman commits adultery, the husband, without avenging himself on the adulterer, puts to death two or three of his slaves, and thus frees himself from all shame; the woman is punished merely with words, but sometimes with blows. The Biadjoos are unacquainted with polygamy.

polygamy. If a man wishes to separate from his wife in consequence of her having committed some crime, he retains her clothes and ornaments, and makes her pay a fine amounting to about 30 rials; and each party is then at liberty to marry. When a Biadjoo dies, the body is put into a coffin, and kept in the house, until all the remaining males in the family have purchased a slave; who is beheaded on the day when the body is burnt, that he may attend the deceased in the other world; and before he is put to death, he is enjoined fidelity to his master. The ashes of the deceased, together with the head of the slave, are put into a watering-pot, and deposited in a small edifice or tomb constructed for that purpose. Sometimes a whole year elapses before a slave can be procured. The houses of the Biadjos are constructed of boards joined together without windows or partitions, except that which separates a small corner in which they sleep. The whole family reside together with their slaves, and consist sometimes of 100 persons. Their only light is that of a piece of pine-wood, which burns no longer than till about eight in the evening. Over their doors they suspend the bloody heads which they cut off in their skirmishes. In order to procure these they proceed, with great secrecy, to the river Banjer, and surprise in the night, or attack, in open day, some small vessel belonging to Banjer fishermen; and one or two of their unfortunate captives are then destined to become a sacrifice to their insatiable rage for murder. When they return with a head, the men, women, and children of a whole village testify their satisfaction by every demonstration of joy. Gongs, or musical instruments of copper, are beat by those who conduct the conqueror to his own house, where the women dance around him, and taking from him the head, they force into the mouth some food and drink; after which ceremony, accompanied with a repast and dance, they hang it up as a trophy of victory. Before the Biadjos undertake expeditions in quest of Banjerese heads, they endeavour to deduce some omen of good or bad fortune from the flight of a kind of hawk (*falco milvus*). They have scarcely any form of government, and no written laws. If a person be accused of theft, and no sufficient proof can be alleged against him, the culprit and the accuser are carried before one of the oldest inhabitants. An earthen pot with ashes and water is placed on the ground; and across the pot is laid a piece of wood, on which are deposited two small copper buttons. An oath having been administered to each party, the piece of wood is so turned round that the buttons fall into the water; the accused and the accuser take up one of these buttons; and he, whose button appears as if scowered and whitened by the ashes, is deemed to have succeeded. The Biadjos are said to have some idea of a supreme being, to whom they address prayers under the name of Dewatta; and as they believe that this Dewatta not only created, but still preserves and rules the world, they request him to grant them happiness and prosperity. If we may judge from the character of these people, their deity must be a gloomy and revengeful being; no nation on earth having a greater propensity to murder and revenge. The Biadjos acknowledge the sultan of Banjer as their sovereign, and pay him yearly a small tribute in gold dust of the value of 20 rials.

The Portuguese, Dutch, and English have ever since the 16th century endeavoured to establish themselves in this island; but the Dutch have been the most successful. The Portuguese, it is said, wished to form a settlement here in 1526, and with this view presented to the sultan of Landac and Succatana some beautiful pieces of tapestry, on which curious figures were wrought; but the sultan,

conceiving these figures to be animated or magic, and apprehending that they might rush suddenly from the tapestry and strangle him, rejected the present and expelled the Portuguese from the country. The English were not much more fortunate, having quitted Borneo entirely ever since the year 1706. In 1766, they made an attempt to form a settlement in the island of Balambangan, at the N. extremity of Borneo, which was given up to them by the king of Solon. They placed in it a few Europeans for the sake of trade, and a garrison of 300 soldiers, Europeans and blacks; and intended to establish a factory, where they might exchange the productions of Europe and Hindoostan for those brought hither from China and the Indian islands; but in the year 1772, after a part of their troops had been swept off by contagious diseases, the fort they had constructed, being badly fortified, was suddenly attacked, and the whole establishment destroyed. The English have still some establishments on the north coast of Borneo; and the circumjacent Indian nations, and the Chinese carry on a great trade with this island. About Borneo are several small islands, that may be denominated the "Bornean islands," such as the Soloos, Tawea, Pulo Laut, Anamba, Natuna, &c.

BORNEO, a sea-port and capital of the island of this name, is large, populous, and commercial, with a good harbour; it consists of about 300 houses, built on piles, and is situated on the N. W. side of the island. N. lat. $4^{\circ} 50'$. E. long. $115^{\circ} 0'$.

BORNEVALT, a town of Germany, in the circle of Westphalia, and duchy of Berg; 3 miles W. of Lennep.

BORNEUS, in Ornithology, the long-tailed scarlet lory. This beautiful bird is of a red colour; quills and tail feathers at the tips green; a blue spot on the wings; orbits fulvous. Inhabits India.

The length of this bird is nine inches and a half. Its bill is orange; orbits of the eyes bare of feathers: quill feathers with blue and green dots; the two exterior feathers inclining to green; lower tail coverts red, bordered with blue. Gmel.—*Iori perruche rouge*, No. 1. Buff. *Pittacia coccinea bonarum fortunarum insule*. Briss.

BORNHEIM, a village of Germany, in the circle of the Upper Rhine, and territory of Franckfort on the Mayne; 6 English miles N. of Franckfort. This village is said to be notorious all over Germany for its numerous brothels. *Render's Tour*.

BORNHOLM, an island of Denmark, in the Baltic sea, the remotest and most easterly of all the Danish islands, about 18 miles in length, and 10 in breadth. Although it is nearly surrounded by rocks, and the soil is stoney, it is a fertile spot, abounding with excellent pastures; oats, butter, and fish, constitute the wealth of the inhabitants. There are some mines of coal and quarries of marble. It was conquered by the Swedes in 1645, and surrendered to them by the treaty of Roskild, in 1658; but the inhabitants revolted in the same year, and restored their island to the Danish dominion, under which it has since continued. Bornholm is distant 75 miles from Zealand, and 15 from the coast of Schonen. N. lat. $55^{\circ} 12'$. E. long. $15^{\circ} 20'$.

BORNII, in Conchology, a species of TELLINA, figured by Born. This shell is transversely striated, bent on one side, and reddish; with red rays. This is three quarters of an inch long, and two inches broad. The native place is not known.

BORNOU, in Geography, an extensive kingdom of Africa, lying south-east of Fezzan, and bounded on the north by the desert of Bilma, on the west by Kuka, Tagua, and Nubia,

Nubia, on the south by Kauga and Begamee, and on the west by Zagg, Zazina, and Kallina. The name Bornou, which is given to this kingdom by the natives, is distinguished in Arabia by the appellation of Bornou, or Bernou, signifying the land of Noah; for the Arabs conceive, that, on the first retiring of the deluge, its mountains received the ark. This is a country of great extent, being comprehended between the 16th and about the 22d degrees of N. latitude. The climate is characterized by excessive, but not uniform, heat. Two seasons divide the year; one commencing about the middle of April, and introduced by violent winds from the S.E. and S., intense heat, a deluge of rain, and such tempests of thunder and lightning as destroy many cattle, and people; at this time the inhabitants confine themselves to their houses; the rest of the season, though sultry and rainy, does not hinder the labours of the husbandman and shepherd. The other season commences towards the latter end of October, when the heat becomes less intense, the air more soft and mild, and the weather serene. The inhabitants are numerous, and consist of various nations; and it is reported that thirty different languages are spoken in this empire. The language of the common people of Bornou, though different from, strongly resembles that of the neighbouring negroes, and is very unlike the Arabic, in which, however, the nobles and principal families converse. The art of writing is known among them; and they are taught to express the Bornou tongue in the characters of the Arabic. They are entirely black, but not of the negro cast. Their general dress is composed of shirts of blue cotton, manufactured in the country; a red cap, imported from Tripoli; and a white muslin turban, brought from Cairo by the pilgrims, who return through that city from Mecca. Necklaces of gold are also worn by the principal people, as a mark of distinction. Wheat and barley are seldom raised in Bornou; but the horse-bean of Europe, and the common kidney-bean are assiduously cultivated, as they are used for food, both by the slaves and by the cattle. They also cultivate a kind of grain peculiar to the country; and the neighbourhood of the city of Bornou is fertile in Indian corn and rice. Gum-trees are thinly scattered; cotton, hemp, and indigo are also to be reckoned among the various productions of its soil. In the culture of the ground, the hoe is the only instrument in use, as the plough is not known; and the women share with the men the labours of their husbandry. The sowing season commences at the end of the periodical rains in April; and such is the rapidity of vegetation, that one species of their grain is reaped in July, and another, of slower growth, in August or September. Two species of roots are used as substantial and wholesome food; one called the "dondoo," whose leaves resemble those of the garden bean, is dried in the sun, and reduced to fine powder, which is mixed with palm oil into the consistency of paste; and the other prepared for use merely by boiling. The fruits of Bornou are grapes, apricots, pomegranates, lemons, limes, and melons. The dates are scarce and indifferent, as are also the apples and plums; but it has a valuable vegetable, called, "Kedeynah," resembling the olive in form and height, and the lemon in its leaf, which bears a nut, whose kernel is an esteemed fruit, and shell, when bruised, yields an oil that supplies the lamps with a substitute for the oil of olives. To the class of animals we may refer innumerable flocks of sheep, and herds of goats and cows, (for there are no oxen,) together with multitudes of horses, buffaloes, and camels, the flesh of which is in high estimation, which cover the vales or pasture on the mountains of Bornou. The common fowl is reared by the inhabitants; and their hives of bees are so numerous, that the wax is often thrown away as an

article of no value in the market. Their game consists of antelopes, partridges, wild ducks, and the ostrich, the flesh of which they prize above every other. Their other wild animals are the lion, the leopard, the civet-cat, the small wolf, the fox, the wild dog that hunts the antelope, the elephant, of which, however, they make no use, the crocodile, the hippopotamus, and giraffe. Bornou is much infested with different kinds of dangerous and disgusting reptiles, especially snakes and scorpions, centipedes and toads. Its beasts of burthen are numerous and various; of which we may reckon the camel, the horse, the ass, and the mule. The dog appears to be the only domestic animal. In Bornou the same plan of constructing their houses universally prevails. Four walls, inclosing a square, are erected; within the walls, and parallel to them, four other walls are also built; the ground between the walls is then divided into different apartments, and covered with a roof. Thus the space within the interior walls determines the size of the court; the space between the walls, limits the width of the apartments; and the height of the walls regulates the height of the rooms. In a large house the rooms are each about twenty feet long, eleven feet high, and as many in width. On the outside of the house, a second square or large yard, surrounded by a wall, is usually provided for the inclosure and protection of the cattle. The walls are generally composed of earth and sand, but others are formed of stones or bricks and clay; and the roofs consist of branches of the palm-tree, intermixed with brush-wood, covered with layers of earth; and the whole building is white-washed with a species of chalk. The utensils of a house, among the lower classes, are mats covered with a sheep-skin, upon which they sleep; an earthen pot and pan; two or three wooden dishes, a couple of wooden bowls, an old carpet, a lamp for oil, and a copper kettle. Persons of a superior rank also possess leathern cushions, stuffed with wool, brass and copper utensils, a handsome carpet, and a sort of candlestick, which is used for their candles that are made of their bees' wax and the tallow of their sheep. The current specie of the empire consists of pieces of metal from an ounce to a pound in weight, formed of copper and brass, melted together and mixed with other materials. The ruling people in Bornou profess the Mahometan religion, so that the sultan and his subjects are muslmen, and the other classes are pagans. The government is an elective monarchy; and the new sovereign, when chosen from among the sons of his predecessor, is invested with all the slaves, and with two-thirds of all the cattle and land, of his father; the remaining third being always detained as a provision for the other children of the deceased monarch. To the four lawful wives of the late sovereign, a separate house with a suitable establishment, is granted by the reigning monarch; and such of his concubines, as were not slaves, are at liberty to return to their friends, with their cloaths and ornaments, and with the permission to marry. The administration of the provinces of Bornou is committed to governors, appointed by the crown; and the expences of the sovereign are defrayed partly by his hereditary lands, and partly by taxes levied on the people. The sultan Ali, who was the sovereign of Bornou, in 1789, though plain in his dress, maintained a magnificent seraglio, accommodating 500 ladies, and was reputed to be the father of 350 children; and the number of horses kept for his own use and that of his servants, amounted to 500. The military force of Bornou consists in a great multitude of horsemen, which renders him a much more powerful monarch than the emperor of Morocco; but his foot-soldiers are few in number, and of little importance. Their weapons of offence are the sabre, the lance, the pike, and the bow; and a shield of hides forms

their defensive armour. Fire-arms, though not entirely unknown, are neither used nor possessed by the people of Bornou. As to their habits and manners, the people are singularly courteous and humane. On the road they stop to salute every one they meet; their quarrels, when they occur, are mere contests of words; and though their women share with them in the business of husbandry, their work, which is dropping the seed in the furrows, and removing the weeds with a hoe, is more an amusement than labour. Their attachment to play is immoderate; and on the game of draughts, which is the only game with which the lower classes are acquainted, they stake their gold dust, their brass money, and even their cloaths. Persons of a superior rank are equally devoted to chess, in which they are eminently skilful. The articles of export furnished by the empire of Bornou are gold dust, slaves, procured from Begamsee, horses, ostrich feathers, salt, collected on the shores of the several lakes that produce it, and civet, obtained from a species of wild cat that is common in the woods of Bornou and Kassina. As to their manufactures, they make a coarse linen of the hemp of their country. Their cotton is spun to a very fine thread, and then manufactured into calicoes and muslins about nine inches broad, and in length from fifteen to twenty yards. Such of these cotton manufactures as are enriched with the blue dye of the country, which, from the superiority of the indigo, is preferable to that of the East Indies, are valued more highly than silk. They also fabricate a species of carpet, as a covering for their horses; and tents, of wool and the hair of goats and camels, are made for the use of the army. From the iron ore of their country they form, with little skill, such slight tools as their husbandry requires; and the little silver they have is converted by their own artists into rings. In return for their exports, they receive from Tripoli, by way of Fezzan, copper and brass, which are used as current species; and also imperial dollars, of which they make rings and bracelets for their women; red woollen caps worn under the turban, check linens, light coarse woollen cloths, baize, baracans, small Turkey carpets, and plain Mesurata carpets. Mr. Lucas's Communications in the Proceedings of the African Association.

BORNOU, the capital of the country above described, is situated at the distance of a day's journey from a river which is called "Wed-el-Gazel," from the multitude of antelopes that feed on its banks, and which is lost in the deep and sandy wastes of the vast deserts of Bilma. It is seated in a flat country, on the banks of a small river. Bornou, though a town of greater extent than Tripoli, consists of a multitude of houses, so irregularly placed, that the intervals between them cannot be called streets: it is furnished with mosques, which are constructed of brick and earth, and with schools, in which the koran is taught, as in the principal towns of Barbary. The royal palace, in which the sultan resides in time of peace, is surrounded by high walls, and forming a kind of citadel, is built, perhaps for security, in a corner of the town. Within the city are markets for the sale of provisions; but for other articles a weekly market, as in Barbary, is held without the walls. This city is surrounded by a wall, fourteen feet high, constructed on a foundation from eight to ten feet deep, of considerable strength. It is secured by a ditch which encompasses the whole; and at sun-set, the seven gates, which form the communication with the country, are shut. Brown, in his travels, p. 467, says, that the wall has four gates, opening east, west, north and south. N. lat. $19^{\circ} 35'$ E. long. $22^{\circ} 40'$.

BORNSTET, a town and bailiwick of Germany, in the circle of Upper Saxony; 4 miles S. W. of Eisleben.

BORNY, a town of France, in the department of the Moselle, and chief place of a canton, in the district of Metz, 2 miles E. of Metz.

BOROCZANE, a town of Poland, in the palatinate of Red Russia; 28 miles S.S.W. of Halicz.

BOROLIBICUS, the wind which blows in the middle between the north and west points; called also the north-west wind.

BORONOO, in *Geography*, a town of Russia, in the government of Archangel; 80 miles S. of Archangel.

BOROS-JENO, a town of Hungary; 28 miles S. of Gros-Warden.

BOROUGH, **BURROUGH**, **BOROW**, or **BURGH**, is frequently used for a corporate town, which is not a city.

Borough, in its original Saxon *borge*, or *borgh*, is by some supposed to have been primarily meant of a tything or company consisting of ten families, who were bound or combined together as each other's pledge.

Afterwards, as Verstegan informs us, borough came to signify a town that had something of a wall or inclosure about it; so that all places which among our ancestors had the denomination of borough, were one way or other fenced or fortified. But in later times, the same appellation was also bestowed on several of the *villa insigniores*, or country towns of more than ordinary note, though not walled: According to Somner, a borough was a place of safety, protection, and privilege; and in the reign of king Henry II. boroughs were so highly privileged, that if a bondman or servant remained in a borough a year and a day, he was by such residence made a free-man. Glanville. These were denominated free-burghs, and the tradesmen who inhabited them free-burgesses, because they enjoyed a freedom to buy and sell without molestation, and with exemption from toll, &c. granted by charter.

The ancient Saxons, according to Spelman, gave the name burgh to those called, in other countries, cities. But divers canons being made for removing the episcopal sees from villages and small towns to the chief cities, the name city became attributed to episcopal towns, and that of borough retained to all the rest; though these too had the appearance of cities, as being governed by their mayors, and having laws of their own making, and sending representatives to parliament, and being fortified with a wall and castle, and the like. See **CITY**.

BOROUGH, or *burgh*, is now particularly appropriated to such towns and villages, as send burgesses or representatives to parliament.

Boroughs are equally such, whether they be incorporated or not; there being great numbers of our English boroughs, not incorporated; and, on the contrary, several corporations that are not boroughs; e. gr. Kingston, Deal, Kent, &c.

Boroughs are distinguished into those by charter or statute; and those by prescription or custom.

The number of boroughs in England and Wales, including cities and cinque ports, which elect members, is 215; some whereof send one, some two representatives.

It has been a subject of controversy among antiquaries, at what time the representatives of boroughs formed a part of the great council of the nation. Some have traced their origin as far back as the Saxon *Wittenagemot*; and have supposed that they were the *wites*, *sapientes*, or wise men, who, besides the prelates and aldermen, are mentioned as a component part of this assembly. Others, however, have maintained, that these wites were the judges, or men learned in the law. Others who exclude the burgesses, or commons, from the Saxon *wittenagemot*, allege,

allege, that the expressions, employed by all ancient historians, in mentioning this national council, seem to contradict the former supposition. The members, it is said, are almost always called the *principes, satraps, optimates, magnates, proceres*; terms which seem to suppose an aristocracy, and to exclude the commons. The boroughs also, from the low state of commerce, were so small and so poor, and the inhabitants lived in such dependence on the great men, that it does not seem probable they would be admitted as a part of the national councils. It appears from Domesday that the greatest boroughs were, at the time of the conquest, scarcely more than country villages; and that the inhabitants were of a station little better than servile. If it be unreasonable to think that the vassals of a barony, though their tenure was military, and noble, and honourable, were ever summoned to give their opinion in national councils, much less can it be supposed, that the tradesmen or inhabitants of boroughs, whose condition was so much inferior, would be admitted to that privilege. These boroughs were not then so much as incorporated; they formed no community; they were not regarded as a body politic; and being merely formed of a number of low dependent tradesmen, living without any particular civil tie, in neighbourhood together, they were incapable of being represented in the states of the kingdom. The commons are well known to have had no share in the governments established by the Franks, Burgundians, and other northern nations; and as the Saxons remained longer barbarous and uncivilized than these tribes, they could never think of conferring such an honourable privilege on trade and industry. The military profession alone was honourable among all those conquerors; the warriors subsisted by their possessions in land; they became considerable by their influence over their vassals, retainers, tenants, and slaves; and it requires strong proof to convince us, that they would admit any of a rank so much inferior as the burghers, to share with them in the legislative authority. The first corporation, even in France, which made more early advances in arts and civility than England, is sixty years posterior to the conquest under the duke of Normandy; and in Normandy, the constitution of which was most likely to be William's model in raising his new fabric of English government, the states were entirely composed of the clergy and nobility; and the first incorporated boroughs, or communities, of that duchy, were Rouen and Falaise, which enjoyed their privileges by a grant of Philip Augustus, in the year 1207. All the ancient English historians, when they mention the great council of the nation, call it an assembly of the baronage, nobility, or great men; and none of their expressions, says Mr. Hume, (*ubi infra*), though several hundred passages might be produced, can, without the utmost violence, be tortured to a meaning, which will admit the commons to be constituent members of that body. When historians mention the people, *populus*, as a part of the parliament, they always mean the laity, in opposition to the clergy: and though the word *communitas* sometimes occurs, Dr. Brady maintains, that it always means *communitas baronagii*. If, therefore, in the long period of 200 years, which elapsed between the conquest and the latter end of Henry III., and which abounded in factions, revolutions, and convulsions of all kinds, the house of commons never performed one single legislative act, so considerable as to be once mentioned by any of the numerous historians of that age, they must have been totally insignificant; and in that case, what reason can be assigned for their ever being assembled? can it be supposed, that men of so little weight or importance possessed a negative voice against the king and the barons? Every page of the subsequent histories discovers their existence; though

these histories are not written with greater accuracy than the preceding ones, and indeed scarcely equal them in that particular. The magna charta of king John provides, that no scutage or aid should be imposed, either on the land or towns, but by consent of the great council; and for more security, it enumerates the persons entitled to a seat in that assembly, the prelates and immediate tenants of the crown, without any mention of the commons: "An authority (says Mr. Hume) so full, certain, and explicit, that nothing but the zeal of party could ever have procured credit to any contrary hypothesis." The same writer adds, that it was probably the example of the French barons, which first emboldened the English to require greater independence from their sovereign; and it is also probable, that the boroughs and corporations of England were established in imitation of those of France.

In ancient times, men were not very solicitous to obtain a place in the legislative assemblies; and rather regarded their attendance as a burden, which was not compensated by any return of profit or honour, proportionate to the trouble and expence. The only reason for instituting these public councils was, on the part of the subject, that they desired some security from the attempts of arbitrary power; and on the part of the sovereign, that he despaired of governing men of such independent spirits without their own consent and concurrence. But the commons, or the inhabitants of boroughs, had not yet reached such a degree of consideration as to desire security against their prince; or to imagine, that even if they were assembled in a representative body, they had power or rank sufficient to enforce it. For protection against the violence and injustice of their fellow citizens, to which alone they aspired, they directed their views to the courts of justice, or to some great lord, to whom, either by law or by choice, they were attached. On the other hand, the sovereign was sufficiently assured of obedience in the whole community, if he procured the concurrence of the nobles. The military sub-vassals could entertain no idea of opposing both their prince and their superiors; and much less could the burgesses and tradesmen aspire to such a thought. Thus, if history were silent on the head, there is reason to conclude, from the known situation of society during these ages, that the commons were never admitted as members of the legislative body.

The first time in which, according to the opinion of those who admit the conclusiveness of the above reasoning, historians speak of any representatives sent to parliament by the boroughs, was the year 1265, during the reign of Henry III.; when the earl of Leicester usurped the royal power, and summoned a new parliament to London, where he knew his power was uncontrollable. Besides the barons of his own party, and several ecclesiastics, who were not immediate tenants of the crown, he ordered returns to be made of two knights from each shire, and also of deputies from the boroughs; an order of men, it is said, which, in former ages, had always been regarded as too mean to enjoy a place in the national councils. Accordingly, this period is commonly esteemed the epoch of the house of commons in England. But though that house derived its existence from so precarious, and even so invidious an origin, as Leicester's usurpation, it soon proved, when summoned by the legal princes, one of the most useful, and, in process of time, one of the most powerful members of the national constitution; and gradually rescued the kingdom from aristocratical as well as from regal tyranny. But Leicester's policy, if we ascribe to him so great a blessing, only forwarded by some years an institution, for which the general state of things had already prepared the nation. It was not, however, till the 23d

year of the reign of Edward I. (A.D. 1295), that the deputies of towns and boroughs were, by a regal summons, admitted into parliament. This is therefore regarded as the legal and true epoch of the house of commons, and the faint dawn of popular government in England. Leicester's usurpation produced only a temporary effect, and the summons of representatives from boroughs was discontinued in subsequent parliaments; but from this period burgesses became a permanent part of the British legislature. The necessities of Edward, occasioned by his continual wars, and by the diminution of his demesnes, induced him to recur to this measure for obtaining requisite supplies; and he became sensible, that instead of imposing taxes by his prerogative, and enforcing his edicts for this purpose, a more expeditious and effectual mode was to assemble the deputies of all the boroughs, to lay before them the necessities of the state, to discuss the matter in their presence, and to require their consent to the demands of their sovereign. With this view he issued writs to the sheriffs, enjoining them to send to parliament, along with two knights of the shire, two deputies from each borough within their county, and these provided with sufficient powers from their community, to consent in their name, to what he and his council should require of them. Accordingly, writs were issued to about 120 cities and boroughs. "As it is a most equitable rule," says he in his preamble to this writ, "that what concerns all should be approved by all, and common dangers be repelled by united efforts;" a noble principle, which may seem to indicate, says Mr. Hume, a liberal mind in the king, and which laid the foundation of a free and an equitable government. The writs of the parliament immediately preceding remain; and the return of knights is there required, but not a word of the boroughs; a demonstration, according to Brady (of Boroughs), that this was the very year in which they commenced.

After the election of these deputies by the aldermen and common-council, they gave sureties for their attendance before the king and parliament; their charges were respectively borne by the borough which sent them; and they had so little idea of appearing as legislators,—a character so remote from their low rank and condition,—that no intelligence could be more disagreeable to any borough, than to find that they must elect, or to any individual, than that he was elected to a trust, from which no profit or honour could possibly be derived. Properly speaking, they did not compose any essential part of the parliament; they sat apart both from the barons and knights, who disdained to mix with such mean personages; and after they had given their consent to the taxes required of them, their business being then finished, they separated, even though the parliament still continued to sit and to transact the national business. As they were all real burgesses of the places from which they were sent, the sheriff, when he found no person of abilities or wealth sufficient for the office, often took the liberty of omitting particular boroughs in his returns; and as he received the thanks of the people for this indulgence, he gave no displeasure to the court, which levied on all the boroughs without distinction the tax agreed to by the majority of the deputies. It was not till the reign of Richard II. that the sheriffs were deprived of the power of omitting boroughs at pleasure. 5 Ric. II. cap. 4.

The union of the representatives from the boroughs gradually gave more weight to their whole order; and it became customary for them, in return for the supplies which they granted, to prefer petitions to the crown for the redress of any particular grievance, of which they found reason to complain. These petitions received the sanction of royal authority, and acquired validity, even without the consent

of the nobles. Afterwards, however, the house of peers, the most powerful order in the state, reasonably expected, that their assent should be expressly granted to all public ordinances; and in the reign of Henry V., the commons required that no laws should be framed merely upon their petitions, unless the statutes were worded by themselves, and had passed their house in the form of a bill. At this time, the commons were much below the rank of legislators; and throughout the reign of Edward I. their assent is not once expressed in any of the enacting clauses; nor in the reigns ensuing, till the 9th of Edward III. nor in any of the enacting clauses of 16 Ric. II. Nay even so low as Henry VI. from the beginning till the 8th of his reign, the assent of the commons is not once expressed in any enacting clause. Pref. to Ruffhead's edition of the statutes, p. 7. The commons were so little accustomed to transact public business, that they had no speaker till after the parliament 6th Edw. III.; and in the opinion of most antiquaries, not till the 1st of Richard II. The house of representatives from the counties was gradually separated from that of the peers, and formed a distinct order in the state. Nevertheless the knights of shires did not form the same house with the burgesses. But by degrees the growth of commerce augmented the private wealth and consideration of the burgesses; the frequent demands of the crown increased their public importance; and as they represented particular bodies of men, resembling in this respect the knights of shires, they were united together in the same house. Mr. Carte, after having carefully consulted the rolls of parliament, affirms (Hist. vol. ii. p. 451.), that they never appear to have been united till the 16th of Edward III. But this union does not seem to have been final; for, in 1372, the burgesses acted by themselves, and voted a tax after the knights were dismissed; and instances occur at later periods of their acting separately. The chief baron Gilbert (Hist. of the Exchequer, p. 37.), is of opinion, that the reason why taxes always began with the commons, or burgesses, was, that they were limited by the instructions of their boroughs. In the manner above stated, the third estate, or that of the commons, reached at last its present form; and as the country gentlemen made thenceforward no scruple of appearing as deputies from the boroughs, the distinction between the members was entirely lost, and the lower house thence acquired a great accession of weight and importance in the kingdom. Still, however, the office of this estate was very different from that which it has since exercised with so much advantage to the public. Instead of checking and controlling the authority of the king, they were naturally induced to adhere to him, as the great fountain of law and justice, and to support him against the power of the aristocracy, which was at once the source of oppression to themselves, and disturbed him in the execution of the laws. The king, in his turn, gave countenance to an order of men, so useful, and so little dangerous; the peers were also obliged to pay them some consideration; and thus the third estate, formerly so abject in England, as well as in all other European nations, rose by slow degrees to its present importance; and in its progress, made arts and commerce, the necessary attendants of liberty and equality, flourish in the kingdom.

In addition to what has been already advanced, Mr. Hume alleges a further evidence, that the commencement of the house of burgesses, who are the true commons, was not an affair of chance, but arose from the necessities of the present situation; viz. that Edward, at the very same time, summoned deputies from the inferior clergy, the first that ever met in England, and required them to impose taxes on their constituents for the public service.

On the other hand, it has been argued by the advocates of the higher antiquity of the commons, that if we look to the best accounts of the original customs of the ancient German nations, we shall find, that, in their communities, all the freeholders enjoyed an equal right with the nobles to assist in deliberations on affairs of great moment. See Tacitus de Moribus German. c. 25. Upon their first settlement in any foreign country, and while their number was small, this right might be exercised, without much inconvenience, by the whole body of the freeholders assembling together on open plains. To this purpose, Matthew of Westminster (Sub. Ann. 1213. Johan. 15.) intimates, that the Anglo-Saxons, after they came into Britain, exercised their right in this manner; for he says, that the meadow near Staines, in which king John granted the great charter, was called "Runemeed," denoting in the Saxon language the "meadow of counsel," because from ancient times it had been usual to consult there upon business which concerned the peace of the kingdom. But this custom had been disused under, and even before, the government of the Normans; perhaps from the time in which the Saxon heptarchy was united into one kingdom. The only instance that occurs of its having been revived is the meeting in the reign of king John; all the parliaments, or great councils, of which we have any account before, were held in churches, abbeys, or royal castles; and therefore, if the right of the freeholders continued, the greater part of them must have exercised it, not personally, as in ancient times, but by their representatives. By a record cited by Dr. Brady, so late as the fifteenth year of king John, it appears, that not only the greater barons, but all the inferior tenants in chief of the crown, had a right to be summoned to parliament by particular writs; and therefore we may conclude, that till that time, no representatives had been sent by any of these to serve for them in parliament; but they attended the great councils of the nation in their own persons: and their number was not so considerable, as not to allow of their being accommodated in the body of a church, or the great hall of an abbey or castle. But these were far from being all the freeholders of the kingdom; for this description comprehended all who held of the barons, either by knight-service, or free socage, and all the possessors of allodial estates, with all the free inhabitants of cities and boroughs not holding of the crown. The number of all these was too great to be contained in any building however spacious. But were these men either wholly excluded from parliament, or were they present there by any kind of representation? Some learned writers have supposed, that every superior lord, who held of the king immediately and in chief, gave an opinion on matters of government, which bound all his vassals. But if this were the case, the possessors of allodial estates, to which class we may refer all the parochial clergy, having no superior lord to act for them in parliament, could not be thus represented, or virtually bound by the acts of the king's barons, to whom they were not attached by any feudal connexion, and of whom they held nothing. Besides, the knights, citizens, and burgesses, who are now representatives of the commons of England, are elected by those for whom they serve; and on occasion of every new parliament, the electors are at liberty to make a new choice: whereas, the representatives, in the above hypothesis of sir H. Spelman, were neither elected, nor liable to be changed at any period of time, by those whom they represented; their right to sit in parliament not arising from any trust conferred by the people, but wholly from their tenures. It is also certain, that the feudal superiority was the same under the government of Henry III. as of William I., and continued so for some ages. If therefore the barons, and superior lords of

great fiefs, holden immediately of the crown, had, by virtue of the institutions of William I., been supposed to represent their vassals in parliament, and the notion then was, that every feudatory, holding by a mesne tenure, was bound by the parliamentary acts of his lord, how came that notion to be discarded in the 49th year of Henry III. or under the reign of his son, or at any time afterwards? A baron, who held of the crown, was to all intents and purposes the head of his vassals, in the reigns of Edward I. and Edward III., as much as in any of the preceding reigns. How happened it then, that the consent of these vassals to the making of laws, or any other act of moment to the public, was not still included in the vote of their lord? Why was it given, against the course of former proceedings, not by him, as their representative, but by knights of the shire, or by citizens, or by burgesses, chosen by the vassals? Some have referred this change, as we have above stated, to the earl of Leicester, in the 49th year of Henry III. But an existing record, it is said, demonstrates this date to be false. A writ of summons, directed to the sheriffs of Bedfordshire and Buckinghamshire, and requiring two knights to be sent for each of these counties, is extant in the close roll of the 38th year of Henry III. And there is also a clause in the great charter of the 9th of the same king (see Dr. Blackstone's edition of the charter, whereby it is declared, that, together with the spiritual and temporal lords, other inferior freeholders, *et omnes de regno*, by which words lord Lyttelton understands "the whole commonalty of the realm," granted to the king the fifteenth part of all their moveable goods, in return for the liberties acceded to them in that charter. "Nor," says his lordship (*ubi infra*), "can I discover in the history of those times any reason sufficient to render it probable, that so great an alteration should then have been made in the constitution of England." Such an alteration must have produced disputes, which would have been noticed by some of the numerous historians of that age. But the English history is altogether silent as to any disputes between the nobility and the people, on this account, from the earliest times of the Saxon government down to the reign of Charles I. Hence it may be reasonably presumed, that the right of the commons must have been incontestibly established by custom, and interwoven into the original frame of our government. It is hardly conceivable, that the admission of all the lower orders of freemen, or indeed of any large number, to the great council of the kingdom, and to a participation of the legislative power, to which they had no right before, should have been brought about, and yet pass unobserved by any writer who lived in that age. If we suppose, as some have done, that the sitting in parliament was at this time regarded only as a trouble and burden, the imposition of such a burden on orders of men, who had been before exempt from it, must have been on their part resisted and opposed. But from the act of the 4th of Edward III., which is thus worded, "It is accorded, that a parliament shall be holden every year once, and more often, if need be," we may infer, that it was generally regarded in a very different light, rather as a privilege, of which they earnestly desired the frequent enjoyment, than as a burden, from which they wished to be exempt. It is true, some boroughs, which, on account of their poverty, were unable to bear the expence of sending members to parliament, declined the exercise of that privilege; but it would be unfair to allege this circumstance, which occurred in particular instances, as an argument in favour of the general sense of the commons in counties, cities, or other more wealthy boroughs. Besides, there are some instances of boroughs that petitioned to be restored to the use of the privilege of sending members to parliament, after a very long interruption.

interruption. Moreover, it seems incredible, that if the whole legislative power had, before the reign of Henry III., been always placed in the nobility and the king, they should not have opposed the extension of it to so many persons of lower rank in the state: more especially as the power of the nobility was never higher than it was in this reign. With regard to the earl of Leicester, it was not his interest, while he was acting at the head of the nobles and people, in a very dangerous contest against the crown, to make any innovations offensive or distasteful to either of those bodies; nor is it probable, that any new institution, begun by that earl, should have been confirmed and perpetuated by Edward I. Among the close rolls of the 24th of this king, there is a writ of summons to parliament, already cited, in which it is asserted, not as an innovation introduced by the earl of Leicester, but "a maxim grounded on a most equitable law, established by the foresight and wisdom of sacred princes, that what concerns all, should be done with the approbation of all; and that dangers to the whole community, should be obviated by remedies provided by the whole community." If the earl of Leicester, or even if Edward I., or his father, had introduced the practice of summoning the commons to parliament, Edward could not with propriety have used this language. It is further alleged, that there is not in any of the oldest writs for sending up representatives from cities or boroughs the least intimation, that such elections were a novelty then introduced. Some writs are taken notice of by Mr. Tyrrel, an industrious searcher of records on this subject, which set forth a claim of certain tenants in ancient demesne, before the 15th year of Edward II., that they ought not to be charged with wages to knights of the shire; "forasmuch as they and their ancestors, tenants of the same manor, had, from time beyond memory, been always exempted, by custom, from the expences of knights, sent by the community of their county to the parliaments of the king, and of his royal progenitors." A time beyond memory is defined by our law-books to be a time antecedent to the beginning of the reign of Richard I.; and if no wages had been ever paid to knights of the shire till the reign of Henry III., it would have been preposterous for these persons to tell the grandson of that king, that they had enjoyed a customary privilege of not paying wages from time beyond memory, which must be supposed, when this exemption was claimed, to go much further back than the reign of Richard I.

With regard to cities and boroughs, there are likewise extant two claims, made in the reigns of Edward II. and Edward III., which seem to decide the sense of that age concerning the antiquity of the custom of citizens and burgesses coming to parliament, and from towns that were held under subjects, not immediately of the crown: These are the claims of the towns of St. Albans and Barnstable. In the petition of the borough of St. Albans, first taken notice of by Selden, and then by Petyt, Brady, Tyrrel, and others, and presented to parliament in the reign of Edward II., the petitioners assert, that though they held *in capite* of the crown, and owed only for all other service their attendance in parliament, yet the sheriff had omitted them in his writs; whereas, both in the reign of the king's father, and all his predecessors, they had always sent members. This expression, it is alleged, could not have been used, if the commencement of the house of commons were in the reign of Henry III. However, Madox, in his "History of the Exchequer," p. 522, &c. has endeavoured to destroy the authority of this petition for the purpose to which it is adduced. He asserts, first, that there was no such tenure in England, as that of holding by attendance in parliament, instead of all other service; and secondly, that the borough

of St. Albans never held of the crown at all, but was always demesne land of the abbot. It is no wonder, therefore, says Mr. Hume, that a petition, which advances two falsehoods, should contain one historical mistake, which indeed amounts only to an inaccurate and exaggerated expression; no strange matter in ignorant burgesses of that age, who wanted to shake off the authority of their abbot, and to hold of the king, without rendering any services even to the crown. See the discussion of this subject, and an examination of the reasoning of Madox and Dr. Brady, in Lyttelton's Hist. of Eng. vol. iii. p. 405, &c. The advocates for the antiquity of borough representatives further refer to a statute of the 5th year of Richard II. stat. 2. which enacts, "that all and singular persons and commonalties, which from henceforth shall have the summons of the parliament, shall come from henceforth to the parliaments in the manner as they are bound to do, and have been accustomed within the realm of England, of old times. And if any person of the same realm, which from henceforth shall have the said summons (be he archbishop, bishop, abbot, prior, duke, earl, baron, banneret, knight of the shire, citizen of city, burgess of borough, or other singular person or commonalty), do absent himself, &c. he shall be amerced, and otherwise punished, according as of old times hath been used to be done within the said realm in the said case." Upon this statute it is argued, that it makes no distinction between the antiquity of summons to parliament sent to the greater nobility, and those to citizens, burgesses, and knights of the shire. Besides this remarkable testimony of the whole legislature in the reign of Richard II. to the antiquity of the custom of the commons coming to the parliament, we have a petition of the commons in the second parliament of the reign of Henry V., which sets forth to that prince, "that as it hath ever been their libertie and freedom, that there should no statute nor law be made, unless they past thereto their assent, considering that the commune of your land, the which is and ever hath been a member of your parliament, be as well assenters as petitioners," &c. This claim was not disallowed either by the lords or the king. Besides these authorities drawn from statutes and records, it is said, that very evident indications of the presence of the people in the national councils, and of their being constituent parts thereof, though in a disorderly manner, are to be found in some ancient histories, and contemporary accounts of transactions in parliament, from the death of Edward the Confessor to that of Henry II. Several instances to this purpose, occurring in the reigns of William the Conqueror, William Rufus, Henry I., Stephen, Henry II., &c. are produced by lord Lyttelton, in the Notes to his History, vol. iii. p. 421, &c. We may further add, that the presence of the people in the Saxon councils, and their having had a share in the highest acts of legislature and government, even till the entrance of the Normans, seems to be proved very strongly from the preambles of laws and other proceedings of those councils, and from the words of the best historians who lived near to those times. On this long usage, says lord Lyttelton, their right was established; and it appears to have been continued under William the Conqueror, with other customs and rights confirmed by him to the nation, and under his successors, by like sanctions of ancient liberties granted in repeated royal charters. In ancient times, however, the property of the commons was so unequal to that of the nobles, and the feudal obligations of the inferior landholders to the lords under whom they held, created such a dependence of the former on the latter, that although, in the idea and scheme of the government, a popular power was mixed with the regal and aristocratical, yet, in reality, the scale of the people was not weighty enough

BOROUGH.

to make a proper counterpoise to either of the others. The commons usually declined to give their opinion or advice to the crown, in certain matters of state, and submitted their judgment respecting them to the king and his council, or to them and the lords. While the representatives of cities, towns, and boroughs, were chosen only out of persons resident in them, they were generally people of low degree and condition, whose education and way of life rendered them very unfit to judge of arduous questions concerning foreign affairs, and treaties with foreign states. Nevertheless, even in the earliest times, so far back as we have any rolls of the parliament, all the commons appear to have given their advice with great freedom in matters concerning the internal government and order of the kingdom. What they declined to advise in, upon some occasions, were questions that related to the making of peace or war. Mr. Hume, indeed, asserts, on the authority of a citation from sir Robert Cotton's abridgment of the records in the Tower, that the commons in these times were much below the rank of legislators, and that they were considered by the king merely as petitioners, or destitute of any proper legislative authority. But the whole passage, cited by Lord Lyttleton, seems to confirm, instead of denying their legislative authority. In the king's answer to their application, they are truly told, that the power of judicature does not appertain to them, but to the king and the lords; and this was the question to which their prayer related: but in statutes they were to judge, as well as in grants, subsidies, &c. Their being petitioners was certainly no argument against their being legislators; since the course of proceedings then was, that their petitions, if assented to by the lords and the king, should be turned into statutes, as all the old records of parliament unquestionably shew.

Burgesses were first admitted into the Scottish parliaments by Robert Bruce, A.D. 1296; and in the preamble to the laws of Robert III. they are ranked among the constituent members of that assembly. Brady of Boroughs. Petyt's Right of the Commons. Brady's Answer to Petyt. Tyrrel's Appendix to his History of England. Hume's Hist. of England, vol. i. and ii. Appendix i. and ii. Lyttleton's History of Henry II. vol. iii. Robertson's Hist. of Scotland, vol. i. p. 79. 8vo. See WITTENAGEMOTE, and PARLIAMENT.

Borough, in *Sens Law*, is a body corporate, consisting of the inhabitants of a certain tract of ground, erected by the sovereign, with jurisdiction annexed to it. Boroughs are erected, either to be holden of the sovereign himself, which is the general case of royal boroughs, or of the superior of the lands so erected, as boroughs of regality and barony. The former are empowered, by their charters, to choose annually certain office bearers, or magistrates; but in the latter, the nomination of magistrates is, by their charters, lodged sometimes in the inhabitants, sometimes in the superior. Bailiffs of boroughs have jurisdiction in matters of debt, service, and questions of possession betwixt the inhabitants. Their criminal jurisdiction comprehends petty riots, and reckless fire-raising. The dean of guild is that magistrate of a royal borough, who is head of the merchant company; to him belong the cognizance of mercantile causes within the borough, and the inspection of buildings, that they encroach neither on private property, nor on the public streets; and he may direct insufficient houses to be pulled down. His jurisdiction has no dependence on the court of the borough, or bailie-court.

Boroughs, Royal, in Scotland, are corporations made for the advantage of trade, by charters granted by several of the kings; and the parliaments of England commissioners to represent them, besides other peculiar privileges.

These form a body of themselves, and send commissioners, each to an annual convention at Edinburgh, to consult the benefit of trade, and the general interest of the boroughs. According to Chamberlayne, they have the sole power of trade and merchandize, exclusive of all others, a power of holding courts, exercising the jurisdiction of sheriffs, making bye laws, &c.

The company of merchants in a royal borough make what is called a guild; the chief of which is a dean of guild, who is next magistrate to the bailiff. See GUILD.

The royal boroughs are not only so many distinct corporations, but do also constitute one entire body, governed by, and accountable to one general court, anciently called the "court of four boroughs," held yearly to treat and determine concerning matters relating to the common advantage of all boroughs. The four boroughs which composed this court were Edinburgh, Stirling, Roxburgh, and Berwick; which two last falling into the hands of the English, Linlithgow and Lanerk were put in their places; with a saving to the former, whenever they should return to their allegiance. But this court not being sufficient to answer the necessities of the royal boroughs, they were all empowered, under James III. in 1487, to send commissioners to a yearly convention of their own, which was then appointed to be held at Inverkeithing, and is now held at Edinburgh, under the denomination of the *convention of boroughs*, vested with great power.

Borough-Courts, in *Law*, are certain courts held in boroughs, by prescription, charter, or act of parliament: such are the sheriff's court, and court of hushings in London. See COURT.

Borough-English, so named in contradistinction, as it were, to the Norman customs, and noticed by Glanvil (l. 7. c. 3.), and by Littleton (§ 165.), denotes a customary descent of lands or tenements in some ancient boroughs and copyhold manors, whereby they come to the youngest, instead of the eldest son; or if the owner hath no issue, to the youngest instead of the eldest brother; because according to Littleton, the youngest is supposed, in law, the least able to shift for himself. 1 Inst. 110. b. And in support of this reason, other usages in favour of the youngest are alleged, as that in Kent, where the lands being equally divided among all the sons, the youngest is to have the privilege of asire or hearth in the mansion-house, in his share, as being supposed the tenderest and more in need of warming. Others, notwithstanding, suspect a different reason for the rise of borough-English, viz. that the places, where this custom now obtains, were anciently liable to that custom granted to the lords of manors in Scotland by king Eugenius, who had the privilege of enjoying the first night of their tenants' brides; so that the eldest son being presumed to be the lord's, they usually settled their lands on the youngest son, whom they thought their own; which being practised a long time, grew at length into a custom. The custom, however, never obtained in England, though it did in Scotland, under the name of "mercheta," or "marcheta," till it was abolished by Malcolm III. Perhaps, says judge Blackstone, the origin of this practice may be illustrated by that of the Tartars, mentioned by Du-Halde, among whom the same custom of descent to the youngest son prevails. As the nation is composed of shepherds and herdsmen, the eldest sons migrate from their father with an allotment of cattle, to seek a new habitation. The youngest son, continuing latest with his father, is naturally the heir of his house; the rest being already provided for. This custom of migrating obtained in many other northern nations; and borough-English may be a remnant of that pastoral state of our British and Ger-

and ancestors, which Cæsar and Tacitus describe. Blackstone's Comm. vol. ii. p. 83, 84.

This custom goes with the land, and directs the descent to the youngest son, although there be a devise to the contrary. 2 Lev. 138. If a copyhold in borough-English be surrendered to the use of a person and his heirs, the right will descend to the youngest son, according to the custom. 1 Mod. 102. And a youngest son shall inherit an estate in tail, in borough-English. Noy. 106. But an heir at common law shall take advantage of a custom annexed to borough-English land; though the youngest son shall be entitled to all actions in right of the land. 1 Nelf. Abr. 396. And the eldest son shall have tythes arising from borough-English land; for tythes of common right are not inheritances descendible to an heir, but come in succession from one clergyman to another. Ibid. 347. Borough-English land being descendible to the youngest son, if a younger son dies without issue male, leaving a daughter, such daughter shall inherit "jure representationis." 1 Salk. 243. By this custom the widow shall have the whole of her husband's lands in dower, called her "free-bench;" and it is given to her to enable her the better to provide for the younger children entrusted to her care. Co. Litt. 33. 111. F.N.B. 150. Mo. Pl. 566. As borough-English is particularly noticed by the law, it is unnecessary to prove that such custom actually exists, but only that the lands in question are subject to it. 1 Comm. 76. But the extension of the custom to the collateral line must be specially pleaded. Robins. on Gavelkind, 38. 43-93.

BOROUGH-HEAD, or **HEAD-BOROUGH**, was one of the lowest magistrates among the Anglo-Saxons, and the chief man of the decennary, tithing, or free-burg, consisting of ten families; chosen by the rest to speak and act in their behalf. He is also called the tithing-man, and, in some countries, the borough-holder, bors-holder, or borough's-elder, being supposed the discreetest man in the borough, town, or tithing.

According to the institution of Alfred, every householder was answerable for the behaviour of his family and slaves, and even of his guests, if they lived above three days in his house; and ten neighbouring householders formed themselves into a corporation, under the name of a decennary, or tithing, of which the head-borough, or bors-holder (derived from the Saxon words *borb*, a surety, and *older*, a head or chief), was the president, and they were answerable for the conduct of each other. Every man was punished as an outlaw, who did not register himself in some tithing; nor could any one change his habitation, without a warrant or certificate from the bors-holder of the tithing to which he formerly belonged. When any person in any tithing was guilty of a crime, the bors-holder was summoned to answer for him; and if he were not willing to be surety for his appearance and his clearing himself, the criminal was committed to prison, and there detained till his trial. If he fled, either before or after finding sureties, the bors-holder and decennary became liable to inquiry, and were exposed to the penalties of the law. Thirty-one days were allowed them for producing the criminal: and if they did not find him within that time, the bors-holder, with two other members of the decennary, was obliged to appear, and, together with three chief members of the three neighbouring decennaries (making twelve in all), to swear that his decennary was free from all privy both of the crime committed, and of the escape of the criminal. If the bors-holder could not find such a number to answer for their innocence, the decennary was compelled by fine to make satisfaction to the king, according to the degree of the offence. The severity of this regulation was afterwards a little mitigated, and the oaths of all the members of the tithing to

which the criminal belonged, to the above effect, were admitted as a sufficient exculpation, provided that, at the same time, they promised, upon oath, to present him to justice, as soon as they could apprehend him. By this institution, every man was obliged, from his own interest, to keep a watchful eye over the conduct of his neighbours; and was in a manner surety for the behaviour of those who were placed under the division to which he belonged; and hence these decennaries received the name of frank-pledges. See **TITHING**.

In many parishes, head-borough also signifies a kind of head constable, where there are several chosen as his assistants, to serve warrants, &c. See **CONSTABLE**.

BOROUGH, or *Borge*, denotes a pledge or security for another's keeping the peace, and conforming to the laws. The word is Saxon, and is sometimes also written borough; in Latin writers, borgha and burgha.

BOROUGH-BREACH, *Borgi fraidura*, in *Ancient Law Writers*, denotes a breaking of the pledge or security given by the members of tithings for the behaviour of each other.

This is the same with what is otherwise called *borg-brege*, *borgh-brege*, *borg-breche*, and *borgi-fraidura*.

BOROUGH, *Law*, or *Borrocut*, in the law of Scotland, the same with what in England is called *binding to the peace*. In case of a contravention of law-boroughs, the surety or cautioner is equally liable with the principal for the penalty specified therein, the one-half to the king, and the other to the complainer.

BOROUGH-BRIDGE, in *Geography*, an ancient borough town of Yorkshire, in England, derives the latter part of its name from a handsome stone bridge over the river Ure. This place was formerly called *New-borough*; in contradistinction from *Aldborough* or *Old-borough*, a village about one mile distant. Each of these places has the privilege of sending two members to parliament; and as both are included in one parish, that parish has the singular power of returning four members. *Aldborough* first made a return in 1558, and *New-borough* in 1553. The former place is attributed, by many respectable writers, to Roman origin, and is said to be the station *Ifurium*, which was placed on the Watling-street, 17 miles from *Eboracum*, or *York*. The ancient walls of this town (*Ifurium*), observes Mr. Gough, though level with the ground, may easily be traced in a circumference of more than a mile and a half. They inclose an area of an oblong square, containing about 60 acres, which slope to the river Ure. The walls, nearly four yards thick, were founded on large pebbles, which were laid in a bed of blue clay. Near the centre of the station was a hillock, called *Borough-hill*, which seems to have been the citadel, where foundations of buildings, mosaic pavements, &c. have been discovered. A sudatory, with sculptured altars, numerous coins, urns, and other relics of the Romans have been found at this station, which was evidently of much consequence in Roman Britain, although probably subordinate to the great one at *Eboracum*. It is generally written *Ifurium Brigantum*, whence *Horsley* infers that it was the capital of the Brigantes. A particular account of the antiquities found here, with engravings, may be seen in Gough's edition of Camden, vol. iii. p. 59, &c. and a very judicious account in Hargrave's *History of Knareborough*, fifth edition, 12mo. 1798.

Borough-bridge is only a small town, with 114 houses and 680 inhabitants. It belongs to the parish of *Aldborough*, and has a chapel of ease to the mother church. In the centre of the town is a cross, or obelisk, about twelve feet high, of the same species of stone as the *Devil's Arrows*, which are at a short distance west of the town. These singular stones have excited much curiosity among antiquaries, and furnished a theme for various conjectural dissertations.

There were formerly four stones, raised upright in the ground, but one of them was demolished in the last century. The remaining three stand about two hundred feet from each other, are of an obeliskal shape, and of a stupendous size. The tops seem as if split, and the sides are indented, or furrowed, for a certain space downwards. This appearance induced some writers to assert that they were fluted by art; but it is more probable that the weather effected this operation. The height of the tallest stone is twenty-two feet and a half from the ground, and its greatest circumference sixteen feet. Its depth in the ground is four feet and a half. Another stone measures twenty-one feet high, by seventeen feet in girth; and the third stone is seventeen feet high, by twenty-two feet in circumference. Mr. Drake (in his history of York) supposes they were trophies raised by the Romans; Leland is of the same opinion; but Dr. Gale conjectures, that they were Herms, and from their particular position pointed to four different Roman roads that met at this place. Doctors Plott and Stukely attribute them to the Britons, and this seems the more probable, as we are well assured that the primeval inhabitants of Britain raised various single upright stones, and different circles of stones of varied diameter and magnitude. These, says Mr. Pennant, were either monumental memorials of departed heroes, or the rude objects of worship, such as the Israelites bowed to, when they departed from the purity of adoration. Such objects are styled in Wales *Meini-hirion*, or the long stones, and *Meinigwyr*, or the ambrosial stones, as described by Bryant and others.

The river Ure is not navigable higher than Borough-bridge, near which the canal from Ripon communicates with it by means of a lock. About two miles and a half below the town, the river Swale joins the Ure. Borough-bridge, Aldborough, and the manor, honour, and castle of Knaresborough were, in the 13th of Henry III. granted to the favourite Hubert de Burgh, upon his paying 100l. a year into the exchequer, but were forfeited by his son in the same reign for joining Simon de Montfort at the battle of Evesham. Borough-bridge remained in the crown till the reign of Edward II. who bestowed it on his insolent favourite Piers Gaveston. It now belongs, with the interest of the two boroughs, to the duke of Newcastle. Near this place, in 1322, a battle was fought between the soldiers of Edward II. and prince Thomas, earl of Lancaster, when the latter was taken prisoner, and, after suffering various indignities, was beheaded. Most of his partizans were taken, and some were slain; among whom was John de Bohun, earl of Hereford, who, in passing over the wooden bridge of this place, was killed by a lance from a soldier lurking beneath the bridge.

This town has a weekly market on Saturdays, and several fairs annually; the principal of which, in June, continues for a week, and is much frequented by the manufacturers from Sheffield, Birmingham, Wolverhampton, &c. Hargrave's History of Knaresborough. Gough's edition of Camden's Britannia. Pennant's Tour from Alton Moor to Harrogate, 4to. 1804.

BOROVITCHI, a town and district of Russia, in the government of Novogorod, situated on the river Mita; 58 miles E. S. E. of Novogorod, and 168 S. E. of Petersburg.

BOROWA, a town of Bohemia, in the circle of Czaflau, 8 miles E. N. E. of Teutsch Brod.

BOROWICA, a town of Poland, in the palatinate of Volhynia; 20 miles N. of Lucko.

BOROWICK, a town of Poland, in the palatinate of Kiou, 32 miles S. E. of Czerkasy.

BOROWNIZA, a town of Bohemia, in the circle of Koniggratz, 18 miles S. E. of Koniggratz.

BOROWSKO, a town of Bohemia, in the circle of Czaflau; 7 miles W. of Ledetsch.

BOROZAIL, in *Medicine*, a disease which resembles the yaws, frequent among the Africans inhabiting the banks of the river Senegal. See *Yaws*.

BOROZDINKA, in *Geography*, a fortress of Russian Tartary, in the government of Caucasus, on the Ural; 32 miles N. of Guriel.

BORRAGO, in *Botany*. See *BORAGO*.

BORRELISTS, in *Ecclesiastical History*, a sect or sort of Anabaptists in Holland, who allow of no use of sacraments, public prayers, or other external worship, nor of any human gloss or explication of scripture; but profess to adhere to the faith and manners of the New Testament times in all their simplicity.

They took their denomination from their founder, Borrel, a person of great learning in the Hebrew, Greek, and Latin tongues, and brother of M. Borrel, ambassador of the States to the French king.

BORRI, JOSEPH FRANCIS, in Latin *Burrhus*, in *Biography*, an impostor and empiric of the 17th century, was born at Milan, about the year 1625, and educated in the Jesuits' seminary at Rome. In early life he was notorious for his licentious conduct; but afterwards assuming the character of a religious devotee, he declaimed against the corruption of the age, and pretended to supernatural visions and revelations. Dreading the powers of the inquisition at Rome, he removed to Milan, where he established a new sect, consisting of persons whom he attached to himself and his cause by vows of secrecy, and whom he deprived of their property by enforcing the obligation of voluntary poverty. With the assistance of his deluded followers, and by means of a sword which he pretended to have received from heaven, he proposed to compel all mankind to unite in one sheep-fold, of which he was to be the shepherd and superintendent. Among his other fancies and chimeras, one of his most distinguishing doctrines was that of the deification of the virgin Mary, whom he conceived to be the only daughter of God, and the Holy Ghost incarnate. Arrogating to himself a divine mission, he assumed the privilege of conveying illumination to his followers by the imposition of hands; and after gaining a sufficient number of adherents, it was his intention to open his commission at the great square of Milan, and there to inveigh against the civil and ecclesiastical abuses of government, to animate the people to recover their liberty, and to seize the city and its territories, with a view to more extensive conquests and dominions. As soon as some of his disciples were arrested and imprisoned, he made his escape; and the inquisition proceeding against him, declared him contumacious, condemned him as a heretic, and caused his effigies to be publicly burnt at Rome. At this time, viz. in 1661, he sought an asylum at Amsterdam, and here he found a convenient theatre for the further exercise of his impostures. Having assumed the characters of a chemist and a physician, he pretended to extraordinary skill in the cure of all kinds of distempers, set up a splendid equipage, and usurped the title of excellence. But when his credit sunk, and his resources derived from the art of swindling failed, he fled from Amsterdam in the night, taking with him all the money and jewels he could collect, and removed to Hamburgh, where he imposed upon queen Christina, by pretending to the secret of the philosopher's stone; but when her means of encouraging this delusion failed, he removed to Denmark, and obtained from the king profuse supplies. Upon the death of the king, he thought it most prudent to make his escape, and in his flight towards Turkey, he was apprehended on the German frontier by mistake, as a political criminal. His

name being accidentally mentioned to the emperor in the presence of the pope's nuncio, he was demanded as an heretical offender, and delivered up by the emperor on condition that his life should be preserved. Upon his arrival at Rome, he was sentenced to abjure his errors, to do public penance, and to be imprisoned for life. In prison he was visited by several persons of rank, who resorted to him in consequence of the fame of his adventures; and having performed a cure on the duke d'Etrée, the French ambassador, who had been given over by several physicians, he obtained some degree of liberty, and at length a removal to the castle of St. Angelo, where he was allowed to prosecute his chemical experiments, and where he died in 1695. Some writings were attributed to him, and printed at Geneva in 1681; one, entitled "*La Chieve del Gabinetto*," i. e. the key of the cabinet, being a series of letters relative to alchemy and the Rosicrucian philosophy; and the other, "*Istruzioni Politiche*," or a set of political aphorisms, with a commentary addressed to the king of Denmark. The *Bibliotheca Medicorum* mentions also two of his letters, printed at Copenhagen in 1669, and written to Bartholine; one, "*De ortu cerebri et usu medico*;" the other, "*De artificio oculorum humores restituendi*." König attributes to him another piece, entitled "*Notitia gentis Burrhorum*."

Borri combined a considerable portion of cunning and artifice with his enthusiasm, and thus became capable of practising more successfully on the credulity of mankind. His fancies with regard to the new celestial kingdom, which he pretended a commission to establish, and the downfall of the Roman pontiff, which he threatened to accomplish, are so extravagant, childish, and absurd, that they can be viewed by sober persons in no other light than as the crude reveries of a disordered brain. In his conduct he manifested, on various occasions, the greatest vanity and levity, accompanying that spirit of imposture which is usually displayed by quacks and mountebanks; and, indeed, says Mosheim, "in the whole of his behaviour, he seemed destitute of sense, integrity, and prudence." *Gen. Dict.* Mosheim's *Ecl. Hist.* vol. v. p. 240.

BORRIANO, in *Geography*, a town of Spain, at the mouth of the river Millas, in the gulf of Valencia; 7 leagues N. of Valencia.

BORRICHIOUS, OLAUS, in *Biography*, the son of a Lutheran minister at Ripen in Jutland, was born April 6th 1626. At the age of 18 he was sent to Copenhagen, where he applied with so much assiduity to his studies, as to gain him the friendship of the superiors of the college, by the recommendation of whom he obtained the canonry of Lunden. By continuing this course of life, his reputation for learning and diligence was so established, that in 1654, when he was only 28 years of age, he was invited to accept the regency of the academy at Herlow. But as he had determined to dedicate his time to the acquirement of the knowledge of medicine, he refused this offer, purposing to spend a few years in visiting foreign academies, and hearing the most celebrated professors in the different branches of that art. The execution of this project was, however, postponed, at the instigation of M. Gerstorff, the prime minister of Denmark, who entertained him at his house as preceptor to his sons. Here he continued five years, at the end of which time, as a proof of the satisfaction he had given, and of the opinion the minister had conceived of his various endowments, he was at once created professor in philosophy, poetry, chemistry, and botany, in all of which he eminently excelled. Before he entered on the duties of his offices, he was permitted, agreeably to his original intention, to visit the different schools of Holland, England, France, Germany, and Italy,

accompanied by the two sons of the minister, his pupils. Having spent six years in his tour, and stored his mind with the knowledge of all that was curious or useful, in the countries he passed through, and taken his degree of doctor in medicine at Angers, he returned in October 1666 to Copenhagen. He now undertook the duty of lecturer in chemistry and in botany; and by the excellency of his discourses on these subjects, confirmed his countrymen in the high opinion they had entertained of his talents. Though the time necessarily spent in this employment, and in preparing his numerous publications, left him, one would have thought, but little leisure for the practice of physic, yet from the great number of valuable observations furnished by him to the *Acta Hassniensia*, he must have had no inconsiderable share of business in that way. In 1686, he was made counsellor in the superior court of justice; and, in 1689, counsellor in the royal chancery. He died the 3d of October, in the following year, three weeks after having undergone the operation for the stone in the bladder. As Borrichius had never been married, he left a considerable part of the large possessions he had acquired by his practice, for erecting and endowing a college for poor students in medicine. His principal medical productions consist of observations published in the *Acta Hassniensia*, and other similar collections, and of the letters sent by him while on his travels, to F. Bartholine, under whom he had been educated. The letters, Haller observes, are the most valuable of those published by Bartholine in his "*Epistolæ Medicæ*;" but the works by which he acquired his principal celebrity, were "*De ortu et progressu chemiæ*," published in 1668, 4to.; and his "*Hermetis Ægyptiorum et Chemicorum sapientia, ab H. Conringio vindicata*," 1674. In this very learned and elaborate work, the author defends the character of the ancient Egyptians, against the strictures of Conringius: attributing to them the invention and perfection of chemistry, and even of alchemy; persuading himself that among their secrets they possessed the art of transmuting metals. But either from infatuation, or a desire of victory, he cites several manuscripts, since known to be spurious, as genuine, and some written since the time of our Saviour, as of much higher antiquity. Notwithstanding these blemishes, the works have great merit. He shews from undoubted authority, that the Egyptians were early acquainted with the medical properties of several of their plants; that they used saline, and even mineral preparations, some of them prepared by chemistry; that incubation, or the method of hatching eggs by artificial heat, was first used by them; in fine, that the art of medicine, invented by them, passed from them to the Grecians. Borrichius was also author of "*Conspectus præstantiorum scriptorum linguæ Latinæ*;" "*Cogitationes de variis linguæ Latinæ ætatibus*;" "*Analecta philologica, et judicium de lexicis Latinis Græcisque*," and various other philological works. *Eloy. Dict. Hist. Gen. Dict.* and Haller's *Bib. Med. Pract.* where will be found the titles of the dissertations, and an analysis of the principal works.

BORROMEAN ISLANDS, in *Geography*, two islands situate in the bay of the lake called "*Lago Maggiore*," or "*Lago di Locarno*," in the Milanese, so denominated from their having belonged to the Borromeo family. One of these islands is called "*Isola-Bella*," and the other "*Isola-Madre*." They are about a league distant from one another, and derive the various beautiful scenes and objects which they present from the taste and liberality of the counts Renatus and Vitalian Borromeo. They were originally barren rocks; but, with immense labour and expence, they were furnished with numerous terraces, grottoes, gardens,

dans, fountains, groves of cedars, cypresses, citron trees, orange-trees, laurel, &c. which render them scenes of enchantment, and a kind of terrestrial paradises. For a particular description of them, see Keyser's Travels, vol. i. p. 374, &c.

BORROMEO, CHARLES, Cardinal, in *Biography*, the son of count Gilbert Borromeo, and a sister of pope Pius IV. was born at the castle of Arona, in 1538; and having made a considerable progress in literature, he was called to Rome on the accession of his uncle to the papal chair in 1559, and invested with the dignities of cardinal-nephew, archbishop of Milan, and penitentiary, legate of Ancona, Bologna, and Romagna, and protector of several crowns and religious orders. At the age of 22, he was entrusted with the government of the most important affairs of the church: and he principally contributed to that encouragement of literature and patronage of learned men which distinguished this pontificate. He instituted at his house an academy, to which all the learned men at Rome repaired, when the business of the day was concluded, to discuss literary questions, and particularly such as related to sacred subjects. The works of this society have been published in several volumes, under the title of "Noctes Vaticane," so denominated because its assemblies were held at night in the Vatican. In conformity to the directions of his uncle, he began his public career with great magnificence and splendour, more anxious to do honour to the pope and the rank assigned him by his favour, than to gratify his own inclinations; but when the council of Trent issued its decrees for the reformation of clerical manners, he set an example of obedience by dismissing at once 80 domestics, discarding silk from his dress, and fasting once every week on bread and water. In co-operation with the designs of the council, he exerted himself in promoting a better education among the clergy; and with this view he instituted a number of seminaries in his own diocese, and in other places. He founded the Jesuits' college at Milan, and was eminently instrumental in erecting a magnificent edifice for the university of Bologna. He took pains in correcting the writings of some doctors of the church, which had been corrupted, and employed Achilles Statius for this purpose; and he was also active in establishing the congregation of eight cardinals, for resolving doubts and obviating difficulties that might arise in the explication of the decrees of the council of Trent. Although he was urged by his parents, and even by the pope, to prevent his family from becoming extinct by entering into a married state, he preferred continuing in the church; and notwithstanding many impediments arising from ill health, a weak voice, and defective articulation, he determined to become a preacher, and by assiduous and persevering application overcame all difficulties. After the death of his uncle, he removed to his archbishopric, and devoted himself to the duties of his pastoral office, which he performed with great honour to himself, and very much to the satisfaction and edification of the people. He took great pains in the reformation of religious orders, and in administering consolation to the remotest parts of his diocese. During the plague, which afflicted the city and diocese of Milan in 1576, he continued in the scene of danger, by his presence imparted comfort to the sick and dying, and sold his goods in order to furnish himself with means for relieving their indigence and distress. He also convened provincial councils and synods, and obtained their sanction in enacting and enforcing various useful regulations for the government of the church. His incessant labours and austerities impaired his feeble constitution, and terminated his course of active and exemplary service at the early age of 47 years, in 1584; and pope Paul V. bestowed

upon him, in 1610, the honours of canonization. Few saints in the calendar better deserved this distinction. Borromeo's writings on subjects of faith and morals were numerous; they were collected in 5 vols. fol. and printed at Milan in 1727. His "Acta Ecclesiae Mediolanensis" was published in folio, in 1519. *Moreri. Nouv. Dict. Hist. Fabr. Bib. Græc.* t. xi. p. 718. The life of Borromeo was published by Pere Touron, in 3 vols. 12mo. Paris. 1761.

BORROMINI, FRANCIS, an Italian architect, was born in 1599, at Bissola, in the diocese of Como, and studied sculpture first at Milan, and afterwards at Rome. Under the patronage of Maderno, his relation, who was the architect of St. Peter's, he directed his principal attention to architecture; and upon the death of Maderno in 1629, he worked under his successor Bernini; and protected by pope Urban VIII. he was employed about the church of Sapienza and the Barberini palaces. At length he became the rival of Bernini; and acquired such a degree of reputation, that the king of Spain engaged him to furnish a design for the enlargement of his palace at Rome; and though it was never executed, he received a liberal recompence in money, and was honoured with the order of St. James. The pope also bestowed upon him the order of Christ, and a pension. In this career of prosperity, the extravagance of his taste incurred the censure of several critics; and he was charged, by Bernini, with corrupting the sound principles of the art. The clamour against him prevailed, and his rival obtained the direction of a building for which he had prepared the designs; upon which he retired in disgust into Lombardy. On his return, he employed himself in preparing a set of grotesques for engraving; but the mortification he experienced preyed upon his spirits, and produced occasional derangement of mind; and in one of his paroxysms, he seized a sword and gave himself a mortal wound, in his 63d year. Borromini affected singularity, and indulged a capricious and fantastic taste in his designs and decorations, which was utterly inconsistent with simplicity and propriety. Accordingly some have represented his style in architecture as resembling the literary style of Seneca, and of the poet Marino. Vain of his own imagined superiority, and jealous of his brethren, he declined to concur with them; and before his death, destroyed all his designs, left any other architect should pass them off as his own. His best-work, among many performances, in churches and palaces at Rome, which blend striking beauties with singularity, is accounted to be the college of the Propaganda. The oratory of the Chiesa Nova, and the house of the fathers are also admired. *D'Argenville. Gen. Biog.*

BORROWDALE, in *Geography*, a picturesque district of Cumberland, near Keswick, south of Derwent-lake, commencing at the cataract of Lowdore, and spreading its tremendous rocks in a vast sweep round the head of the lake, at the distance of about half a mile from the shore, which is bounded by meadow-land to the brink of the water. The aspect of these rocks, with the fragments that have rolled from their summits, and which lie on each side of the road, prepare the curious traveller for the awful ruin to which he approaches in the gorge or pass of Borrowdale, that opens from the centre of the amphitheatre, which bounds the head of Derwent-water. Dark rocks yawn at its entrance, and disclose a narrow pass, running up between mountains of granite, that are shivered into almost every possible form of horror. Above, the whole scene resembles the accumulations of an earthquake or volcanic eruption, splintered, shivered, and amassed in piles over one another. Huge cliffs have rolled down into the glen below, where, however, remains a miniature of the most delightful pastoral

beauty on the banks of the river Derwent. Among the most striking of the fells are Glaramara, exhibiting rock upon rock, and Eagle-crag, where that bird till of late has been accustomed to build its nest: but the depredations annually committed on its young, have driven it from the place. Hence the pass extends for a mile over a frightful road, that climbs among the crags of a precipice that hangs over the river, with frequent glimpses into glens and chasms, seemingly obstructing further progress by fallen slivers of rock, and at length reaching the gigantic stone of Boulder, that appears to have been pitched into the ground from the summit of a neighbouring fell, and in its shape resembles the roof of a house reversed, the side towards the road projecting about 12 feet over the base. The dimensions of this huge mass are as follow: its length is 62 feet, its perpendicular altitude 36 feet, its circumference 89 feet, and it contains 23090 solid feet; its weight is 1771 tons 13 hundred. The returning traveller is presented with an opening view over the Derwent lake of the Skiddaw-mountain, and the upper slopes of Saddleback obliquely seen towards the east, and rearing itself far above all the heights of the eastern shore. At the entrance of the gorge, the village or hamlet of Grange lies picturesquely on the bank of the Derwent, among meadows and woods, and shelters itself under the ruinous fell, called Castle-crag, deriving its name from the castle or fortress, which from its summit once guarded this important pass. Borrowdale abounds in valuable mines, among which some are known to supply the finest wadd, or black lead to be found in England. These mountains also furnish great quantities of iron-stone, slate, and various kinds of fire-stone. Radeliffe's Journey in 1794, vol. ii. p. 350, &c.

BORROWSTONNESS, or **BOWNESS**, a town of Scotland, in the county of Linlithgow, having a harbour on the south side of the frith of Forth, and surrounded with coal-pits and salt-works, which produce the principal exports of the place. It has a good pier and harbour of late construction: 15 miles W. of Leith and 4 N. of Linlithgow.

BORSALO, or **BURSAL**, a town and kingdom of Africa, in Negroland, not far from the sea-coast, and extending along the northern bank of the river Gambra, as far as Tantagonda. The town of this name is in the middle of the country, about 45 leagues from the coast. In the country which is little known, there is a river of the same name.

BORSELLA, in the *Glass Works*, an instrument where-with they extend or contract the glasses at pleasure; also smooth and levigate them.

BORSEHOLDER. See **BOROUGH**, *Head*.

BORSET, in *Geography*, an abbey about half a league from Aix-la-Chapelle, celebrated for its mineral waters, of the same general quality with those of Aix-la-Chapelle, and recommended as warm baths in similar diseases, and also in dropical and oedematous cases. They consist of the upper and lower springs; those of the former, which supply the baths, raising the thermometer to 158°, and those of the latter to 127°. They are less sulphurous than those of Aix-la-Chapelle; and abound much with selenites, which incrusts the pipe through which they pass; and also the sides of the bath.

BORSIPPA, or **BARSITA**, in *Ancient Geography*, *Semanat*, a town of Babylonia, according to Josephus and Strabo; represented by the latter as consecrated to Diana and Apollo, and placed by M. d'Anville on the eastern bank of the Euphrates, about the 32d degree of latitude.

BORSK, in *Geography*, a town and district of Russia, in the government of Upha, seated on the river Bielaya. N. lat. 55° 20'. E. long. 55° 15'.

BORSNA, or **BORZNA**, a town and district of Russia, in the government of Tchernigof, seated on a rivulet of the same name, falling into the Desna; 5 miles S. E. of Tchernigof, and 548 S. of Petersburg.

BORSOD, a town of Hungary, and the capital of a country of the same name; inhabited by Hungarians, Slavonians, Bohemians, and Germans, and furnishing good wine and grain.

BORSOE, a small island of Denmark, 2 leagues N. E. from Apenrade, on the east coast of Sleswick.

BORSTEL, a town of Germany, in the circle of Westphalia, and bishopric of Osnabruck, 8 miles N. of Furstenau. —Also, a town of Germany, in the duchy of Holstein, 14 miles S. E. of Bramstede.

BORSTLING, in *Ichthyology*, synonymous with barbling, or barschling, the common perch, *perca fluviatilis*. See *Marfigl. Danub.*

BORSUC, in *Zoology*, the name of the badger, *ursus meles*, in Poland. The same animal also bears the names of *jazewice*, *koluszki*, and *zlik*, in that country.

BORSZEJOWKA, in *Geography*, a town of Poland, in the palatinate of Kiow; 10 miles W. of Kiow.

BORT, a town of France, in the department of the Correze, and chief place of a canton, in the district of Ussel. The place contains 1792, and the canton 6563 inhabitants: the territory comprehends 140 kilometres, and 10 communes: distant 4 leagues S. E. from Ussel.

BORTHWICK, in *Topography*, a parish and village in the county of Edinburgh, Scotland, is noted in the historic page for a magnificent castle which was built here by William I. lord Borthwick, about the year 1430. In its complete state it was very extensive, and considered almost impregnable, but Oliver Cromwell laid siege to it in 1650, and forced the garrison to surrender. "It is seated," observes Mr. Pennant, "on a knoll, in the midst of a pretty vale, bounded by hills, covered with corn and woods; a most picturesque scene. It consists of a vast square tower, 90 feet high, with square and round bastions at equal distances from its base. The state rooms are on the first story, once accessible by a draw-bridge. Some of the apartments were very large; the hall 40 feet long, and had its music gallery; the roof lofty, and once adorned with paintings. This place was once the property of the earl of Bothwell, who, a little before the battle of Carbury hill, took refuge here with his fair consort." The parish contains 200 houses, and 668 inhabitants. Pennant's Tour in Scotland, 4to. vol. iii.

BORTZUTIM, a town of Transylvania, 12 miles N. of Clausenburgh.

BORUA, a town of Portugal, in the province of Alentejo, 2 leagues from Villa Viciosa.

BORVIASIA, a town of Russian Tartary, on the north side of the Don, 64 miles E. N. E. of Azof.

BORYSOW, a town of Lithuania, in the palatinate of Minsk, seated on the river Berezyna, 36 miles E. N. E. of Minsk. N. lat. 54°. E. long. 29° 5'.

BORYSTHENES, in *Ancient Geography*, a river of European Sarmatia, forming almost the whole western boundary of Sarmatic Scythia. Its name is said to be derived from the language of the Sclavi or Slaves, who, in their migration, blended themselves with the Scythians. It signifies "a rampart formed by a forest of pines," being derived from *bor*, a forest of pines, and *stena*, a wall. As a confirmation of this etymology, it is alleged that the shores of the Borysthenes are covered with forests of pines. Mela, deducing his description of this river from Herodotus, (l. iv. § 53.) represents it as flowing through a country of the same

same, and as the most pleasant river of Scythia, more gentle in its course than any other, and affording water more agreeable to drink. He adds, that it enriched many pleasant pastures, and that it supplied very large fishes without bones. It flowed from distant and unknown springs, which lay, according to Ammianus, (l. xxii. c. 18.) in the mountains of the Neus, and was navigable through a course of 40 days' sailing; and in this interval received many large rivers. After its junction with the Hypanis, it discharged itself into the northern part of the Euxine sea. It is now called *Dnieper* or *Ni per*, which see.—Also, a town of European Sarmatia. Stephanus Byz. represents it as a Greek city, being a colony of Milesians, seated near the mouth of the river of the same name. By some it was called Boryllhenes, by its inhabitants *Olbia*, and by Pliny *Miletopolis*: probably the same that is now denominated *Ozakow*, which see.

BORYZA, a city of Pontus. Steph. Byz.

BORZA, in *Geography*, a town of Persia, in the province of Aiderbeizan, 80 miles S. of Tauris.

BORZINSKOI, a town of Siberia, on the Argun; 144 miles S. E. of Nerchinsk.

BOS, in *Antiquity*, was peculiarly used for an ancient Greek silver coin, which was *didrachmus*, or equivalent to two drachms.

Bos, LAMBERT, in *Biography*, an eminent philologist, was born at Worcum, in Holland, in 1360, and became Greek professor at Fraecker, in the exercise of which office he acquired great reputation, and where he died in 1717. His profound erudition is honourably mentioned by several writers, and particularly by Fabricius, and by Hemsterhusius in his oration "De linguæ Græcæ præstantia." His treatise on the Greek ellipsis is held in high estimation by grammarians. His other principal works are, "A new edition, with additions, of the Greek grammar of Vilerus;" "an edition of the Septuagint, with prolegomena and various readings," 2 vols. 4to. Franck. 1709; "Thomæ Magistri eclogæ cum notis;" "Exercitationes Philologicæ, quibus Novi Fœderis loca nonnulla illustrantur," 1700 and 1713, 8vo.; "Mysterii Elliptici Græcæ expositi specimen;" "Antiquitatum Græcarum descriptio;" and "Animadversiones ad scriptores quosdam Græcos." Nouv. Dict. Hist.

Bos, JOHN BAPTIST DU, the son of a considerable merchant and magistrate of Beauvais, in France, was born at that place in 1670, and finished his studies at the Sorbonne. He afterwards became a distinguished writer, and a member of the French academy. In 1695 he was one of the committee for foreign affairs under Mr. Torey, and was afterwards charged with some important transactions in Germany, Italy, England, and Holland. After his return to Paris, he was made an abbé, and had a pension. He was also chosen perpetual secretary of the French academy; and in this situation he died at Paris, March 23, 1742. His principal works are, "Critical reflections upon poetry and painting;" of which the best edition is that of Paris, 1740, 3 vols. 12mo.; "A critical history of the establishment of the French monarchy among the Gauls," of which the best editions are those of 1743, in 2 vols. 4to. and in 4 vols. 12mo.; "The interests of England ill understood in the present war," 1714; "The history of the four Gordians, confirmed and illustrated by medals;" and "The history of the league of Cambray, formed in 1708, against the republic of Venice," of which the best edition is that of 1728, in 2 vols. 12mo.

Bos, or BOSCHE, JEROM, an ancient painter, and engraver, was born at Bois-le-Duc, and took pleasure in painting devils, witches, and enchantments. His pictures, distinguished by the freedom of his touch, and the strength of

his colouring, are held in high estimation, though, from the nature of the subjects which he selected, they excite a degree of horror blended with admiration. The most remarkable painting of this master, among several others of a similar kind, in which he indulges a wildness of imagination, is an allegory of the pleasures of the flesh; representing the principal figure, drawn by monstrous imaginary forms, preceded by demons, and followed by death. He was also an engraver, and the first artist who attempted to engrave in the grotesque style; and he is said to have been more distinguished by fertility of invention than by a correct judgment. The two plates, most deserving of mention, are one representing "St. Christopher," carrying the infant Jesus across the water and bending under his load; on the left is a hermit, coming from his cell with a lantern, and the whole composition is surrounded with small grotesque figures of all shapes, in the most ridiculous attitudes; and another is the "Last judgment," in which Christ appears seated on a rainbow, with two angels on each side and sounding trumpets, having on their labels this inscription, "Hic est dies quem fecit; surgite mortui, venite ad judicium;" and at the bottom are small figures of men and devils of all shapes intermixed. To both these prints is affixed his name, "Bosche." He died in 1500. Pilkington and Strutt.

Bos, LEWIS JANSSEN, or JOHN LEWIS DE, a painter, was born at Bois-le-Duc, and having received instructions in painting from the artists of his native city, he applied himself to study after nature, and became eminent for the truth of his colouring, and the neatness of his handling. His favourite subjects were flowers and curious plants, which he grouped in vases of glass or crystal, half filled with water, and to which he gave a peculiarly natural and pleasing appearance. He also exhibited on the leaves of his subjects the drops of dew with singular transparency, and embellished them with butterflies, bees, wasps, and other insects, in a manner superior to that of any co-temporary artists. In the style of his portraits he was no less excellent than in his composition of still life. He died in 1507. Pilkington.

Bos, in *Zoology*, the Ox, a genus of animals in which the horns are concave, or hollow, turned outwards, lunated and smooth; front teeth in the lower jaw eight; canine teeth or tusks none.

There are but few species of this tribe that appear to be really distinct; but the number of varieties into which they are divided, arising from the differences of climate, domestication, and other causes, are endless. They are a most valuable race of animals to mankind, their flesh and milk affording excellent nutritious food: they are useful as beasts of burthen; and their hides serve many domestic purposes. The species are TAURUS, or the common ox, which comprehends the varieties of *ferus* and *domesticus*, *Americanus*, *moschatus*, *grunniens*, *bubulus*, *caffer*; according to Gmelin. To these are added, by later writers, the *Bos arnee* of Kerr: the *Baas* of the Cape; with the *Dwarf fox* of Africa, under the names of *Bos barbatus*, and *pumilus*; which see.

Bos strepticerus, Aldrovandus. See STREPSICEROS bos.

BOSIA, in *Geography*, a maritime and episcopal town of Sardinia, situate on the western coast of the island, near a river of the same name. It is defended by a castle, and has a good fort; distant 18 miles S. S. W. from Algieri, and 36 S. S. W. of Sassari, to which it is suffragan. N. lat. 42° 18'. E. long. 8° 34'.

BOSARA, in *Ancient Geography*, a town of Arabia Felix, according to Ptolemy.

BOSARADDAHEBA, or JESARDECHER, a town of Afa, in the province of Sablestan; 21 leagues S. of Candahar.

BOSBOCK, **Boseoc**, **Bouc des Bois**, and **Forest Antilope**, in *Zoology*, the name of *Antilope Sylvatica* (*Gmel.*) by different writers. See *SYLVATICA*.

BOSC, **CLAUDE DU**, in *Biography*, an engraver, was a native of France, and being invited to England by Nicholas Dorigny, assisted him for some time in engraving the cartoons of Raphaël; and afterwards separating from Dorigny, he undertook to engrave the cartoons for the print-sellers. He also engraved the duke of Marlborough's battles, for which he received 80*l.* per plate; and, assisted first by Du Guernier, and afterwards by Beauvais and Baron, he completed them within two years in 1717. He then became a print-seller, and published, by subscription, the translations of Picart's Religious Ceremonies. As an engraver, he possessed no great merit: his style is coarse and heavy, and the drawing of the naked parts of the figure in his plates is very defective. However, he engraved from several great masters. The "Contenance of Scipio," from a picture of Nicholas Poussin, in the Houghton collection, is one of his plates. He flourished in 1714. Strutt.

Bosc, **PETER DU**, an eminent protestant preacher of France, was born at Bayeux in 1623, educated at Montauban and Saumur, and in 1642 ordained one of the ministers of Caen. The fame of his eloquence was very extensive; and he was warmly solicited by the churches of Charenton and Paris to become their pastor, but he preferred continuing at Caen. His reputation excited envy and alarm; and he was falsely charged with having used offensive language with regard to auricular confession, and on this charge exiled to Chalons. But his talents and character were held in such high estimation, that powerful intercession was made in his favour, so that he was permitted to return in the same year, 1664, to Caen. His return was the occasion of very general rejoicing among persons of all parties; and it was celebrated in a very singular manner by a Catholic of free character, who invited two Franciscans to an entertainment, and urged drinking to such a degree, that one of them died on the spot. Next day he paid his respects to M. Du Bosc, and informed him, "that he had thought it his duty to sacrifice a monk to the public joy; that the offering would have been more suitable if it had been a Jesuit, but he hoped it would not be unacceptable, though only a Franciscan." M. Du Bosc was selected, on account of his distinguished character and address, to draw up remonstrances against the severities which were exercised by the Catholics against the Protestants; and on all occasions he expressed such loyalty to the king, and such a disposition to submit to civil authority, that he frequently succeeded in obtaining relief, and in checking the rage of persecution. At length, however, viz. in 1665, the violence of the adversaries of the Protestants became irresistible, and the parliament of Normandy issued an arret, which prohibited Du Bosc from the exercise of his ministry. Upon this he retired to Holland, and discharged the duties of his ministerial office at Rotterdam, till his death, which happened in 1692. During his life he printed two volumes of sermons; and after his death, his son-in-law, M. le Gendre, published a collection of public papers, speeches, letters on theological subjects, Greek, Latin, and French verses, &c. *Gen. Dict.*

Bosc, **HIPPOLITUS**, taught anatomy and medicine at Ferrara, towards the end of the 16th century. He was also a distinguished practitioner of surgery. His works are "De vulneribus a bellico fulmine illatis," Ferrariae, 1596, 4to. He attributes the principal part of the mischief in gun-shot wounds to the heat of the ball. "De læsione motus digitorum, et inæcie brachii." This was published by J. Lauterbach, in his *Concilia*, at Francof. in 1605, 4to.

"De curandis vulneribus capitis, brevis methodus," Ferr. 1609, 4to.; "De facultate anatomica, lectiones viij, cum quibusdam observationibus," 1600, 4to.; a judicious and useful compendium, interspersed with some valuable notes and observations by the author. Haller. Bib. Anat. et Chirurg.

Bosc, or **Boscius**, **IGNATIUS**, published at Ingoldstadt, 1580, 4to. "De lapidibus qui nascuntur in corpore humano ac precipue renibus, ac vesica, et ipsorum curatione." Ibid.

BOSCAGE, denotes a place set with trees, a grove, or thicket.

BOSCAGE, *boscagium*, from Ital. *bosco*, wood, in a *Lazou* sense, signifies mast or such sustenance as woods and trees yield to cattle.

According to Manwood, to be quit *de boscagio*, is to be discharged from paying any duty of wind-fall wood in the forest.

BOSCAGE, among *Painters*, is said to denote a picture or landscape representing much wood and trees.

BOSCAGE sometimes denoted a tax or duty laid on wood brought into the city.

BOSCAGER, **JOHN**, in *Biography*, an eminent French lawyer, was born at Beziers in 1601, and removing at an early age to Paris, officiated for his uncle, La Foret, during his illness, as teacher of law, when he was only 22 years old. After having acquired great reputation at the university of Padua, he succeeded his uncle, and occupied his chair till his death. His mode of instruction manifested an accurate and comprehensive judgment; for he reduced all law to certain principles or definitions, from which he deduced consequences, that comprised all the particulars of each topic. Some Latin treatises, which he composed, were translated into French, at the request of Colbert, and published under the title of "Institute of the Roman and French law, with remarks by Francis de Launay," 4to. 1686. Another work was published after his death, entitled, "De Justitia et Jure," 12mo. 1689. His death happened by a fall into a ditch, from which he could not extricate himself, after he had attained the age of 87 years. Moreri.

BOSCAN, **MOSEN JUAN ALMOGAVAR**, a reformer of Spanish poetry, was born at Barcelona towards the close of the 15th century. By the advice of Andrew Navagero, ambassador from Venice to Charles V., he attempted to introduce into the Spanish poetry, which was before harsh and barbarous, the Italian measures and taste; and he was the first, who, with the assistance of his intimate friend, Garcilaso de la Vega, succeeded in the attempt. A collection of the works of these coadjutors was published together in 1544. Garcilaso's testimony to his genius and virtue is thus translated by Mr. Southey:

"Then hand in hand

A youth approached, with Phœbus; in his face
The skilful eye might read benevolence
And wisdom; he was perfected in all
The love and various arts of courtesy
That humanise mankind; the graceful port,
And the fair front of open manliness
Discovered Boscan; and that fire illumed
His generous face, that animates his song,
- With never-fading splendour there to shine."

Boscan is said to have possessed more learning than taste, and more taste than genius. Without being sublime, some of his turns are neat and ingenious. In prose he translated the courtier of Castiglioni. He died in 1542 or 1543. Moreri. *Gen. Biog.*

BOSCAWEN, in *Geography*, a township of America, in Hillsborough county, New Hampshire, seated on the western bank

bank of Merrimack river, above Concord; 43 miles N.W. from Exeter. It contains 1108 inhabitants; and in its vicinity are the Boscawen hills.

BOSCAWEN'S *Island*, a name given by captain Wallis, in 1767, to an island in the Southern Pacific Ocean; called by the natives, "Kootahē." It is separated from Kuppel's island, called "Neootabōotaboo," by a channel 3 miles broad. They are both situate in S. lat. 15° 5'. W. long. 173° 28'. Kootahē is very lofty, of a conical form, between two and three miles in diameter, and lies N.E. from the other. Both are populous and fertile. They were discovered by Schouten and le Maire, May 10, 1616. Schouten, who, after bartering with the natives for cocoan-nuts, in return for nails and beads, was attacked by them from their canoes, called them Traitors' and Cocoa islands, in consequence of the reception he met with. Captain Wallis exchanged with the inhabitants of Neootabōotaboo some nails for fowls, fruit, and one of their clubs. Perouse saw Kootahē, Dec. 20, 1787, and having examined both the islands, lay to in a bay upon the west coast of the larger division of Neootabōotaboo. The natives brought off the finest cocoa nuts he had ever seen, with other vegetables, as well as some fowls and a hog; they seemed to manifest no apprehension, and traded very freely. They resembled the more southern islanders in every thing, except that their looks indicated a ferocity, like that which characterizes their northern neighbours. A rocky bank, two or three leagues N. of Kootahē, was found in 1616, covered with 14 fathoms of water. Missionary Voyage, Introd. p. 67.

BOSCH, BALTHASAR VANDEN, in *Biography*, a painter of conversations and portraits, was born at Antwerp in 1675, and first studied, after the manner of Teniers, those subjects which were apartments decorated with busts, vases, pictures, and other curiosities; but in process of time he employed his pencil on subjects of a more elegant and elevated kind, and acquired a superior style of performance. He also painted portraits with great reputation, and particularly a portrait of the duke of Marlborough on a horse, painted by Van Bloemen. His paintings fetched an extravagant price, exceeding that produced by the performances of Teniers or Ostade, with which they cannot, in reality, pretend to any competition. His pencil is light, his touch spirited, and his figures, more elegant than those of most of his contemporaries, are dressed in the mode of the time. In some of his works the composition and design, and also the colouring are very good, and the subjects are judiciously chosen. He died in 1715. Pilkington.

BOSCH, JACOB VANDEN, a painter of still life, was born at Amsterdam in 1636, and painted summer fruits of various kinds with a neat pencil, and with such an exact imitation of nature, that they appeared delicious, and almost real. He died in 1676. Pilkington.

BOSCHADIS, in *Zoology*, a species of *ECHINORHYNCHUS*, that infests the intestines of the domestic duck. The neck is gliform, and the proboscis slightly echinated. Goetz Eingew.

BOSCHAS, Anas Boschas, in *Ornithology*, the Common Mallard, or Wild Duck, the specifical distinction of which consists in the plumage being of a cinereous colour; the tail feathers (of the male) recurvate; bill straight; collar white. Linn. Fa. Suec. &c.

Gaulin mentions several distinct varieties of this bird, in the *Syst. Nat.* the characters of which are described as follows:—*Cirrhata*, above grey, beneath white, crest cinereous; *persea*, head and upper parts of the neck cinereous, beneath yellowish; *major*, back footy. This is larger than the

others, measuring two feet and a half in length. *Grisea*, entirely cinereous, with the legs and bill black; *navia*, with the back black, spotted with yellowish; *nigra*, having the head and collar black.

The natural history of the wild duck is detailed so amply by different writers, that nothing new remains to be added by us. Dr. Latham, in particular, has entered at great length in his judicious compilation on this subject. The wild ducks, observes this writer, are frequent in many parts of England, but no where in more plenty than in Lincolnshire, where prodigious numbers, according to Mr. Pennant, are taken annually in the decoys, each decoy paying from five pounds to twenty, annual rent. In Somersetshire the rental of a decoy yearly has been known to amount to even thirty pounds.

With us these birds pair in the spring. They breed in all the low marshy grounds, laying from ten to sixteen eggs. It is observed of the young, that they always take to the water as soon as they are hatched. The old birds are very artful. They do not constantly build their nest close to the water, but many times at a distance from it; in which case the female takes the little brood in its beak, or between its legs, one or two at a time, to the water side, and going into it herself, the young ones follow instinctively. Wild ducks are known sometimes to lay the eggs in a high tree, in the deserted nest of a crow or a magpie. Dr. Latham speaks of an instance that took place at Etchingam, in Suffex, in which the female was found sitting upon nine eggs, in an oak twenty-five feet from the ground. The eggs were supported by some small twigs laid crossways.

In England only a comparatively small number of wild ducks are found in the summer; because, at that time, they remain in the more northern parts of Europe, and only return to us towards the winter. In France this species is not often seen till the winter; appearing in October, and again departing northward in the spring. They are caught in that country, as with us, in decoys, the chief of which are in Picardy, where prodigious numbers are taken, especially on the river Somme. They have also another method: a sportsman, with a cage of tame decoy ducks, takes his station in a certain place, near which, it is conceived, the flock will pass. If they approach so near as to allow him to fire, he takes them with little trouble; but if otherwise, he lets fly one of the tame decoy ducks, then a second, and so on: these tame birds entice the wild ducks in small parties within reach of the sportsman's fowling-piece, who is thus enabled to kill six or seven birds at every shot. They are now and then taken also by means of a hook, baited with a bit of sheep's lights, which, swimming on the water, the bird swallows the bait, and hook with it. Divers other methods of catching the wild duck are peculiar to different nations, of which one seems worth mentioning, on account of its singularity; and this is the practice in India. The person wishing to take these, wades into the water up to the chin, and having his head covered with an empty calabash, approaches the place where the ducks are; when they, not regarding an object of this sort, suffer the man freely to mix with the flock; after which he has only to pull them by the leg under the water, one after another, till he is satisfied; returning as unsuspected by the remainder as when he first came among them. This mode of capture is common on the river Ganges, only that the duck-hunters use the earthen vessels of the gentoos, instead of calabashes. These vessels are what the gentoos boil their rice in, and are called kutcharee pots, which, after being once used, they look upon as defiled, and in consequence throw them into the

the river as uselefs. The ducks, from constantly seeing these vessels float down the stream, regard them as little as the calabashes; and the duck-hunter, concealing his head in one of them, can seize upon them without exciting the least suspicion. A similar method is also practised in China, and in South America, to take the wild duck.

BOSCHAS, *Anas fesa five Boschas mexicana*. Brifs. A synonym of *Anas Clypeata*, the Shoveler, var γ . See **CLYPEATA**.

BOSCHAS, *Boschas Bellonii*. The Garganey. **ANAS QUERQUEDULA** is called by this name; both in Gesner's birds, and the Ornithology of Aldrovandus.

BOSCHI, **BOSCH**, or **BOSCO**, in *Geography*, a town of Italy, in the Alexandrin of the Milaneze, seated on the river Orbe, five miles E. from Alexandria.

BOSCIA, in *Botany*, (in honour of Bosc, author of part of the Zoological and Botanical articles in "Nouveau Dictionnaire d'Histoire Naturelle," now publishing at Paris.) Willden. 266. Clafs, *tetrandria trigynia*. Gen. Char. *Cal.* perianth, four-toothed. *Cor.* four-petalled. *Pericarp*, capsule, four-celled.

Species *B. undulata*, Thunberg, "Leaves opposite, lanceolate, waved." A shrub. Native of the Cape of Good Hope.

BOSCIA. La Mark (Illust. Pl. 395.) Clafs, *dodecandria monogynia*. Gen. Char. *Cal.* perianth, four-leaved. *Cor.* none. *Stam.* filaments long; anthers didymous. *Pist.* germ on a pedicle, as long as the filaments; style, none; stigma pointed. *Pericarp*, a nut. *Seed*, one.

Species *B.* A shrub. *Leaves*, oblong-ovate, alternate, on short petioles, strongly reticulated, coriaceous. Flowers in a terminating corymbus. A native of Africa, in the neighbourhood of Goree, where the negroes eat the kernel of the nut. This plant does not appear to be known to Willdenow. It will, doubtless, soon receive another name, as Thunberg's plant seems to have got the first possession.

BOSCHIUS, JOHN, in *Biography*, a native of Liege, of considerable learning and abilities, was invited, in 1558, to the chair of professor of medicine, at Ingolstadt, which he held with credit several years. His works are, "De peste liber," published originally in German, in 1562, 4to.; "Concordia philosophorum, ac medicorum, de humano conceptu, atque fœtus incremento, animatione, mora in utero, ac nativitate," Ingolds. 1576, 4to. and 1588; "Oratio de optimo medico, et medicinæ auctoribus, inter orationes Ingoldstadienses." Haller Bib. Anat.

BOSCO, in *Lavv.* See **ATTACHIAMENTA de bosco et spinis**.

BOSCOBEL, in *Topography*, in the parish of Donnington, in Shropshire, is a place memorable in English history, for the oak tree, wherein king Charles the Second secreted himself, after the desperate battle at Worcester. Finding it impracticable either to escape into Wales, or to reach the metropolis in safety, and knowing that many of his enemies were searching for him, in the immediate neighbourhood, he was prevailed on by major Carless (who accompanied him) to seek protection in a large oak tree. Here they seated themselves one whole day, and saw some of Cromwell's soldiers seeking for the king in an adjoining wood. After the restoration, this tree became highly venerated, and numerous persons went on pilgrimage to see it. A great part of it was cut away, and converted into tobacco-stoppers, hafts of knives, and other memorials; and many plants were propagated from its acorns. Its remains are inclosed with a brick wall, the inside of which is covered with laurel. The 29th of May, the day of his birth, and of his resto-

ration, is still commemorated in England, by an annual festival and holiday; and various classes of the community display branches, leaves, and apples of the oak tree. Near Boscobel is Whiteladies, so named from being a nunnery of white, or Cistercian nuns. The ruins of this are still considerable, and the church is ornamented with circular arches, &c. Gough's Edition of Camden's Britannia, vol. ii. Carte's History of England, vol. iv. Granger's Biographical History of England, vol. iii.

BOSCOI, or **BOSCI**, in *Ecclesiastical History*, denotes a species or tribe of monks in Palestine, who fed on grafs, like the beasts of the field.

The word is Greek, βοσκη, q. d. *grazers*; formed from βοσκω, *pasco*, I feed.

The Boscoi are ranked among the number of Adamites, not so much on account of their habit as food. They took no care about provision; but when eating-time came, or any of them were hungry, went into the fields, with each his knife in his hand, and gathered and eat what he could find.

BOSCOLI, ANDREA, in *Biography*, an historical painter, was born at Florence, in 1553, and educated under Santi di Titi. He was the first person who had a just notion of the chiaro-scuro, and used it successfully in the Florentine school; where, though it had been happily practised by Giorgione, at Venice, and also by Titian, it was not well understood before his time. He possessed great freedom of hand, and gave a surprising force of colour; and both in design and composition the grandeur of his stile resembled that of his master. He studied after nature; and in his travels he drew sketches of any particular objects that struck him; but pursuing this practice at Loretto, with regard to the fortifications of the city, he was seized by the officers of justice, and condemned to be hanged; but he happily escaped, within a few hours of execution, by the interposition of signior Bandini, who explained to the chief magistrate his innocent intention. He was also an engraver; but the subjects of his plates are not specified either by Marolles or Florent le Comte. He died in 1606. Pilkington.

BOSCOVICH, ROGER JOSEPH, an eminent mathematician and natural philosopher, was born of very respectable parents, in the free city of Ragusa, on the coast of Dalmatia, the 18th of May 1711. He was the youngest of nine children, and his mother lived to the extraordinary age of 103. Six sons received the best education that their father's circumstances could afford; and all of them, particularly the eldest, who became a priest, were distinguished by a happy vein for poetry. Having finished his grammatical course with applause, the young Boscovich prompted by the example of his brother, in his fifteenth year took the habit of the noviciate, and entered the Jesuits' college at Rome. There the original bent of his genius discovered itself, by the enthusiastic ardour with which he plunged into the study of the mathematics. His progress in that important branch of knowledge was so rapid as to astonish, and soon out-run his preceptors. Under their instruction he acquired the elements of geometry and algebra, but was left to the exercise of his own application in prosecuting the higher parts of mathematics. He studied by himself the principles of the differential calculus; and thus prepared, he began the *Principia* of Newton, and devoured that immortal work with the most eager avidity. He was transported by the vast display of new and splendid truths which were unveiled; and while, with the torch of geometry, he traced the secret links of nature's operations, and seemed to penetrate the counsels of heaven, he felt his passion for distinction wonderfully inflamed: nor, in the warmth of his temper, could

he supposed the movements of self-gratulation, which the consciousness of his powers and acquirements excited in his breast. By his persuasion, Noceti, his master in philosophy, was induced to reprint a small poem on the rainbow, and another on the aurora borealis, both of which Boscovich enriched with ingenious notes and illustrations. The publication of this tract spread his fame beyond the precincts of the college, and beyond the Alps. Mairan, whose opinion concerning the aurora borealis he had espoused, noticed it with loud commendation, in the second edition of his dissertation; and the praises bestowed by the French philosopher, with the title conferred on him of correspondent of the Academy of Sciences, could not fail to prove highly gratifying to his youthful vanity.

After Boscovich had completed the usual course of philosophy, he was obliged, by the rules of the institution, to teach grammar and the classics; but he never lost sight of his favourite studies, and he was invited by his mathematical master, to defend annual theses, and deliver public dissertations on such subjects as occasion suggested. These being printed in succession, extended farther his reputation. The first appeared in 1736, and contained a theory of the solar spots, very similar to that which was afterwards so ingeniously supported by professor Willson, of Glasgow. It supposes the sun to have two atmospheres, the lower being dense, and sometimes sprinkled with clouds; the upper rare, and subject to variation of height. Next year produced two dissertations; one on the transit of Mercury, and another on a remarkable aurora borealis.

Five years had Boscovich spent in the drudgery of teaching Latin, and three more were consumed in the unprofitable study of scholastic theology, when, by a very singular indulgence, he was exempted by his superiors from the fourth year's attendance, and permitted to relinquish that dark and thorny path, and thenceforth employ his talents in exploring Nature's wide domain. His situation now, as supernumerary prefect of the Roman College, was entirely suited to his taste. To communicate mathematical instruction was to him a delightful task; and he prepared, for the use of his pupils, a short system of geometry, which comprised all the capital truths of that science in fourteen propositions. In the selection of the materials, in their disposition and arrangement, he exhibited the clearness, the precision, and noble elegance, formed after the model of the ancients. He composed the elements of trigonometry with the same purity of taste. But the capital part of the system, his theory of the Conic Sections, was reared by repeated efforts, and at distant intervals, and was not published until the year 1755. Boscovich considered these curves as described in *plano*, and assumed, for his generic definition, the beautiful property of the *directrix*, which is common to them all, the parabola being only its simplest case. In the ellipse, the ratio of a line, drawn from any point to either of the *foci*, is to a perpendicular from the same point to the *directrix*, in the ratio of a less to a greater; in the hyperbola, it is that of a greater to a less. But the author did not stop here; he likewise investigated the properties derived immediately from the section of the cone. He supposed it cut by a moveable plane, and showed how the several curves would thence be successively produced. The same luminous idea he transferred to the cylinder, the spheroid, and the conoids. His imagination loved to contemplate the fine mutation and transition of mathematical figure, and to trace the series of successive, yet apparently connected changes, which have suggested the *law of continuity*. On that metaphysical principle, as elucidated by the transformation of geometrical *loci*, he gave an exquisite dissertation. Other dissertations,

remarkable for their ingenuity, were successively delivered to a crowded audience, at the annual examination of his school. These treated on various difficult points in geometry, astronomy, and optics; on osculating circles, the nature of infinitesimals, trajectories, the inequality of gravity over the earth's surface, the centre of magnitude, the laws of bodies, living forces, the flux and reflux of the sea, the annual aberration of the fixed stars, the limits of astronomical observations, the use of lenses and dioptric telescopes, and a new method of employing the observation of the phases in lunar eclipses, on the determination of a planet's orbit, by help of catoptrics, and on the atmosphere of the moon, which he held to be very different from that of the earth, and more analogous to water. In one of these dissertations he pointed out a mistake of the famous Daniel Bernouilli, who had hastily concluded, that the tides of the atmosphere must rise higher, in proportion to its rarity, than those of the ocean; in another, he showed that the question, concerning the measure of forces, which then so vehemently agitated the scientific world, as it generally happens, was merely a dispute of words; in a third, he sketched the outlines of that bold structure, which has obtained such deserved celebrity among the learned—his sublime theory of the constitution of matter.

While Boscovich was thus usefully and honourably engaged in directing the studies of youth, and enlightening the learned world by his elegant and ingenious writings, the pleasure of his conversation was eagerly courted at Rome. In every house of note he was always a most welcome guest, and he reigned in every society by the ascendancy of his talents. Before mixed companies he would freely talk of his own speculations, which he had a singular felicity in rendering intelligible and interesting to the most ordinary minds; and though, on these occasions, he was not accustomed to conceal his inward satisfaction, or decline bestowing upon himself the merited encomiums, these frequent sallies of vanity seemed to flow merely from the warmth of his character, and were effaced in the general blaze of admiration entertained for his superior talents. Nor was his ambition confined within the circle of abstract science; indulging the excursive flights of fancy, he often sacrificed to the Muses. He composed Latin verses, on a great variety of subjects, and which consequently possessed very different degrees of merit. Every occurrence he was ready to seize, whether public or private, serious or comic; wars, nuptials, jocular and domestic incidents, were all indiscriminately his theme. He had a wonderful knack in composing those verses, with a memory not less astonishing for retaining them; and at the tables of his friends he took pleasure in reciting elaborate passages. Surrounded by his disciples and partial admirers, the sort of idolatry which he received appears, however, to have had rather an unfortunate effect on his character, by tempting him to overrate the measure of his powers, and extent of his attainments. Once, and once only, he entered the lists with his illustrious contemporaries. It was in answer to the question, proposed by the Academy of Sciences at Paris, to determine the inequalities produced by the mutual action of Jupiter and Saturn, especially near the time of their conjunction. His memoir was returned with much commendation, and very few mathematicians assuredly would have felt themselves lowered in yielding the premium to the great Euler. But Boscovich was piqued at what he conceived to be an unfair decision, and would never afterwards engage in any public competition.

A philosopher, residing in Rome, amidst the venerable remains of ancient splendour, was powerfully drawn to examine those monuments. Boscovich wrote several dissertations

tions on the subject of antiquities, two of which were printed, and the rest circulated in manuscript. His zeal, activity, and fondness of applause, rendered him at all times accessible, and in a multitude of cases, his advice was ardently sought by individuals. Benedict XIV. a great patron of learned men, and his enlightened minister, cardinal Valenti, consulted him on various important objects of public economy, the clearing of harbours, and the constructing of roads and canals. On one occasion, he was joined in a commission with other mathematicians and architects, invited from different parts of Italy, to inspect the cupola of St. Peter's, in which a crack had been discovered. They were divided in opinion; but the sentiments of Boscovich, and of the marquis Poleni, prevailed. In stating, however, the result of the consultation, which was to apply a circle of iron round the building, Poleni forgot to refer the idea to its real author, and this omission grievously offended the Ragusan geometer. Other incidents had concurred to mortify his pride: he became at last disgusted with his situation, and only looked for a convenient opportunity of quitting Rome. While in this temper of mind, an application was made by the court of Portugal to the general of the Jesuits, for ten mathematicians of the society to go out to Brazil, for the purpose of surveying that settlement, and ascertaining the boundaries which divide it from the Spanish dominions in America. Wishing to combine with that object the mensuration of a degree of latitude, Boscovich offered to embark in the expedition, and his proposition was readily accepted. But cardinal Valenti, unwilling to forego the lustre reflected by a man of such distinguished abilities, commanded him, in the name of the pope, to dismiss the project, and persuaded him to undertake the same service at home in the Papal territory. In this fatiguing, and often perilous operation, he was assisted by the English Jesuit, Mayer, an excellent mathematician, and was amply provided with the requisite instruments and attendants. They began the work about the close of the year 1750, in the neighbourhood of Rome, and extended the meridian line northwards, across the chain of the Appennines as far as Rimini. Two whole years were spent in completing the various measurements, which were performed with the most scrupulous accuracy. In the intervals, while this great work was carrying on, the active disposition of Boscovich sought amusement and occupation in other pursuits. At night he was busy in drawing out his *Elements of Conic Sections*; and in the mornings and evenings, during his excursions to and from the remote stations among the mountains, he composed on horseback the greater part of his elegant Latin poem on *eclipses*. This singular fact reminds us of what is reported of the late Dr. Darwin, who is said to have framed, in his mind, the beautiful and harmonious episodes of the *Botanic Garden*, while driving in his chariot, on visits to his country patients.

This important operation of measuring two degrees on the surface of Italy, is elaborately described by Boscovich in a quarto volume, written in his usual diffuse manner, and full of illustration and minute details. But the book is rendered the more valuable by the addition of several opuscles, or detached essays, relating to the subject, and which display great ingenuity, conjoined with the finest geometric taste. We may instance, in particular, the discourse on the rectification of instruments, the elegant synthetical investigation of the figure of the earth, deduced both from the law of attraction and from the actual measurement of degrees, and the nice remarks concerning the curve and the conditions of permanent stability. This last tract gave occasion, however, to some strictures from D'Alembert, to which Bos-

covich replied, in a note annexed to the French edition of his works.

The arduous service which Boscovich had now performed was but poorly rewarded. From the pope he received only a hundred sequins, or about forty-five pounds sterling, a gold box, and *abundance of praise*. He now resumed the charge of the mathematical school, and besides discharged faithfully the public duties of religion, which are enjoined his order. A trifling circumstance will mark the warmth of his temper, and his love of precedence. He had recourse to the authority of cardinal Valenti, to obtain admission into the oratory of Caravita, from which his absence excluded him, and which yet did afford only the benefit of a free, but frugal supper. In presiding at that social repast, the philosopher relaxed from the severity of his studies, and shone by his varied, his lively, and fluent conversation. He lived in habits of intimacy with his colleagues, and especially with his compatriot, Benedict Stay, known to the learned world by an excellent didactic poem, entitled "*Philosophia Recentior*," and which he elucidated by notes, containing, in a very neat compressed form, the elements of mechanics.

At this time a dispute arose between the little republic of Lucca, and the government of Tuscany, on the subject of draining a lake. A congress of mathematicians was called, and Boscovich repaired to the scene of contention, in order to defend the rights of the petty state. Having waited three months in vain, expecting the commissioners, and amused with repeated hollow promises, he thought it better for the interest of his constituents, to proceed at once to the court of Vienna, which then supremely directed the affairs of Italy. The flames of war had been recently kindled on the continent of Europe, and Boscovich, like a true courtier, took occasion to celebrate the first successes of the Austrian arms, in a poem, of which the first book was presented to the Empress Theresa; but the military genius of Frederick the Great of Prussia soon turned the scale of fortune, and our poet was reduced to silence. More honourably did he employ some leisure in the composition of his immortal work, "*Theoria philosophiæ naturalis reducta ad unicam legem vicium in naturâ existentium*," printed at Vienna in the year 1758. This he drew up, it is alledged, in the very short space of thirty days, having collected the materials a considerable time before; yet we must regret the appearance of haste and disorder, which deforms a production of such rare and intrinsic excellence.

After a successful suit of eleven months at Vienna, Boscovich returned to Rome, and received from the senate of Lucca, for his zealous services, the handsome present of a thousand sequins, or about 450*l*. Thus provided with the means of gratifying his curiosity, he desired and obtained leave to travel. At Paris he spent six months, in the society of the eminent men, who then adorned the French capital; and, during his stay in London, he was elected, in 1760, a fellow of the Royal Society, and he dedicated to that learned body his poem on *eclipses*, which contains a neat compendium of astronomy. The expectation of the scientific world was then turned to the transit of Venus, calculated to happen in the following year. Boscovich, eager to observe it, returned through Holland and Flanders to Italy, and joined his illustrious friend, Correr, at Venice, from whence they sailed to Constantinople, having, on their way, visited the famous plain of Troy. In Turkey, he scarcely enjoyed one day of good health, and his life was repeatedly despaired of by the physicians. After spending half a year in this miserable state, he returned in the train of sir James Porter, our ambassador at the Porte; and having traversed Bulgaria, Moldavia, and part of Poland, his intention was to penetrate into

into Russia, if the agitation which there prevailed, on the sudden death of Peter, had not deterred him from executing the project. The diary of his journey, which he published in Italian and French, is but a poor book, full of pedantry, and patched up of trifling and insipid remarks. Yet such were his pride and blind partiality, that he regarded, with contempt, the wholesome criticisms to which it gave occasion. Boscovich began his travels at too late a period of life to profit much by them.

At Rome his arrival was welcomed, and he was again consulted on various plans of public improvement. But in the spring of 1764, he was called by the Austrian governor of Milan, to fill the mathematical chair in the university of Pavia. The honours which he received provoked the jealousy of the other professors, who intrigued to undermine his fame. He took the most effectual mode, however, to silence them, by publishing his dissertations on optics, which exhibit an elegant synthesis and well-devised set of experiments. These essays excited the more attention, as, at this time, the ingenuity of men of science was particularly attracted to the subject, by Dollond's valuable discovery of achromatic glasses.

The expulsion of the Jesuits from the dominions of Spain prevented Boscovich from going to California, to observe the second transit of Venus, in 1769, and which expedition the Royal Society of London had strongly solicited him to undertake. And as his rivals began now to stir themselves again, he sought to dispel the chagrin, by a second journey into France and the Netherlands. At Brussels he met with a peasant, famous for curing the gout, and from whose singular skill he received most essential benefit. On his return to Italy, he was transferred from the university of Pavia to the palatine schools at Milan, and resided with those of his order, at the college of Brera, where he furnished, mostly at his own expence, an observatory, of which he got the direction. But he was still doomed to a life of mortification. Some young Jesuits, who acted as his assistants, formed a conspiracy, and, by their artful representations, prevailed with the government to exclude his favourite pupil and friend from holding a charge of trust. This intelligence was communicated to him at the baths of Albano, and filled him with grief and indignation. He complained to prince Kaunitz, but implored his protection in vain. To the governor of Milan he wrote, that he would not return, unless things were restored to their former footing. He retired to Venice, where, having staid ten months in fruitless expectation of obtaining redress, he meditated spending the remainder of his days in honourable retirement at his native city of Ragusa. But while he waited for the opportunity of a vessel to convey him thither, he received the afflicting news of the suppression of his order in Italy. He renounced his scheme, and seemed quite uncertain what he should take. Having come into the Tuscan territory, he listened to the counsels and solicitation of Fabroni, who held forth the prospect of a handsome appointment in the Lyceum of Pisa. In the mean time he accepted the invitation of La Bord, chamberlain to Louis XV. and accompanied him to Paris. Through the influence of that favourite, he obtained the most liberal patronage from the French monarch; he was naturalized, received two pensions, amounting to 8000 livres, or £333, and had an office expressly created for him, with the title of "Director of optics for the marine." Boscovich might now appear to have attained the pinnacle of fortune and glory; but Paris was no longer for him the theatre of applause, and his ardent temper became soured by the malign breath of jealousy and neglect. Such extraordinary favour bestowed on a foreigner, could not fail

to excite the envy of the *francs*, who considered him as rewarded greatly beyond his true merit. The freedom of his language gave offence, his perpetual egotism became disgusting, and his repetition of barbarous Latin epigrams was most grating to Parisian ears. Besides, the name of a priest and a jesuit did not now command respect; and the sentiments of austere devotion, which he publicly professed, had grown unfashionable, and were regarded as scarcely befitting the character of a philosopher. Mirabeau, in his letters from Prussia, mentions Boscovich with a degree of slight bordering on contempt, and warmly recommends it to his court to invite from Berlin the celebrated Lagrange; a mathematician of the very highest order, and blessed with the mildest disposition.

But the geometer of Ragusa was not idle. He applied assiduously to the improvement of astronomy and optics; and his diligence was evinced by a series of valuable memoirs. He revised and extended his former ideas, and struck out new paths of discovery. His solution of the problem to determine the orbit of a comet from three observations, is remarkable for its elegant simplicity; being derived from the mere elementary principles of trigonometry. Not less beautiful are his memoirs on the micrometer, and on achromatic telescopes. But his situation had become extremely irksome; and in 1782, he desired and obtained leave of absence. Two years he spent at Bassano, in the Venetian state, where he published his opuscles, in five volumes, 4to. composed in Latin, Italian, and French, and containing a variety of elegant and ingenious disquisitions connected with astronomical and optical science. During that time he lived with his editor Remondini, and occupied himself in superintending the press. After finishing his task, he came to Tuscany, and passed some months at the convent of Valombrosa. Thence he went to Milan, and issued a Latin prospectus, in which he proposed to reprint the philosophical poem of Stoy, enriched with his annotations, and extended to ten books. But very few subscribers appeared; his opuscles experienced a slow sale; and the imperial minister neither consulted nor employed him in some mathematical operations which were carrying on. Every thing but too keenly reminded him that he was no more a favourite of the Italian public. The visions of glory melted away. This mortifying reflexion preyed upon his spirits, and made the deeper impression, as his health was much disordered by an inflammation of the lungs. He sunk into a stupid, listless melancholy, and after brooding many days, he emerged into a childish infanity, and at last became furiously mad. It was truly pitiable to behold a man of his eminent talents reduced to such an humiliating condition. The Milanese government provided for his custody. During the heat of delirium, he frequently exclaimed, that he would die poor and inglorious. His religious feelings acquired new force, and he seemed to look forward with anxious hope for that distinction in a future world, which he thought was unjustly denied him in this clouded state of existence. In his short lucid moments, or fits of exhaustion, that intervened, he regretted having spent his time in curious speculation, and considered the calamity with which he was visited as a kind of chastisement of heaven for neglecting the spiritual duties of his profession. In this temper of resignation, his impothume burst, and he expired on the 13th of February, 1787. He was interred decently, but without pomp, in the parochial church of S. Maria Pedone. "Such was the exit," says Fabroni, "of this sublime genius, whom Rome honoured as her master, whom all Italy regarded as her ornament, and to whom Greece would have erected a statue, had she for want of space been obliged even to throw down some of her heroes."

The abbé Boscovich was tall in stature, of a robust constitution, with a long pale visage. His temper was open and friendly, but irritable, vehement, and impatient of contradiction. James Boswell, in his amusing Life of Dr. Johnson, incidentally mentions, that the English moralist chancing to meet Boscovich in London, had a very keen dispute with him in Latin on some metaphysical topic. There was much heat on both sides; and the Goliath of literature treated the mathematician in his usual bearish manner.

Boscovich was more distinguished by the elegance of his mathematical genius, than for talents of invention. The predilection he entertained for the geometry of the Greeks, led him perhaps to undervalue the modern analysis, and rather to neglect the cultivation of the integral calculus, that astonishing instrument of discovery, which is indispensable in making any great progress in the deeper parts of physical and astronomical science. His example, with similar ones in this country, shows the danger of indulging a taste so laudable in itself, but which has a tendency to circumscribe the powers of human intellect.

The only work of Boscovich that has appeared in English, is his "Elements of the Conic Sections," which was, within these few years, translated, abridged, and somewhat altered by the Rev. Mr. Newton of Cambridge. This little treatise, we are sorry to observe, has not yet received such attention from the public as it well merits. For a view of his theory of matter, see the article CORPUSCULAR PHILOSOPHY.

BOSCUS, in *Ancient Law-Writers*, signifies a wood of any kind. It is formed from the Greek, *βόσκω*, I feed, as serving for pasture. In which sense, *boscus* amounts to the same with the Italian *bosco*, and French *bois*. *Boscus* is divided into high wood, or timber, called also *salus*, and *haut-bois*; and coppice, or underwood, *sub-boscus*, or *sub-bois*.

BOSEA, in *Botany*, (in honour of Bose, a senator of Leipzig). Linn. 315. Reich. 344. Schreb. 442. Willden. 504. Juss. 83. Gært. 490. Class, *pentandria digynia*. Nat. Ord. *atriplices*. Juss.

Gen. Char. *Cal.* perianth five-leaved, equal; folioles roundish, concave, erect, thinner at the edge. *Cor.* none. *Stam.* filaments subulate, longer than the calyx; anthers simple. *Pist.* germ ovate-oblong, cuspidate; style none. *Pericarp.* berry globular, one celled. *Seed* one, round, acuminate.

Eff. Char. *Calyx* five-leaved. *Cor.* none. *Berry* one-seeded.

Sp. B. *gervamora*. A small shrub. Leaves simple, alternate, petioled, ovate, pointed, entire, smooth, with fine purple nerves; flowers reddish, in loose axillary racemes. Cultivated by Mr. Miller before 1728. A native of the Canary islands. La Marck intimates a doubt whether Sloane's Jamaica plant be the same.

BOSEN, in *Geography*, a town of Prussia, in the province of Natangen, seated on the Satten lake; 50 miles S. of Königsberg.

BOSENBRUNN, a town of Germany, in the circle of Upper Saxony, and the Vogtland; 3 miles S. W. of Oelsnitz.

BOSHAM, a town of Abyssinia, near the source of the river Lebec. N. lat. 7° 40'. E. long. 36° 30'.

BOSHOND, in *Zoology*, (Jachhals vel bosfond). Boffinguin, p. 291: The spotted hyæna, *canis crocuta*.

BOSIO, JAMES, in *Biography*, a native of Milan, who flourished about the end of the 16th century, and being knight servitor of the order of Malta, conducted its concerns at Rome for a long time with reputation. Disappointed in the expectation of the advancement of his patron, cardinal Petrocchini, to the papal chair, he retired and devoted the

remainder of his life to pious exercises. As a writer he is known by his voluminous history of the order of Malta, entitled "Dell' istoria della sacra religione dell' illustrissima militia di san Gioanò Gierosolimitano," 3 vols. fol. printed at Rome, in consequence of the arrangement of two cordeliers, in 1621, 1629, and 1684. This is the source whence later historians of the order have derived their chief materials. Some idea may be formed of Bosio's understanding and disposition, from the veneration which he manifested to the wood of the real cross, of which he wrote the history from its discovery in the time of Constantine. *Antonio Bosio*, the nephew of the preceding, who was also agent at Rome for Malta, published in 1632, the result of his researches into the vaults and catacombs of Rome in a folio volume, entitled "Roma Sotteranea," a work that contains all the monuments and epitaphs which he could find of the first Christians. An improved edition was published in Latin by Paul Aringhi in 1651. Moreri. Nouv. Dict. Hist.

BOSLÉ, in *Geography*, a town of France, in the département of the Loiret, and chief place of a canton, in the district of Beaugency; 2 miles N. of Beaugency.

BOSNA, SERAI. See SERAJO.

BOSNA, a river of Bosnia, which passes by Serajo, and joins the Save, 50 miles N. of that town.

BOSNIA, called also *Rama*, a province of Turkey in Europe, being a part of ancient Pannonia, or of Turkish Illyricum, and deriving its name from the river Bosna, or from the people called Bosneni. It is bounded on the north by the river Save, which separates it from Sclavonia, on the east by the Drino, which parts it from Servia, on the west by the Verbas, Croatia, and Dalmatia, and on the south by a chain of mountains, which separates it from Dalmatia. It is about 40 leagues long, and 24 broad; and though mountainous, it is fertile, more especially near the rivers; its arable land producing good wheat, and its pastures feeding many cattle; its mountains contain some mines of silver. Its air, soil, produce, language, and inhabitants, resemble those of Servia. Bosnia and Servia were formerly united to Hungary, and governed by their own princes; but in 1465, the Turks took possession of them; Stephen V. their last sovereign being taken prisoner by Mahomet II. and slayed alive; from that time they have been a province of the Turkish empire, which appoints beglerbeys and sangiacs over them. Bosnia is chiefly inhabited by Greek Christians, together with some Mahometans, Jews, and Catholics. Its principal towns are Banjaluka, Orbach, Serajo, and Zwernick.

BOSOK, a town of Hungary, 3 miles E. of Baia.

BOSON, in *Conchology*, the *turbo muricatus*, so called by Adanson.

BOSOWKA, in *Geography*, a town of Poland, in the palatinate of Braclaw. N. lat. 49° 20'. E. long. 30'.

BOSPHORICUM *Marmor*, a name given by the ancients to a species of marble, of a yellowish white colour, with beautiful veins of a somewhat darker hue; called also, from its transparency, *phengites*.

BOSPHORUS, or BOSPORUS, formed from *βος*, *bos*, and *πορος*, *passage*, in *Geography*, a long and narrow sea which it is supposed a bullock may swim over; in a more general sense, a long narrow sea running in between two lands, or separating two continents, and by which two seas, or a gulf and a sea, are made to communicate with each other.

In which sense bosphorus amounts to the same with what we otherwise call an arm of the sea, channel, or freight; the Italians, *faro*; the Latins, *fretum*, and the French *pas*, *manche*.

The name *bosphorus* is chiefly confined to two freights, in

BOSPHORUS.

in the Mediterranean sea, viz. the "Bosphorus of Thrace," commonly called the "Streights of Constantinople," or "Channel of the Black Sea;" and the "Cimmerian, or Scythian Bosphorus," so called, it seems, from its resemblance to the Thracian: now more commonly the "Streights of Caffa," which unites the sea of Azof with the Euxine or Black Sea.

The origin of the name is better agreed on than the reason why it was first given to the Thracian Bosphorus. Nymphius tells us, on the authority of Accarion, that the Phrygians, desiring to pass the Thracian streight, built a vessel, on whose prow was the figure of a bullock, and which was hence called *Proas, bullock*; and which served them for a ferry-boat.—Dionysius, Val. Flaccus, Callimachus, Apollodorus, Marcellinus, &c. say, that Io, being transformed into a cow by Juno, passed this streight swimming, which hence was called Bosphorus.—Arrian tells us, that the Phrygians were enjoined by the oracle, to follow the route which a bullock should mark out to them; and that upon stirring one up, it jumped into the sea to avoid their pursuit, and swam over this streight. Others say, that an ox, tormented by a gad-fly, threw itself in and swam over; and others, that anciently the inhabitants of these coasts, when they would pass over, joined little boats together, and had them drawn over by bullocks, &c.

Some late writers rather suppose Bosphorus to have been so called, because here was anciently the beast-market. Tournef. Voyag. tom. ii. let. 12. and 14.

The "Thracian Bosphorus," called also the "Myrian Bosphorus," because the Mysians inhabited the country opposite to Thrace, connected the Euxine with the Propontis, or present sea of Marmora, and formed a winding channel, separating Europe from Asia, through which the waters of the Euxine flow, with a rapid and incessant course, towards the Mediterranean. This streight has been very minutely described by Dionysius of Byzantium, who lived in the time of Domitian, (see Hudson's Geograp. Minor. tom. iii.) and by Gilles or Gyllius, a French traveller of the 16th century. On the steep and woody banks of this channel the ancients profusely scattered a crowd of temples and votive altars, attesting the unskillfulness, the terrors and the devotion of the Greek navigators, who, after the example of the Argonauts, explored the dangers of the inhospitable Euxine. On these banks tradition long preserved the memory of the palace of Phineus, infested by the obscene harpies, which LeClere conjectures to have been only locusts; and of the Sylvan reign of Amycus, who defied the son of Leda to the combat of the Cestus. The residence of Amycus was in Asia, between the old and the new castles, at a place called *Laurus Infana*; and that of Phineus was in Europe, near the village of *Mauromole* and the Black Sea. The streights of the Bosphorus are terminated by the Cyanean rocks, which, as the poets describe them, had once floated on the face of the waters; and were destined by the gods to protect the entrance of the Euxine against the eye of profane curiosity. At present there are two small islands, one towards either shore; that of Europe being distinguished by the column of Pompey. From the Cyanean rocks, to the point and harbour of Byzantium, the winding length of the Bosphorus extends about 16 miles, and its most ordinary breadth may be computed at about 1½ mile. According to the statement of Olivier, (Travels in the Ottoman Empire, p. 77.) it is nearly 7 leagues long, and about 20 miles from the point of the Seraglio of Constantinople to the Cyanean islands. In its greatest breadth it is not two miles; and in several places it is so narrow, that some ancient authors say, that a person may hear the birds sing from one shore to the other, and that

two persons may hold a conversation across the channel. Herodotus, Polybius, and Arrian estimated its length from the temple of Jupiter to the city of Byzantium at 120 stadia, or 15 Roman miles, i. e. 13 miles 5 furlongs and 191,336 yards in English measure. Its breadth was various. At its entrance they reckoned it 4 stadia, or 805 yards; and at the other extremity 14 stadia, or 2825 yards. But the ancients, as well as the moderns, differ very much about these measures. In certain places its waters formed large basins and deep bays. The new castles of Europe and Asia are constructed, on either continent, upon the foundations of two celebrated temples of Serapis and of Jupiter Urius. The old castles, erected by the Greek emperors, command the narrowest part of the channel, in a place where the opposite banks advance within 500 paces of each other. Mahomet II., when he meditated the siege of Constantinople, restored and strengthened these fortresses; but he was not apprized, that near 2000 years before his reign, Darius had chosen the same situation to connect the two continents, by a bridge of boats, and thus to transport 700 thousand men against the Scythians. At this place the crusaders also entered Asia, when they prosecuted the scheme of rescuing the holy land from the yoke of the Mahometans. At a small distance from the old castles, we discover the little town of Chrysopolis or Scutari; and as the Bosphorus begins to open into the Propontis, it passes between Byzantium and Chalcedon.

The harbour of Constantinople may be considered as an arm of the Bosphorus, and in a very remote period obtained the denomination of the "Golden Horn," from the resemblance which the curve it describes bears to the horn of a stag, or rather of an ox, with the epithet golden, expressing the riches which every wind wafted from the most distant countries into the secure and capacious port of Constantinople; which see. From the mouth of the Lycus, formed by the conflux of two small streams, and supplying the harbour with fresh water, by which the bottom of the harbour is cleansed, and shoals of fish are invited to make it their retreat, to that of the harbour, this arm of the Bosphorus is more than seven miles in length: the entrance is about 500 yards broad, and a strong chain might be occasionally drawn across it, to guard the port and city from the attack of an hostile navy. The navigation from the issue of the Bosphorus to the entrance of the Hellespont is about 120 miles. See HELLESPOINT, and PROPONTIS.

The "Cimmerian Bosphorus," now called the streights of Caffa, derived its name from the "Cimmerians," a people who inhabited the adjacent country; separated between Chersonesus Taurica, belonging to Europe, and the territories of Asia; and joined the Euxine sea, with the Palus Maëotis. Its breadth is about 4 leagues. See *Sea of Azof*.

BOSPHORUS, or *Cimmerian Bosphorus*, the name of an ancient kingdom, comprehending all the provinces that were subject to the Bosphoran princes, and bounded on the east by Colchis, on the west by the gulf Carcinites, on the south by the Euxine sea, and on the north by the Tanais, where that river falls into the Palus Maëotis; so that it comprised the Chersonesus Taurica in Europe, and in Asia the whole tract which lies between the Palus Maëotis and the Euxine sea. Diodorus Siculus (l. xii.) confines the kingdom of Bosphorus within the Bosphorus Cimmerius, the boundary of Europe and Asia on that side; but Strabo (l. vii.) extends it to the gulf Carcinites, which, with the Palus Maëotis, forms the isthmus of the Chersonesus. The chief cities of the Asiatic Bosphorus were Phanagoria, the metropolis of Bosphorus in Asia, according to Strabo, Cepi, Hermonassa, Stratoclea,

Cim-

Cimmerium, Situated on the Palus Mæotis, Tanais at the mouth of the river bearing that name, where the city of Azof now stands, Paniardis, Tyrambe, and Gerasum, called by Ptolemy a Cimbrian village. The country bordering on the Palus Mæotis and the Bosphorus, which was inhabited by the Cimmerii, is represented by the ancients as inhospitable, covered with thick forests and continual fogs through which the rays of the sun could not penetrate. See CIMMERII.

The Bosporani were governed by their own princes in the earliest times; but the history of them by Trogus Pompeius is lost, so that little certainty is known concerning them. The first recorded in history, and mentioned by Strabo, (l. vii.) was Lucon; and he was succeeded by several others, whose history is involved in great obscurity. The kingdom of Bosphorus, as we are informed by Diodorus Siculus, was voluntarily surrendered by Parisides III. to Mithridates the Great, king of Pontus, after it had been held by his ancestors for the space of 400 years. In the time of the last Mithridatic war, the Bosporani revolted from Mithridates, and admitted Roman garrisons into the cities of Phanagoria, Theodosia, Chersonesus, and Nymphæum; but upon the death of that prince, the whole country was restored by Pompey to his son Pharnaces, whom he honoured with the title of friend and ally of the Roman people. During the civil war between Cæsar and Pompey, Pharnaces, not satisfied with the kingdom of Bosphorus, attempted the recovery of his father's dominions; crossed the Euxine sea, and reduced Colchis, Armenia Minor, and several places in Cappadocia, Pontus, and Bithynia. After the battle of Pharfalia, Cæsar sent against him a considerable force under the command of Domitius Calvinus; Domitius being overcome in battle, Pharnaces made himself master of the remaining part of Pontus and Cappadocia, and of all Bithynia; but as he was advancing into Asia, properly so called, Cæsar left Egypt, traversed Syria, and came unexpectedly upon Pharnaces, and gained a complete victory. After this defeat Pharnaces fled to Sinope, and from thence sailed back into Bosphorus; where, upon his landing, Afander, whom he had appointed governor of that country during his absence, seized and put him to death, and took upon himself the title of king of Bosphorus. Cæsar, however, conferred the kingdom of Bosphorus on Mithridates the Pergamian, in recompence of services which he had performed in Egypt. But in endeavouring to secure the possession of it, he was vanquished and slain in battle by Afander, who, after his death, held the kingdom without any farther molestation. Afander, being disgusted by the emperor Augustus, who gave the command of the Bosporian troops that served in the Roman army to Scribonius, abstained from all food, and thus ended his life in the 93d year of his age. Upon his death Scribonius, pretending that he was the grandson of Mithridates, and marrying Dynamis, the daughter of Pharnaces, took possession of the kingdom of Bosphorus, but was expelled from it by Polemon, on whom the kingdom had been bestowed by Augustus. Polemon was succeeded by his son Polemon II.; who exchanged the kingdom, in the reign of Claudius for part of Cilicia. Trajan, as Eutropius informs us, took the king of Bosphorus under his protection; and Lucian tells us, that the Bosporans, in his time, had a king named Eupator; but we have no record of the period previous to the division of the Roman empire in which this kingdom terminates.

BOSPHORUS, *Promontory of*, was a promontory of Thrace, at the entrance of the harbour of Byzantium, situate on the Thracian Bosphorus, near the Propontis, and N.W. of the promontory of Chalcedon in Asia Minor.

BOSPHORUS, a city of Chersonesus Taurica, seated near the Cimmerian Bosphorus, and supposed by some writers to have been the same with Panticapæum, which, according to Strabo, was the metropolis of the European Bosphorus. But Pliny, Eutropius, and Stephanus Byz., speak of them as two different cities. Strabo and Ptolemy take notice of Panticapæum, but say nothing of Bosphorus; but Procopius often mentions the latter, but never takes notice of Panticapæum; from which circumstance it has been inferred, that these two names belong, at different periods, to the same city; Panticapæum being its most ancient name, recognized by Pliny, Strabo, and Ptolemy, and Bosphorus the name given to it by Procopius. Pliny, however, says, that some persons called it Bosphorus, and that, in its origin, it was a colony of Milesians.

BOSPHORUS, a town of India. Steph. Byz.—Also, the name of a town placed by Suidas towards the Hellespont, which was ravaged under the empire of Justinian.

BOSQUET, FRANCIS, in *Biography*, one of the most learned prelates of France in the 17th century, was born at Narbonne, in 1605, and educated at Toulouse. Before he assumed the ecclesiastical profession, he exercised various civil employments, viz. those of intendant of Guienne and of Languedoc, solicitor-general to the parliament of Normandy, and counsellor of state. But, in 1648, he was nominated bishop of Lodeve, and entrusted by the king with the management of the national concerns; and in 1657 took possession of the bishopric of Montpellier, in which situation he continued till his death in 1676. He was held in high estimation, for his learning, piety, and charity. As an author, he acquired betimes a considerable degree of reputation by his Latin translation, with notes, of the synopsis of civil law, composed in Greek verse by Michael Psellus. He also wrote a "History of the popes, who resided at Avignon," from 1305 to 1394; and published several epistles of pope Innocent III. with learned notes. But his principal work was a "History of the Gallican church, in the reign of Constantine," written in Latin, and published with considerable augmentations in 1636, 4to. but with the omission of some liberal and spirited reflections on the fictions and errors introduced into the early accounts of the Gallican church. He also left behind him some MS. observations on the liberties of the Gallican church, and some notes on the canon law. Gen. Dict.

BOSQUET, in *Ornamental Gardening*, is a term applied to detached clumps or other parts of gardens, pleasure or ornamented grounds, planted with a variety of deciduous evergreen trees, and shrubs, and herbaceous perennial flowers, either in a regular or irregular manner. They should be laid out in form suited to the nature, extent, and particular circumstances of the ground, so as to produce the greatest possible variety and effect; some being made circular, others oval or oblong, and with bending sweeps or swells outwards or inwards, and longer or smaller as may be necessary. They may be disposed with the greatest effect on the confines of extensive lawns, or other open spaces in grass; also in parks, paddocks, the terminations of spacious avenues and carriage ways leading to the houses, especially where of considerable dimensions, being varied in situation, and distributed at such distances as to leave large intervening spaces of open land in grass.

In the planting of compartments of this nature, in order to produce the best effect, much attention should be bestowed in regulating the sizes of the plants, their shades, and times of flowering, as well as in the disposing them in the order of their different growths, so that they may rise regularly from the sides to the centres, and display themselves in

the best and most advantageous manner in their heads and branches. It was formerly the practice to plant trees and shrubs of the deciduous and evergreen kinds, chiefly together in separate patches, but by a judicious mixture of both sorts a great richness and variety of effect are produced; various sorts of tall herbaceous perennial plants, as well as low flowering ones, may be introduced on the sides and edges, such as those of the golden rod, and other similar kinds, with daffodils, violets, polyanthus, primroses, and many others of the same sort.

In the less extensive kinds of ornamented grounds these sorts of bosquets should always remain perfectly open and wholly exposed to view, in order that the full variety of the plants may be shown; but in extensive parks, and other similar grounds where they are chiefly planted with the more large and coarse hardy trees and shrubs, they may be inclosed with open hurdles to defend them from the cropping of cattle or other animals, especially until they have acquired a sufficiently hardy and large growth.

These clumps, after being thus planted, only require the earth among the plants to be slightly dug over in the autumn, or very early spring, and once or twice hoed over in the summer to keep weeds from rising; the dead wood and irregular branches of the different plants or trees being cut out, shortened, and removed, to preserve them distinct and keep them in order. See *CRUMP*.

When well arranged and kept in neat order these sorts of bosquets or clumps produce much diversity and ornamental effect, both in large gardens and pleasure grounds.

BOSRA, in *Geography*, a town of Arabia Petrea, sunk into decay and inconsiderable note, though it is considered as the capital of the country. It is seated in the midland, on the back of Palestine, on the other side Jordan, and about 150 miles from the lake, or sea, of Galilee. See *BOSTRA*.

BOSS, or **BOSSE**, in *Sculpture*, signifies relievo, or prominence. The word is French, *bosse*, which signifies the same; whence also to *embosss*. See *EMBOSSING*.

Boss of a buckler, among the *Ancients*, the *umbo*, or *cu-çzæ*, which juts out in the middle.

Boss, among *Bricklayers*, denotes a wooden utensil wherein the labourers put the mortar to be used in tiling. It has an iron hook, whereby it may be hung on the laths, or on a ladder.

BOSS, **CASPAR VANDER**, in *Biography*, a painter of ships, sea-views, calms, and storms, was born at Hooru, in 1634, and manifesting an early genius for the art of painting, applied with assiduity to the study and practice of it, and distinguished himself by the excellence of his composition, by a light free touch, by an agreeable tint of colour, and by a very artful manner of handling. His application was so intense as to impair his health, so that he died much regretted at an early age in 1666. Pilkington.

BOSSAGE, in *Architecture*, a projecting stone, laid rough in building, to be afterwards carved into mouldings, capitals, arms, or the like.

BOSSAGES, also denote stones which seem to advance beyond the naked of a building, by reason of indentures, or channels left in the joinings; used chiefly in the corners of buildings, and thence called rustic quoins.

The cavities or indentures are sometimes round, sometimes square, sometimes chamfrained, or bevelled, sometimes in the diamond form: sometimes they are enclosed with a cavetto, sometimes with a littel.

BOSSCHART, **THOMAS WILLEBORTS**, in *Biography*, a painter of history and portraits, was born at Bergen-op-zoom, in 1613, and studied at Rome under Gerard Segers,

with whom he continued four years. His taste of design was fine and correct, his touch free and spirited, his colouring transparent and true, and his carnations possessed so much softness and life, that he was thought to approach near to Vandyck in portrait and history; and his works were eagerly purchased. His merit recommended him to the patronage of the prince of Orange, in whose service he was employed for several years. The large picture of "War and Peace," at the Hague, and the "Martyrdom of St. George," in the great church, are much commended for goodness of expression, for excellent colouring, and for being exquisitely finished. Pilkington.

BOSSE, **ABRAHAM**, a French engraver, was born at Tours, and flourished in 1630. In his performances he successfully imitated the coarser manner of Callot; and most of his works are executed from his own designs. The figures, with which he commonly embellished his plates, are drawn in a spirited style, and etched with great freedom. He afterwards retouched the etching with the graver in a bold, expeditious manner. The effect of his plates is clear and pleasing, though his lights are usually too much scattered. He was most successful in small subjects. We have a treatise by him "On the art of drawing;" the best edition of which is said to be that with the additions and corrections of M. Cochin; "The school of the painter and sculptor;" "The workshop of a copper-plate printer;" "The school-master and mistress;" and several other plates from his own designs; and also, "The history of the Maid of Orleans," from the designs of Vigouon, &c. &c. Strutt.

BOSSEE, in *Geography*, a town of Germany, in the duchy of Holstein; 6 miles E. S. E. of Rendsburg.

BOSSEA, in *Botany*, Willden. 1242. Class, *diadelphia decandria*.

Gen. Char. *Cak*. bilabiate, upper lip obcordate. *Cor*. banner biglandular at the base: keel two-petalled. *Pericarp*, legume peduncled, compressed, many-seeded.

Species, *B heterophylla*. Ventenat. A shrub two feet high. Branches compressed. Leaves alternate, smooth, petioled, the lower elliptic, the upper lanceolate. Peduncles one-flowered, axillary. Banner and rings yellow. Keel purple. A native of New Holland.

BOSSINEY, in *Geography*, an ancient borough of Cornwall, in England, is reduced from its original consequence, and now consists of only a few miserable cottages; yet some of the occupiers of these dwellings have the power of electing two members of parliament. This place, with many other towns in the county, was made a chartered borough by Richard earl of Cornwall, brother of Henry III.; but the town has never been incorporated. The right of election is vested in all persons who possess lands within the borough and live in the parish, but this number is now reduced to five or six.

Bossiney is in the parish of Tintagel, where are the remains of a castle occupying a very singular situation. The fortress stood partly on the main land and partly on a bold rocky promontory, which was separated from the shore by an immense chasm in the cliff, over which there was formerly a drawbridge. What remains on the peninsular part is a circular ruinous wall, which incloses some buildings that appear to have been the keep. Beneath is a passage through the rocks, where boats could pass at the time of high tides. From the extent and character of the ruins it is presumed, that this fortress has been a place of great strength and security. It is asserted by many writers, that it was the birth-place of the celebrated British king, Arthur, but this assertion is not satisfactorily substantiated. See *ARTHUR*. The bold, stupendous cliffs about Tintagel, and along the northern coast.

coast of Cornwall, cannot fail to excite emotions of admiration and terror in the minds of most spectators.

From Tintagel to Boscastle the road winds through various rocky chasms. The latter village is seated at the bottom of a deep valley, washed by a small inlet of the sea, whilst mountainous eminences encircle it. This place was formerly noted for a castle, built by one of the Botereaux family; but no fragments are now remaining. History of Boroughs, vol. i. 8vo.

BOSSO. MATTHEW, in *Biography*, an ecclesiastic distinguished for his learning and virtues, was born at Verona, in 1428, and educated first at Milan, and after his admission into the congregation of canons regular of the Lateran, at Padua. His merit advanced him to several eminent offices in his order; and at Fiesole, where he superintended the canonry of St. Bartholomew, he became acquainted with Lorenzo de Medici, who appointed him his confessor; and it was from his hands, and in his church that John, the son of Lorenzo, afterwards pope Leo X. received the ensigns of the cardinalate. He was offered a bishopric by pope Sixtus IV. for his services in checking the disorders that prevailed in the nunneries of Liguria, and the adjacent provinces, but refused to accept it. After having five times sustained the office of visitor, and twice that of procurator-general of his order, he died at Padua in 1502. Of his works the principal are the following, viz. "De salutaribus animi gaudiis;" "De instituendo sapientia animo;" "De tolerandis adversis;" "De gerendo magistratu;" "De immoderato mulierum cultu;" and a collection of letters and small pieces, entitled "Recuperationes Fesulanæ," printed at Bologna, in 1493, and furnishing one of the finest specimens of typography of the 15th century. Gen. Dict. Roscoe's Lorenzo de Medici, vol. ii.

BOSSON, in *Geography*, one of the five glaciers of Switzerland, that stretch towards the plain of Chamouny, and unite at the foot of Mount Blanc. See GLACIER.

BOSSU, RENE LE, in *Biography*, a polite scholar and eminent critic, was born at Paris in 1631; and having received the rudiments of his education at Nanterre, he was admitted a canon regular in the abbey of St. Genevieve, at the early age of 18 years, and pursued the study of philosophy and divinity. After having received priest's orders, in 1657, he indulged his inclination to the Belles Lettres, and devoted himself for several years to the employment of teaching them. At length he retired to pass his time in tranquil study at the abbey of St. Genevieve; and in this retreat, where he was sedulously employed, published his "Parallel of the philosophy of Descartes and of Aristotle," and his more popular "Treatise on epic poetry." He also published a small piece in favour of Boileau against St. Sorlin; but the greater number of his compositions remain in MS. at the abbey of St. John, at Chartres, of which he was made sub-prior in 1677. He died in 1680. Bossu was distinguished by a sound judgment, well regulated, but lively imagination, and a mild, benevolent character. His work on epic poetry furnishes many judicious rules, of which however, Voltaire says, that they will never make a poet. It was left in an imperfect state; the author having intended to exemplify his rules from Horace and Virgil. The best edition is that of the Hague, in 1714, with a memoir on the life and writings of the author by father Courayer. Gen. Dict.

BOSSU, in *Geography*, an island about 3 or 4 leagues N.E. from Trinity Point, on the north coast of the gulf or river of St. Lawrence.

BOSSUET, JAMES BENIGNUS, in *Biography*, a famous French divine, celebrated for popular eloquence, for his ta-

lents as a controversial divine, and for his elaborate vindication of the Roman catholic faith, was born at Dijon in 1621; and having for some time pursued his studies under the care of the Jesuits, who wished him to enter into their order, he was rescued from them by the interposition of his uncle, and in 1642 sent to Paris to finish his studies at the college of Navarre. As he had devoted himself to the clerical profession, theology was the object of his particular attention; and his favourite author was Augustin. To the study of polite literature he dedicated a portion of his time; and whilst he was a professed admirer of Homer, he disapproved the introduction of mythology into modern poetry. And though the range of his studies was very extensive, he disregarded mathematics from a preconceived notion, that they would not contribute to make him a founder divine, or a more eloquent preacher. The philosophy of Descartes recommended itself to him by its novelty, and he adopted it, notwithstanding the reproach and persecution which it underwent. After completing his theological course, he received the degree of doctor of the Sorbonne in 1652, and then removed to Metz, when he was appointed canon of the church. Here he wrote his first polemic piece, which was a refutation of the catechism of a Huguenot minister of that town, with whom, however, he lived on terms of uninterrupted friendship. Upon his return to Paris, his eloquence as a preacher recommended him to royal patronage. In 1661, he preached before the king, and his conduct during his residence at Versailles was suited to the dignity of his profession. He soon obtained, without any solicitation on his own part, the bishopric of Condom; but when he was appointed preceptor to the dauphin, in 1670, he resigned this preferment, and devoted himself entirely to the discharge of the duties of this honourable and important office. In this situation he composed for the use of his pupil, his discourse on universal history, which, notwithstanding some objections that have been urged against it, is considered as his principal performance, and much more instructive and useful than all his theological and controversial writings. As soon as he had completed the education of the prince, Lewis XIV. advanced him, in recompence of his attention to this object, in 1681, to the see of Meaux; and in this situation of greater leisure, he employed himself in the defence of the church against both infidels and protestants. In his polemic writings he displayed much logical acuteness and dexterity in illustrating the doctrine of the church, and the variations subsisting among protestants; and he deduced his chief arguments in favour of the former, and in opposition to the latter, from the antiquity and unity of the churches; the authority of fathers, councils, and popes, during a long series of ages; the novelty of the pretensions of the reformers; the necessity of an umpire in the province of religion for settling disputes, explaining the scriptures, and maintaining order and peace; and the necessity of submitting to such an umpire, in order to prevent that disunion and variety of sects, each professing its right to interpret the divine word, and claiming the honour of being the true church, which disgraced the cause of the protestants. The latter were ably defended by the French Calvinists, and particularly by the celebrated Claude, to whom, in the controversy, some even of the catholics have allowed the superiority. Leibnitz also became a party in the dispute between the protestants and papists, and recommended, for the sake of unity and peace, mutual concessions. But Bossuet remained inflexible, and conceded only that the sacramental cup might be allowed, as a matter of favour, to the laity. He was, however, no advocate for the infallibility of the pope, or for his assumed right of deposing kings; but zealously opposed both these claims,

claims, when urged by Innocent XI. against the independence of the crown, and the liberties of the clergy of France. The consequence of his opposition was the loss of the cardinal's hat, which the pope offered him as an inducement to his desisting from prosecuting this dispute.

Bossuet, not content with writing on general subjects, such as the defence of the Christian religion, the catholic faith, and the Gallican church, undertook to refute the notions of the amiable Fenelon concerning quietism; either because he considered these notions as erroneous and dangerous, or because he wished to degrade in the general estimation the character of a person, whom he regarded as a rival. Fenelon complained of the harshness with which he was treated; and such indeed were the impetuosity and zeal with which he entered into this dispute, that being once at court he maintained his opinion with a degree of ardour, which led the king to say to him, "What would you have done, if I had taken part with Fenelon against you?" Bossuet replied with great spirit, "I would have spoken ten times as loud." On another occasion, however, he was less disposed to give offence; for though he had condemned theatrical exhibitions, to which Lewis was addicted, yet being asked, what he thought of attending them, he replied with a considerable degree of address, "For it there are great examples, and against it strong arguments."

Of his talents as a speaker Bossuet exhibited a specimen that was much admired, at the early age of 16: and as to his style of preaching, it was lofty, free, animated, and energetic. As he possessed a retentive memory, he seldom wrote down more than the heads of his discourses, and supplied the intervals extempore, but as the result of previous meditation. Hence it happens, that his printed sermons are rather bold and mattery sketches than finished compositions; and however much they have been admired, they are far excelled by the discourses of Massillon and Bourdaloue. But his funeral orations are considered as surpassing all others with respect to sublimity and pathos. Of the seven which he delivered and published, the three that have claimed pre-eminence are those for the queen of England, widow of Charles I., in which is introduced a fine delineation of Cromwell's character and politics; for the duchess of Orleans, sister to Charles II.; and for the famous prince of Condé.

In the exercise of his episcopal and pastoral functions Bossuet was entitled to great respect and commendation. He was eminently distinguished by his attention to the duties of his office; by his diligence in communicating instruction to the ignorant, and comfort to the afflicted; and by the exercise of an exemplary hospitality to the indigent. In his clerical visits he paid particular attention even to peasants and children. Whilst he was thus amiably employed, he closed a studious and dignified life, in the year 1704. It ought to be recorded to his honour, that though he was a zealous advocate for the doctrines of the church of Rome, he was no friend to persecution, and expressed his disapprobation of the severity exercised toward the Huguenots. Nevertheless, it does not appear that he ever represented to the king the injustice, cruelty, and impolicy of this conduct.

"The behaviour and manners of Bossuet always commanded respect, but they often betrayed haughtiness, a domineering disposition, and a high opinion of himself; and shewed he had but little of that spirit of meekness and gentleness, which in the archbishop of Cambray was joined to every virtue that inspires veneration. The difference of their characters is easily discerned in their writings. In those of Bossuet, the reader admires vigour of mind and strength of rea-

soning; in those of Fenelon, he feels the persuasive power arising from the union of a fine genius with genuine benevolence. Accordingly, the former has been said to have demonstrated the truth, and the latter to have exhibited the amiableness of religion."

Of the works of Bossuet a collection was made in 1743, in 12 vols. 4to. to which was added, a supplement of 5 vols. 4to.; and the Benedictines of St. Maur have published 12 vols. of a new and improved edition. He also wrote in Latin a defence of the declaration of the French clergy on ecclesiastical power. Bossuet was a distinguished member of the French academy, into which he was admitted in 1671. *Eloge Academique par d'Alembert. Nouv. Dict. Hist. Moreri. Gen. Biog.*

BOST, or BUST, in *Geography*, a town of Persia, in the province of Segistan, or Seistan, seated on the banks of the river Heermund, or Hindmend; distant about 75 miles S.W. from Candahar. N. lat. $32^{\circ} 30'$. E. long. $64^{\circ} 25'$. From this town *Abulfeth Ali Ben Mohammed al Kateb*, one of the most illustrious poets who flourished under the dynasty of the Samanides, derived the appellation of *Al Bosthi*. *Herbelot.*

BOSTAN, a town of Asiatic Turkey, in the province of Room, seated in a fertile plain of the same name, watered by the river formerly called "Sarus," and surrounded by mountains, on the northern side of mount Taurus. The town is small; and its inhabitants present a striking contrast to the more polished natives of Syria. Their common dress is a short jacket and a fringed turban. The women, whose complexion is fair and florid, wear on their heads flat pieces of metal, some of silver, and others of copper, according to their rank, which they tie under the chin, and thus shelter their faces from the sun and rain. N. lat. $38^{\circ} 12'$. E. long. $36^{\circ} 28'$.

BOSTANGI-BASCHI, or *Bostangee Bachi*, in the *Turkish Affairs*, an officer in the grand seignor's household, who has the superintendence of all the gardens, water-works, and houses of pleasure, with the workmen employed in them. The post of bostangi-baschi, or chief gardener, is one of the most considerable in the Turkish court; and his power is very extensive. He has the emperor's ear, and on that account is much courted by all who have business depending at the Porte; he is governor of all the villages on the channel of the Black sea, and has the command of above ten thousand bostangis, or gardeners, in the seraglio, and other places about Constantinople. He represses debauchery, and punishes theft and other offences. But that which gives him the greatest eclat is the honour he has of holding the rudder whenever the grand seignor takes his pleasure on the water, and of accompanying him every where on horseback, whenever he goes out in state. This officer is of the number of the four "Rickab agaleri," or officers of the court, who are obliged to attend the sultan on all solemn occasions; the other three are called "Buyuk-imbrohor," or great equeerry, "Kurchuk-imbrohor," or little equeerry, and "Capidjilar-kizayissi," or great chamberlain. The bostangees are generally sons of Mussulmans; their pay is tolerably good, and they are almost all married. They were established under the reign of the first emperors, and for a long time furnished a nursery of the best soldiers. Those of them who displayed the greatest courage and strength, and more especially the highest degree of fanaticism, were transferred to the janizaries.

BOSTON, in *Geography*, is a large commercial borough-town of Lincolnshire, in England. It stands in that division of the county called Holland, and is nearly surrounded by the fens; the greater part of which having been inclosed and drained, is now appropriated to arable and meadow lands.

lands. Previous to this great national undertaking, Boston had lost much of its population and trade; but this event has renovated the town. It stands on the banks of the river Witham, which empties itself into the sea about five miles east of the town. Here is a commodious, well-frequented haven; and formerly a great trade was carried on in the exportation of wool: that being prohibited, the merchants were necessitated to seek for profit in other commodities, and have nearly kept pace in the characteristic commercial spirit of the country, by advancing the population, opulence, and trade of Boston. It is now one of the most considerable towns and ports in the county of Lincoln; and, besides two weekly markets, has four annual fairs.

Boston, according to Bede, was anciently called Botolph's town, from St. Botolph, a Saxon, who founded a monastery here, which, according to the same venerable writer, gave origin to the town. Other writers state, that the Romans had a station here, and in support of this opinion refer to some ancient foundations of buildings, hewn stones, and urns, that were discovered here in 1716. This town sent representatives to three national councils, 11th, 26th, and 27th of Edw. III. and first returned regular members in Edw. VI.'s time. It was incorporated in the last year of Henry VIII.'s reign. The number of voters amounts to nearly 200. About the end of Henry I.'s reign, a man, named Robert Chamberlain, with some accomplices, disguised in the habits of monks, set the town on fire in several places, for the purpose of plundering the inhabitants. Chamberlain was taken, and executed, but refused to impeach his accomplices.

The corporation, by whom the town is governed, consists of a mayor, who is chief clerk of the market, and admiral of the coast, a recorder, twelve aldermen, eighteen common-councilmen, a judge, and marshal of the admiralty, a coroner, two sergeants at mace, and other inferior officers.

The river Witham is navigable at spring tides for vessels of ten to eleven feet water; and many of them are employed in the corn trade to London. A communication is opened between this place and Lincoln, by means of a canal; and another cut communicates to Sleaford, Horncastle, &c.

Boston had formerly, besides St. Botolph's monastery, a priory, four friaries, and three colleges. It had also two churches; but that of St. John's is entirely destroyed. The other, dedicated to St. Botolph, is a large, elegant pile of building, with a lofty tower, which is justly admired for the lightness, neatness, and beauty of its various compartments. In the year 1309 was laid the foundation of this structure, which has since proved the pride and boast of the Bostonians. It is 300 feet in height, and is said to be the loftiest tower in England. From its top is a most extensive view over the flat fens of Lincolnshire. The whole height is divided into four compartments, of which the uppermost is formed into an octagon-shaped lantern, each side perforated with pointed arched windows, and filled with mullions and tracery. This is attached to the square tower by flying buttresses, terminated by puffed pinnacles. The three other compartments are ornamented with highly decorative windows and tracery; and at each corner are two strong ornamented buttresses. The church, though more ancient than the tower, displays a fine example of English florid ecclesiastical architecture. Large in dimensions, lofty and light in its general character, and richly elegant in the various decorative ornaments of windows, oratories, door-ways, &c. it will be examined with delight by the architectural antiquary. It consists of a nave, chancel, side aisles, south porch chapels, &c.; and is one hundred feet in width, by three hundred feet in length. In the upper part of the nave are twenty-eight pointed windows, between which are fourteen groined arches, with light

spandrels curiously moulded. These, with their interfections and embossments, produce a very beautiful effect, which is improved by the lofty columns and arches that divide the centre from the side aisles.

The general appearance and convenience of Boston have been much improved within the last twenty years. Many obstructions have been removed, and new buildings erected. The market place is spacious, and is ornamented with a handsome market-cross. In 1772, the corporation built an excellent fish-market, which is abundantly supplied with sea and river fish. Queen Elizabeth gave the corporation a court of admiralty over all the adjacent sea-coast. Vessels arrive here from Stanton's wharf, London, every ten days; and from Hull and Lynn, every spring tide. Several foreign ships trade here in summer with timber, rye, wine, &c. Boston is 35 miles east of Lincoln, and 116 miles N. E. of London. It contains 1252 houses, and 5926 inhabitants. History of the Boroughs of Great Britain, vol. ii. Howlett's Select Views of Lincolnshire, 4to.

Boston, the capital of the state of Massachusetts, in America, the largest town of New England, and the fourth in size and rank in the United States, lies in N. lat. 42° 23' 15", and W. long. 70° 52' 42". This town, together with the towns of Hingham, Chelsea, and Hull, constitute the county of Suffolk; and it is distant 61 miles S. by W. from Portsmouth, 164 N. E. from New Haven, 252 N. E. from New York, 347 N. E. from Philadelphia, and 500 N. E. from the city of Washington. It is built upon a peninsula of irregular form, at the bottom of Massachusetts bay, and is joined to the land by an isthmus at the south end of the town leading to Roxbury. Its length, including the neck, is 3 miles; that of the town itself is not quite 2 miles; its widest part, 726 yards. The peninsula contains about 700 acres (some say 1000), in which are about 2600 dwelling-houses. The number of inhabitants, in 1790, was 18,038; but it has since been much augmented, so that in 1800, they amounted to 24,937. The town is intersected by 97 streets, 36 lanes, and 26 alleys, besides 18 courts, &c. many of which are irregular and incommodious. State-street is very spacious, and connecting in a line with Long wharf, where strangers usually land, exhibits a flattering idea of the town. Boston contains 19 edifices for public worship; 9 for congregationalists, 3 for episcopalians, and 2 for baptists. The Friends, Roman Catholics, Methodists, Sandemanians, and Universalists, have also one appropriated to each. Most of them are ornamented with beautiful spires, and furnished with clocks and bells. The other public buildings are the state-house, court-house, a theatre, concert-hall, Faneuil hall, gaol, alms-house, work-house, bridewell, and powder magazine. Franklin place, adjoining Federal street theatre, contains a monument of Dr. Franklin, and is reckoned a great ornament to the town. A magnificent state-house is also erected on the south side of Beacon-hill, fronting the mall, and overtopping the monument on Beacon-hill. The market-place, in which Faneuil hall is situated, is plentifully supplied with all kinds of provisions, both from the country, and from the ocean, and rivers.

The harbour of Boston is formed by point Alderton on the south, and by Nahant point on the north. It is sufficiently capacious to admit 500 vessels to ride at anchor in good depth of water; but the entrance is so narrow, as hardly to allow two ships to pass a-breast. It is diversified with about 40 islands, the greatest number of which consist of rocks and banks of sand, slightly covered with verdure; but about 15 of them afford excellent pasturage, hay, grain, and agreeable places of resort in summer to parties of pleasure. At the distance of about three miles from the town is Castle-island, the fortifications of which, formerly called Castle-William,

William, defend the entrance of the harbour and sufficiently provisioned for a peace establishment. The light-house stands on a small island at the north entrance of the channel (point Alderton and Nantasket heights being on the south), and is about 65 feet high. In steering for it from cape Cod, the course is W.N.W. when within one league of the cape; the distance from cape Cod to the light-house is about 16 leagues; and from cape Anne the course is S.W. distant ten leagues. A cannon is lodged and mounted at the light-house, to answer signals. Of the islands, seven only are within the jurisdiction of the town, and taxed with it; viz. Noddle's, Hog, Long, Deer, Spectacle, Governor's, and Apple islands. The wharfs and quays in Boston are about 80 in number, and very convenient for vessels. Long wharf, or Boston pier, extends from the bottom of State-street, 1743 feet in a straight line into the harbour; its breadth is 104 feet, and at the end of it are 17 feet of water at ebb-tide. Adjoining to this wharf on the north, is a convenient wharf, called from its former proprietor, and its form, Minot's T. Here vessels are supplied with fresh water from a well surrounded by salt water, and dug at a great expence. On the north side Long wharf is covered with large and commodious stores; and a canal has been cut, in order to connect this harbour with Roxbury.

In approaching Boston from the sea, it presents a beautiful and picturesque object. It lies in a circular but irregular form round the harbour, and is ornamented with spires, above which the monument of Beacon-hill rises pre-eminent, bearing on its top a gilt eagle, with the arms of the Union; and on its base, a variety of inscriptions commemorating some of the most remarkable events in the late war. Beacon-hill is the highest point of land on the peninsula; the common below it contains about 45 acres, refreshed by perpetual breezes; and on its east side is the Mall, a pleasant walk, about 600 yards long, adorned with rows of trees. Charles river, and West Boston bridges, are highly useful and ornamental to Boston; and both are erected on Charles river, which mingles its waters with those of Mystic river in Boston harbour. Charles river bridge connects Boston with Charlestown, in Middlesex county; it stands on 75 piers, and is 1503 feet long, and 42 feet broad. West Boston bridge stands on 180 piers, and is 3483 feet long, and 40 feet wide. Both bridges have draws for the admission of vessels, and lamps for the benefit of evening passengers. Boston has seven free schools, supported at the public expence, in which the children of all citizens are freely admitted; and besides these, many private schools.

The principal societies in the commonwealth hold their meetings in this town; these are the Marine Society, American Academy of Arts and Sciences, Massachusetts's Agricultural Society, Massachusetts's Charitable Society, Boston Episcopal Charitable Society, Massachusetts's Historical Society, Society for Propagating the Gospel, Massachusetts's Congregational Society, Massachusetts's Humane Society, Boston Library Society, Boston Mechanic Association, Society for the Aid of Emigrants, Charitable Fire Society, and seven respectable lodges of free and accepted masons.

For the support of the foreign and domestic trade of Boston, which is very considerable, there are four banks; viz. the branch of the United States bank, the Union, the Massachusetts's, and the Boston, banks; the Massachusetts's bank consists of 800 shares of 500 dollars, equal to 400,000; the capital of the Union bank is 1,200,000 dollars, 400,000 of which is the property of the state. The principal manufactures of Boston consist of rum, loaf-sugar, beer, sail-cloth, cordage, wool, and cotton cards, playing cards, pot and pearl-ashes, paper-hangings, hats,

plate-glass, tobacco, and chocolate. It has 30 distilleries, 2 breweries, 8 sugar-houses, and 11 rope-walks. The number of the different stages that run, through the week, from this town, is upwards of 20; and on the great road between Boston and New Haven, there are constantly employed 20 carriages and 100 horses.

For the government of Boston, nine select men are annually chosen; and at the same time are chosen a town-clerk, a treasurer, twelve overseers of the poor, twenty-four firewards, twelve clerks of the market, twelve scavengers, twelve constables, and a number of other officers. Besides those called "trained bands," there are four other military companies in Boston; viz. the ancient and honourable artillery company, the cadets, fusiliers, and artillery.

The settlement of Boston took place as early as the year 1631 from Charlestown. It was called by the Indians Shau-mut, and by the settlers from Charlestown, Trimountain, from the view of its three hills; and it derived its present name from respect to the Rev. Mr. Cotton, a minister of Boston, in England, and afterwards minister of the first church in this place. In 1727, it was much damaged by an earthquake, and has since frequently suffered severely by fires, its houses having been mostly built of wood. The revolution, whence America dates its independence, commenced at Boston. Morse.

BOSTON Corner, a tract of land adjoining mount Washington, in Berkshire county, and state of Massachusetts, containing 67 inhabitants.

BOSTON, New, a township of Hillsborough county, New Hampshire; 12 miles S.W. by W. from Amoskeag falls, 60 miles W. of Portsmouth, and equally distant N.W. from Boston.

BOSTRA, BOTSRA, BOSRA, or BOZRAH, in *Ancient Geography*, one of the principal towns of Arabia, and the capital of a canton or province called "Auranite." It was the capital of the eastern Idumæa, and the royal residence of Joba, the son of Zerah, duke of Edom; and in scripture history, it is commonly mentioned as situate in a wilderness, because it stood on the confines of Arabia Deserta. It was, however, in those times to which the ancient biblical history refers, a considerable place; having been made a Levitical city by Joshua, and a city of refuge. It is likewise celebrated by ancient writers and medals; and several of its bishops, at a later period, assisted at some of the ancient councils. It was distant four days' journey from Damascus, had a very strong castle, a gate 20 cubits high, and one of the largest basins or reservoirs in the Levant. It was captured by Alexander the Great, after the battle of Issus, and he seems to have been much attached to it; but after his death it became subject to the Seleucidan kings of Syria, until the time of Antiochus Dionysus, when it was conquered by an Arabian prince. Under the reign of Trajan, it was subjected to the dominion of the Romans. At this time it was comprehended in a province of Arabia; and Trajan adorned it with many sumptuous edifices, established it as a new city, and gave the inhabitants permission to denominate it "Trajana." The emperor Septimius Severus enlarged this city, whence some have regarded him as its founder. This prince, or his immediate successors, conferred upon it the names and honours of a metropolis. Under the reign of Alexander Severus, it was considered as a place of importance, on account of its situation on the frontiers of the empire; and it was thought worthy of receiving a Roman colony. In honour of Alexander Severus, it assumed the name of "Alexandrianna." The two principal divinities worshipped at Bostra were Bacchus and Urania. Bacchus Dionysus was, according to Diodorus Siculus, the Osiris of the Egyptians; and this deity was denominated "Dufario" by

by the Nabatean Arabs in the vicinity of Bosra. Accordingly, the inhabitants of this city engraved a figure of their god Dufares on their medals at Bosra. There was also a temple of the goddess Urania, which was engraved on a medal of Septimius Severus, and also on one of the empress Mammæa. The worship of Jupiter Ammon, and of Serapis, was also admitted into Bosra, and they received from the Greeks that of Jupiter Pius or Amicus. The citizens of Bosra regarded Urania as the tutelar deity of their city. The Dufarian games, which were first discovered on medals under the reign of the emperor Philip, were celebrated at Bosra in honour of Dufares, the Bacchus of the Arabians. When Arabia was divided, after the conquest of it by Trajan, Bosra was appointed the metropolis of that part which retained the name of Arabia; and its bishop afterwards became the metropolitan of the ecclesiastical province. See BOSRA.—Another town of the same name, but less celebrated, is mentioned among the Moabite cities, in Jer. ch. xlviii. v. 24.

BOSTRYCHITES LAPIS, derived from *βοτρυχίζω*, *I fold the hair in braids*, in *Natural History*, a name given by some to a stone supposed to contain women's hair included in it: some have understood by it, those pieces of crystal which have accidental foulnesses in them, resembling hair, or pieces of hair, caused by earthy or metalline matter; others call by this name those German agates, which contain either the conservæ or other capillary water plants, or other foulnesses running into their form; the first of these very frequently have the conservæ of great length, and variously undulated and turned about, so as very elegantly to represent a loosely flowing lock of hair.

BOSTRYCHITES is also a name given by some authors to a species of pyrites, whose irradiations were supposed to imitate hair.

BOSTRICHUS, in *Entomology*, a genus of **COLEOPTEROUS** insects distinguished by having the antennæ clavated, the club solid; thorax convex, with a slight margin; head inflexed, and concealed under the thorax. Gmel. Fabr. &c. The species of this genus are *capucinus*, *flavicornis*, *elongatus*, *typographus*, *chalcographus*, *polygraphus*, *micrographus*, *bidentatus*, *scolytus*, *crenatus*, *pygmæus*, *ligniperda*, *piniperda*, *testaceus*, *varius*, *vittatus*, *minutus*, *maculatus*, *bifasciatus*, *limbatus*, *fuscus*, and *pilosus*.

BOSTWICKS, in *Geography*, a post-town of America, in Stokes county, N. Carolina, 290 miles from Washington.

BOSULS, a town of France, in the department of the Aveyron; $3\frac{1}{2}$ leagues N.E. of Rhodéz.

BOSWELL, JAMES, in *Biography*, son of Alexander Boswell, lord Auchinleck, one of the judges in the supreme court of session, and justiciary in Scotland, was born at Edinburgh, Oct. 29, 1740, and received the first rudiments of education in that city. He afterwards studied civil law in the universities of Edinburgh and Glasgow; and during his residence in these cities, he formed an intimate acquaintance with some English students, which produced a predilection for their manners, that contributed in a great degree to his future habits and attachments. Ambitious, in early life, of distinguishing himself by his literary talents, he was so fortunate as to obtain the patronage of the late lord Somerville, of which he always retained a grateful remembrance. In 1760, he visited London, to which he became much attached, and where he fixed his principal residence. Here he enjoyed the advantage of cultivating an acquaintance with several persons of literary character, to whom he recommended himself by his attention, and by the urbanity of his manners. Although his father had intended him for the profession of the law, his own inclination led him to wish for a commission

in the army; but he gave up this object in deference to lord Auchinleck's persuasion, and at his desire returned to Scotland; and renewing his attention to the law, pursued a course of regular instruction, and passed his trials as a civilian at Edinburgh. In compliance with his father's wishes, he attended the lectures of an excellent civilian at Utrecht, in the winter of 1762; and afterwards obtained permission to make his grand tour of Europe. During his winter's residence at Utrecht, he visited several parts of the Netherlands, and then commencing his projected travels, he passed from Utrecht to Germany, and pursued his route through Switzerland to Geneva; from hence he crossed the Alps into Italy, paying his respects, in the course of his journey, to Voltaire at Ferney, and to Rousseau in the wilds of Neuchâtel. In Italy, he associated with lord Mount Stuart, to whom he afterwards dedicated his "*Theses Juridicæ*." From Italy he sailed to Corsica, and, traversing the island, he obtained the friendship of Pascal de Paoli, in whose palace he resided during his stay. From Corsica he went to Paris; and returning to Scotland in 1766, he soon after became an advocate at the bar in that country. In the famous Douglas cause, which was at that time a subject of discussion, he published a pamphlet entitled "*The Essence of the Douglas Cause*," which contributed to his popularity. In 1768, appeared his "*Account of Corsica, with Memoirs of General Paoli*," which was highly spoken of by Dr. Johnson, and translated into the German, Dutch, Italian, and French languages. His prologue, written in the winter of this year, on occasion of opening the theatre royal at Edinburgh by David Ross, esq. was flattering to the author, and beneficial to the manager, as it secured to the latter the uninterrupted possession of his patent till his death in Sept. 1790. In the celebration of the Shakspeare jubilee at Stratford-upon-Avon, in 1769, Mr. Boswell took a conspicuous part, appearing at the masquerade exhibited on that occasion, under the character of an armed Corsican chief. In 1783, he published his letter to the people of Scotland, which, according to the opinion given of it by Dr. Johnson, in a letter to the author, "contains very considerable knowledge of history and the constitution, very properly produced and applied." As this letter was sanctioned by the approbation of Mr. Pitt, it was soon followed by another, in which Mr. Boswell displayed his usual energy and political talents. In 1785, he published "*A Journal of his Tour to the Hebrides*," with Dr. Johnson; and in the same year he removed to London, where he was called to the English bar. But his profession seems to have been less the object of his attention than the "*Life of Dr. Johnson*," for which he had been collecting materials from the commencement of his acquaintance with him in the year 1763, to the time of his death, and which was published in 2 vols. 4to. in 1791. Few persons can be supposed to be better qualified for this undertaking than Mr. Boswell; for he had known, and he had familiarly, and almost daily, conversed with Dr. Johnson for more than twenty of the last years of his life; during which, he was happy in the kind regard and unreserved confidence of his venerable friend, who, as we are informed by Mr. B. himself, was fully apprized of his biographical intention, and manifested no disapprobation of it. Of this work, which of course became very popular, it will be sufficient to observe, that it exhibits a faithful history of Johnson's life, exemplified in a variety of anecdotes, that rendered it equally instructive and entertaining. The last literary performance of Mr. Boswell was the preparation of a second edition of this work. Mr. Boswell combined, with considerable intellectual powers, a gay and active disposition; and he often experienced an unaccountable depression of spirits. In one of his gloomy intervals he composed a series of essays under the title

title of the "Hypochondriac," which appeared in a periodical publication about the year 1782, and which he once thought of collecting into a volume. Soon after his return from a visit to Auchinleck, he was seized with a disorder which put an end to his life, in Portland Street, June 19th, 1795, in the 55th year of his age. At the close of his journal of the tour to the Hebrides, after having given a sketch of his own character, he introduces, not indeed without an apology, the eulogium of Dr. Johnson, whose friendly partiality to the companion of his tour represents him as one "whose acuteness would help my inquiry, and whose gaiety of conversation and civility of manners are sufficient to counteract the inconveniences of travel in countries less hospitable than we have passed." He lost his wife, to whom he was married in 1769, in the year 1790, and she left him two sons and three daughters. She was a lady, who to the advantages of a polite education united a superior understanding; and on occasion of her death he honoured her memory with an affectionate tribute. *Bog. Dict.*

BOSWORTH, MARKET, in *Topography*, a town in Leicestershire, England; situated on a hill, and celebrated in history as the nearest place of note to the scene of battle between Richard III. and Henry earl of Richmond. The manor anciently belonged to the earls of Leicester, and by a partition came to Saer de Quincy, earl of Winchester, who, in the reign of king John, gave it to Richard de Harcourt, of Stanton Harcourt, in Oxfordshire, whose descendant Richard Harcourt, when lord of the town, obtained from Edward I. the privileges of a market (Wednesday) and a fair. The manor continued in this family till Henry VIII.'s reign, when it came to the marquis of Dorset; and from him, by the earl of Huntingdon, to sir Wolstan Dixey knight, whose heirs are, or lately were, owners of it. Bosworth is 106 miles N.W. from London, and contains 120 houses and 791 inhabitants. The church is large, contains some ancient arms and monuments, and has a beautiful spire; it had five chapels belonging to it. There is a free-school, of which Anthony Blackwall, a learned divine, was master, and Samuel Johnson (afterwards LL.D. so celebrated in the literary world) his usher. Thomas Simpson, the mathematician, was born here in 1710, who, from indigent circumstances, and the business of fluff-weaving, acquired so deep a knowledge of mathematics, as to rank him with the most scientific men of the age, and to raise him to the professorship at Woolwich, and F.R.S. He died at Bosworth, 1761. See SIMPSON. Nichols's History of Leicestershire, see *Market Bosworth*, et seq.

BOSWORTH, Battle of, in *History*. This battle, on which the kingdom of England depended, and which terminated the civil war between the houses of York and Lancaster, was fought August 22, 1485, on a large flat plain, called Radmore plain, 3 miles from Bosworth, and 4 miles from Hinckley, between Henry earl of Richmond at the head of 6000 men, and king Richard III. with an army above double that number: about 100 of the former were slain, and about 4000 of the latter. The battle, which lasted little more than two hours, was decided by the death of Richard, as his followers then sought safety in flight, and left Richmond master of the field and kingdom. Richard fought with singular intrepidity; his body, being found among the slain, was ignominiously thrown across a horse, and carried to Leicester, where it was interred in the Grey Friars church. Many relics of this battle have at various times been found by digging and ploughing in the field. These were spurs, rings, armour, cross-bows, arrow-heads, &c. King Richard's well, and Crown hill, where Richmond harangued

his army, preserve the identity of the place. Henry's Hist. of England.

BOTABA, in *Geography*, the name of one of the Ladrões, or Marian islands.

BOTABOTA, in *Ornithology*, a name given by some writers to that species of sea swallow (*hirundo efculenta*), whose nests are so famous for soups in China, and in some of the islands in the Indian ocean. See ESCULENTA HIRUNDO. The nests are supposed to be restorative, and greatly provocative to venery; for which last quality it is that the eastern nations in general are so fond of them. See BIRD'S NEST.

BOTAGIUM, in *Middle Age Writers*, a fee paid for wine sold in *bote*, or *buts*.

Wine that tastes of the cask is called *vinum botatum*.

BOTALE FORAMEN, in *Anatomy*, an aperture in the heart of a fœtus, whereby the blood is enabled to circulate, without going into the lungs, or the left ventricle of the heart. See FŒTUS, CIRCULATION, and HEART.

BOTALLUS, LEONARD, in *Biography*, an eminent physician of Piedmont, flourished about the middle of the 16th century. He was a disciple of Fallopius, and took his degree of doctor in medicine at Padua. It appears by his writings, that he was a diligent observer, and enjoyed a considerable share of practice. That he was in great estimation, appears by his having been made in succession physician and aulic counsellor to Charles IX. Henry II. of France, and to William prince of Orange. He was also skilled in the practice of surgery, having been instructed under his brother in the camp of the prince of Orange, whom he cured of a wound, in which the carotid artery had been injured. His works are, "De curandis vulneribus sclopetorum," 8vo. 1560. Venet. This has been frequently reprinted, and continued, for a long time, to be esteemed the most useful manual that had been published on the subject. "Commentarioli duo, alter de medici, alter de ægroti, munere," 1565. Lion, 8vo.; in this he lays down rules for the conduct of the physician, the surgeon, and the apothecary, in their attendance upon the sick. But the work by which he is most known, and which produced an important revolution in the practice of medicine, is his "De curatione per sanguinis missione, de incidendæ venæ, cutis scarificandæ, et hirudinum assigendarum modo," Antw. 1583, 8vo. Though bleeding had always been occasionally used in the cure of diseases, yet in his time it was nearly constantly superseded by purging medicines, or it was too sparingly used, and seldom repeated. Our author made frequent recourse to it, with complete success, he says, in diarrhœa, dysentery, in fever, the plague, and during pregnancy, in which cases it was nearly prohibited. Flattered with the success with which his practice was attended, he became, as he advanced in life, more and more bold and free in the use of the lancet, and has left records of cases, in which he bled his patients ten times, or oftener. He even recommends bleeding in quartan fevers, and in dropsies. The reputation the author acquired, soon procured him profelytes; and bleeding became a general remedy all over Europe; but in no country was it carried to such excess as in France, where the professors of medicine, for their too frequent recurrence to it, were held up to ridicule by Le Sage, in his inimitable novel of Gil Blas. The mania has at length subsided; and bleeding is now considered by them as a valuable, but not as an universal remedy. The works of Botallus were collected, and published under the title of "Opera Omnia," in 1660, at Leyden, by I. V. Horne. Haller. Bib. Med. Pract. et Chirurg. Eloy. Bib. Hist.

BOTANIST, a person who understands the nature, history, and distinction of vegetables, on settled and certain principles, and can call every plant by a distinct, proper, and intelligible name. Linnæi Fundam. Botan. p. i. See **BOTANY**.

BOTANOMANCY, formed of *βόταν*, herb, and *μαντεία*, divination, a species of ancient divination by means of plants, particularly sage and fig-leaves. The persons who resorted to it, wrote their own names and their questions on leaves, which they exposed to the wind; and as many of the letters as remained in their own places, were taken up, and being joined together, contained the required answer.

BOTANOPHILI, among the writers on the subject of vegetables, those who have treated of them, not as botanists, on their natural and established distinctions, but in regard to different operations, as gardeners, physicians, &c.

BOTANY, is that branch of natural history which relates to what is usually called the vegetable kingdom, the second of the three grand assemblages into which all terrestrial objects are divided. Its name, *βόταν*, is the Greek word for grass, and is derived from the verb *βόω*, or *βοσκω*, which signifies to feed; because grass is the chief food of those animals which are most useful to man. By a process not uncommon in language, its meaning has been extended to the whole vegetable creation; and, by a familiar figure of speech, it is now employed to denote the natural history of plants.

Botany, as a science, is not confined to the description and classification of plants, as ignorance has often been pleased to represent it, but comprehends many other important particulars. Its various objects may be conveniently arranged under the following general heads.

I. The terminology, or description and nomenclature of the several parts of a plant which are externally visible.

If all natural objects were simple in their form, it would not be easy to distinguish one from another; nor would it be possible to describe them, so as to give a clear and precise idea of them. Hence a boundless variety, connected with general resemblances, is wisely and benevolently made their universal character. Every plant is composed of several parts, which differ from each other in their outward appearance, and which cannot fail to strike the most careless spectator. Many of them also are themselves compound, and are obviously capable of being divided into subordinate parts.

The first grand division, adopted by most botanists, is into the *root*; the *body* of the plant; and the *fructification*. The last, or something equivalent to it, is essential to all plants; the first is visible in almost all; and the second is not wanting in many.

The *root* is stated by Linnæus to consist of the *radicle*, and the *descending caudex*. The *radicle* is that fibrous part which draws nourishment from the earth, and in many plants constitutes the whole of the root. The *descending caudex* is properly part of the stock, or body of the plant, which extends itself below the surface of the ground, as the ascending caudex rises above it. That the ascending and descending caudex have precisely the same nature is evident from the well-known fact, that if a young tree be inserted, what was before the root will produce leaves, while the former stem throws out radicles.

Roots are divided, according to the term of their duration, into *annual*, *biennial*, and *perennial*. The *annual* and *biennial* produce flowers and fruits only once, and then soon die; the former passing through all the stages of vegetable life in one season; the latter throwing out root-leaves the first year, but not completing the fructification till the next. The *peren-*

nial root has within itself a principle of continued life, and gives being to new flowers and seeds, year after year, to an indefinite length of time. Of the roots that are called *perennial*, some are truly, others imperfectly such. In the true perennial root, the descending caudex and the radicle preserve the same individual organization, and increase in size as long as the plant continues to flourish. The imperfectly perennial, are the bulbous and the tuberous, which perish themselves, after producing the bulbs, the tubers, or the tubercles, which are to be the parents of future plants. See **ROOT**, **CAUDEX**, **BULB**, **TUBER**, and **TUBERCLE**.

The *body* of the plant springs from the root; and is terminated by the fructification. It is called by Linnæus the *herb*, and, according to him, consists of the *trunk*, the *leaves*, the *fulcra*, props or supports, and the *hybernacula*, or buds; all which will be explained under their respective articles.

The *fructification* is a temporary part of the vegetable, designed to perpetuate the species, by producing a perfect seed, in which is contained the rudiment of a plant, similar to that by which it was generated. Its essential parts are the *stamen* and the *pistil*; the former corresponding with the male, and the latter with the female, in the animal kingdom. The stamen consists of the filament and the anther; the pistil of the germ, or seed-bud, the style, and the stigma. They are generally protected by two coverings; the outward called the *calyx*, and the inward the *corolla*; but in many kinds of plants, either one or the other, and, in some, both of them are wanting. The pistil, in the last stage of its growth, is the parent of the seed, or seeds, which are either naked, or enclosed in a *pericarp*, or seed-vessel. The *receptacle* or base on which the fructification is situated, is commonly considered as one of its parts; and connected with it there is in many plants a visible *nectary*, or honey-cup. See the articles **FRUCTIFICATION**, **STAMEN**, **PISTILLUM**, **CALYX**, **COROLLA**, **SEED**, **PERICARP**, **RECEPTACLE**, and **HONEY-CUP**.

II. The classification or arrangement.

A knowledge of the different parts of a plant must necessarily be gained before it can be described. But amidst the numerous vegetable productions of even a single country, this, of itself, would avail but little. To give a peculiar name to every individual, would be a labour which no invention or diligence can perform; and, if accomplished, would produce a burden which no memory can sustain. It is necessary, therefore, to pursue resemblances and differences through a number of gradations, and to found on them primary and subordinate divisions; either ascending from particulars to generals, or descending from generals to particulars. The former is the method in which science of every kind is slowly formed and extended; the latter, that in which it is most conveniently taught. The number of stages through which these subdivisions should be carried, is either not pointed out by nature, or enough of nature is not known to fix them with precision. They differ, therefore, in different systems, and, unfortunately, corresponding ones, have not always been called by the same names. Linnæus has employed four principal divisions, which he has called *classes*, *orders*, *genera*, and *species*; occasionally introducing an intermediate one between the order and the genus, and another between the genus and the species.

A *species* consists of individuals, resembling each other in the form, position, proportion, and general appearance of their several parts, produced from similar individuals, and having a power to produce other individuals of the same kind; or, as it is concisely defined by Jussieu, it is a perennial succession of similar individuals, deriving their origin from a successive

successive generation. These individuals are not, indeed, exactly like each other in every minute respect; such a perfect conformity does not exist in any two individuals, either of animate or inanimate organized nature. But the difference between those of the same species, though sufficiently discernible by the eye, cannot easily be expressed in words. With a strongly marked resemblance in all their parts, there is a perpetual variation in their outline, and other particulars; so that no two individuals, lying one upon the other, will entirely correspond. They are formed after the same model, not cast in the same mould. In the general, an accurate description of all the parts belonging to any individual, will discriminate the whole species. There are, however, some sensible qualities of importance enough to be distinguished by proper names, which are, in many cases, too uncertain to enter into a specific character. Of these, size, colour, smoothness, or hairiness of surface, and luxuriance of one part at the expense of another, are the chief; and they are owing either to difference of soil, climate, particular exposure, and other accidents; or, to artificial cultivation, the most abundant source of perpetual varieties.

A *genus* is an assemblage of species, connected with each other by one or more common characters, but still preserving their specific distinctions.

An *order* is a similar assemblage of genera.

A *class* bears the same relation to its orders; and as it stands at the top of the series, it seizes the most general and most widely diffused resemblances, and comprehends the greatest number of particular differences.

A natural arrangement of the species, genera, orders, and classes, free, in every instance, from heterogeneous combinations, and disturbing no real affinities, is the *ne plus ultra* of classification. It is a consummation devoutly to be wished; it is the point of perfection which every naturalist should labour to approach, though what no one can expect actually to reach. To have formed the idea is no small advance in the progress towards it, and implies a very considerable acquisition of knowledge.

Most of the systems which have hitherto been proposed, are professedly artificial; that is, founded on a few parts of a plant, with little or no regard to the rest. The calyx, the corolla, the sexual parts of the fructification, and the mature fruit, have, each in their turn, been selected for this purpose by different systematic writers. A slight sketch of some of the principal systems will be found below in the history of botany, and a fuller explanation will be given, with critical remarks, under the article CLASSIFICATION. But, as the system of Linnæus is that which has been adopted in this work, we shall now briefly illustrate its general principles.

In this system, the fructification has been justly considered of the first consequence. The characters of the classes, orders, and genera, are accordingly taken entirely from it.

In the greater number of plants, the parts of fructification may be readily discerned by the naked eye, or with the assistance of a common lens; but there are also not a few in which they have not been satisfactorily discovered, or are too minute to be described with sufficient accuracy, for the purpose of systematic arrangement.

In most of those whose parts of fructification have been clearly ascertained and distinctly described, the stamens and pistils are inclosed within the same envelope; or, at least, are absolutely contiguous; but, in some, they are contained in separate flowers, or placed at a distance from each other. In both cases, there is much variety with respect to their number, position, and other circumstances.

On these distinctions the distribution into classes and orders is founded. The characters of the classes are taken ex-

clusively from the stamens; those of the orders, either from the stamens or the pistils, but most generally from the pistils.

The first eleven classes, with the exception of the fourth and sixth, regard simply the number of the stamens, and derive their names from the Greek word *αριθ*, which signifies a male, or husband, compounded with the numerals, *μᾶς*, alone, or one; *δύο*, two; *τρεῖς*, three; *τέτρας*, four; *πέντε*, five; *ἕξ*, six; *ἑπτά*, seven; *οκτώ*, eight; *έννα*, nine; *δέκα*, ten; *δωδεκά*, twelve.

Class,	1. Monandria.	Flowers with	1 stamen
	2. Diandria.	- - -	2 stamens.
	3. Triandria.	- - -	3 stamens.
	4. Tetrandria.	- - -	4 stamens, all of the same length.
	5. Pentandria.	- - -	5 stamens.
	6. Hexandria.	- - -	6 stamens, all of the same length.
	7. Heptandria.	- - -	7 stamens.
	8. Octandria.	- - -	8 stamens.
	9. Enneandria.	- - -	9 stamens.
	10. Decandria.	- - -	10 stamens.
	11. Dodecandria.	- - -	12 stamens.

The twelfth and thirteenth classes are called, from the general number of their stamens, icofandria and polyandria (*εικοσι*, twenty, *πολύς*, many); but their real character depends entirely on the part to which they are attached; for there are icofandrious plants which have more, and polyandrious ones, which have fewer than twenty stamens.

12. Icofandria. Flowers with about twenty stamens attached to the calyx, or sometimes, in part, to the corolla.

13. Polyandria. Flowers most commonly with more than twenty stamens, attached to the receptacle.

The fourteenth and fifteenth classes have always two stamens shorter than the rest. Their names are taken from the number of those which are longer, compounded with the Greek word *δυναμις*, power, implying a superior rank or dignity.

14. Didynamia. Flowers with two longer stamens.

15. Tetradynamia. Flowers with four longer stamens.

The next three classes are determined by the union of the filaments, or lower parts of the stamen, into one or more bundles or brotherhoods. Their names are derived from the Greek word *ἀδελφός*, brother, compounded with the numerals, one, two, and many.

16. Monadelphia. Filaments united into one brotherhood.

17. Diadelphia. Filaments forming two brotherhoods.

18. Polyadelphia. Filaments forming more than two brotherhoods.

In the nineteenth class the anthers, or superior part of the stamens, are united, and compose a hollow cylinder, through which the style of the pistil passes. It is called *syngenesia*, from the Greek word *σύνγωγις*, to denote the union of the parts which possess the power of rendering the pistil fertile.

19. Syngenesia. Anthers united.

The twentieth class is called gynandria, from *γυνή*, female, and *ανήρ*, male; it is distinguished by the attachment of the stamens to the pistil itself, and not, as in other flowers, either to the receptacle, calyx, or corolla.

20. Gynandria. Stamens on the pistil.

The twenty-first and twenty-second classes consist of plants which have the stamens and pistils in separate flowers, growing from the same or from different roots. Their names are derived from *οἶκος*, a house, compounded with the numerals, one and two.

21. Monœcia. Stamiferous and pistiliferous flowers on the same plant.

22. Diœcia. Stamiferous and pistiliferous flowers on different plants.

The twenty-third class has been formed for such plants as have some flowers with both stamens and pistils, and others with only stamens or pistils. It is called polygamia, from πολλός, many, and γαμος, marriage, implying a diversity in the mode of connection between the stamens and pistils.

23. Polygamia. Different dispositions on the same plant.

The twenty-fourth and last class comprehends all the plants which have inconspicuous flowers, and of which the fructification is consequently, in a great measure, unknown. It derives its name from κρυπτός, private, and γαμος, marriage.

24. Cryptogamia. Flowers inconspicuous.

The principles on which the classes are formed in the sexual system, will be distinctly seen in the following synoptic table.

SYNOPTIC TABLE OF THE LINNÆAN CLASSES.

Flowers	visible	Stamens and pistils in the same flower.	Stamens and pistils not united in any of their parts.	Relative length not regarded.	1 stamen - - - -	1. Monandria.
					2 stamens - - - -	2. Diandria.
					3 stamens - - - -	3. Triandria.
					5 stamens - - - -	5. Pentandria.
					7 stamens - - - -	7. Heptandria.
					8 stamens - - - -	8. Octandria.
					9 stamens - - - -	9. Enneandria.
					10 stamens - - - -	10. Decandria.
					12 stamens - - - -	11. Dodecandria.
					about 20 stamens attached to the calyx - -	12. Icosandria.
Flowers	visible	Stamens and pistils in the same flower.	Stamens and pistils united in some of their parts.	of equal length	generally more than 20 attached to the receptacle. - - - -	13. Polyandria.
					4 stamens - - - -	4. Tetrandria.
					6 stamens - - - -	6. Hexandria.
				of unequal lengths, two always shorter.	2 long, 2 short - -	14. Didynamia.
					4 long, 2 short - -	15. Tetradynamia.
			Stamens and pistils united in some of their parts.	by their filaments	into one brotherhood -	16. Monadelphia.
					into two brotherhoods -	17. Diadelphia.
					into more than two brotherhoods - - - -	18. Polyadelphia.
				by their anthers - - - -	- - - -	19. Syngenesia.
				united, and attached to the pistil - - - -	- - - -	20. Gynandria.
Flowers	scarcely visible, so that their fructification has not been distinctly described - - - -	Stamens and pistils in different flowers.	Stamiferous and pistiliferous flowers on the same plant - - - -			21. Monœcia.
						22. Diœcia.
						23. Polygamia.
						24. Cryptogamia.

After these twenty-four classes, the palmi are placed in the way of appendix, because their fructification has not hitherto been sufficiently described.

By attending to these few simple and easy characters, the botanical student may readily find out under what class he is to look for any unknown plant, the name of which he is de-

sirous to learn. He is next to inquire to which order of the class it belongs.

The orders of the first thirteen classes are founded entirely on the number of the pistils; and are called monogynia, digynia, trigynia, &c. from γυνή, female, or wife, compounded, as in the names of the classes, with the Greek numerals. The style

Ayles are to be counted from the base, and not from the upper part, which is often divided into two or more segments, without destroying the monogynous character of the flower. When the styles are wanting, the number of stigmas determines the order.

In the classes didynamia and tetradynamia, none of the genera have more than one style; the characters of the orders are therefore taken from the pericarp.

The class didynamia has two orders; the first is distinguished by its naked seeds, inclosed, till ripe, in the permanent calyx instead of a pericarp. Its name, gymnosperma, is derived from *γυμνός*, naked, and *σπέρμα*, seed.

The second has its seeds in a pericarp, and is called angiosperma, from *αγγίον*, a vessel, and *σπέρμα*.

The class tetradynamia has also two orders, distinguished by the form of the pericarp; the first called siliculosa, from *silicula*, a little pod; the second, siliquosa, from *siliqua*, a pod. See *SILICULA*, and *SILIQUA*.

In the classes monadelphia, diadelphia, and polyadelphia, the orders are denominated from the number of the stamens, triandria, pentandria, &c.

In the class syngenesia, the orders are more complex. They are six in number; the first five are distinguished by the epithet polygamia, intimating that the flowers are compound, and consist of numerous florets, or little flowers, seated on a common receptacle.

In the first order, polygamia æqualis, all the florets are equally possessed of stamens and pistils.

In the second, polygamia superflua, the florets of the disk, or central part of the compound flower, have both stamens and pistils; those of the ray or circumference have only pistils, but the latter, as well as the former, produce fertile seeds.

In the third, polygamia frustranea, the florets of the disk have both stamens and pistils; those of the ray, neither one nor the other, or only abortive pistils.

In the fourth, polygamia necessaria, the florets of the disk have efficient stamens, but abortive pistils; those of the ray, fertile pistils impregnated by the stamens of the disk.

In the fifth, each floret has its own calyx, in addition to that which surrounds the common receptacle, and forms the whole into one compound flower.

The sixth differs from the rest in having only simple flowers, referred to this class on account of the union of their anthers. It has been lately abolished by the general consent of botanists, and the plants formerly included in it have been referred to the class pentandria.

In the classes monœcia and diœcia, the orders have the same names as the preceding classes, and are distinguished by the number of the stamens, or by the union either of the stamens or of the anthers, or by the attachment of the stamens to the pistil.

The orders of the twenty-third class are denominated from the number of houses or plants on which the several kinds of flowers are found.

In the order monœcia, there are some flowers with stamens and pistils, and others that have either only stamens or only pistils on the same plant.

In the order diœcia, they are perfect, and only stamiferous or perfect, and only pistilliferous flowers on two distinct individual plants.

In the order triœcia, the different kinds of flowers are distributed among three distinct individual plants.

The class cryptogamia is divided into four great families;

1. Filices, or ferns.
2. Musci, or mosses.

VOL. V.

3. Algae, which term properly implies sea-weeds; but besides these, it contains several numerous terrestrial genera, which ought to constitute a distinct order.

4. Fungi.

When the order to which a plant belongs is ascertained, its genus is next to be investigated. The characters of the genera are universally taken from some part of the fructification, and are advantageously exhibited in synoptic tables, which will be found under the names of the classes in their proper places.

III. The synonyms of plants; or the names by which they are distinguished in the writings of professed botanists and others, from the earliest times to the present.

It is evident, that a multiplicity of names for the same plant is unavoidable in common life; but it may be thought not likely that scientific men should willingly increase the number. This, however, is the natural consequence of a gradual improvement in knowledge. As genera were formed, and species accurately distinguished, it became necessary to invent generic and specific names. As generic characters were settled with greater precision, former dispositions were necessarily changed, and many plants of course appeared under a different generic appellation. The nomenclature of the early botanists has, therefore, in the natural course of things, become obsolete; and, to avail ourselves of their observations, it is necessary to know what they called the various plants which have since received new names. To form an accurate collection of synonyms is a work of great difficulty and labour, which has exercised the diligence and discernment of all who have entered deeply into the subject, and is still far from complete. It is much to be lamented that the perplexity has been greatly increased by the licentious caprice of even good botanists. Linæus himself has sometimes departed from the nomenclature of his predecessors, without any good or apparent reason.

In a work like the present, intended for occasional consultation, peculiar attention ought to be paid to this perplexing part of science; and we esteem it incumbent upon us to spare no pains in collecting, not only the synonyms of the most eminent botanists, but also the vulgar English names of indigenous plants, as well as those given by unscientific nurserymen and gardeners to exotics.

IV. The sensible qualities of plants, or the different manner in which they severally affect the organs of sight, smell, taste, and touch.

Of these, colour is the most general and the most striking. The colours of plants are indeed so wonderfully diversified, and so constantly meet the eye, whenever it is directed to the face of nature, that they contribute, more than any other quality, to the beauty of the creation. They are too subject to accidental variation, to be safely employed as specific characters; but they are in many cases so nearly uniform and constant, that they ought not to be entirely neglected. It is not possible, indeed, to do more than express a few leading distinctions. In the description of their minute shades, and gradual approximation to a kindred tint, the powers of language utterly fail. The prevailing colour of vegetables, considered in their appearance as a whole, is green; but this green is not, perhaps, precisely the same in any two species of plants, or in different parts of the same plant, or even in the same part of the same plant in different stages of its growth. All that can be done is to point it out generally, by stating its relation to white or black, or by fixing upon the colour of some well-known plant, or other natural substance, not as a mark of identity, but as a standard of comparison. Thus we speak of light green, and dark green, of apple green, and olive green, &c.

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The colours of plants are divided by Linnæus into Hyaline, with the transparence either of water or of glass.

- White, either cream-coloured or snowy.
- Cinereous, either grey, livid, or lead-coloured.
- Black, either dark or jet black.
- Yellow, either sulphur, flame, or copper-coloured.
- Red, either crimson, flesh-coloured, or scarlet.
- Purple, more or less approaching to violet.
- Blue.
- Green.

It is scarcely necessary to observe, that this enumeration is very imperfect. The different parts of plants have most commonly their appropriate colour. Roots and seeds are frequently black, the pericarp rarely, the corolla scarcely ever. The stem, the leaves, and the calyx are generally green, the corolla very seldom. The filaments and the pistil are often hyaline. The anthers are often yellow, as is also the corolla, especially in autumnal flowers. Vernal corollas and sweet berries are frequently white. Red is common in summer flowers, and subacid berries growing in the shade. Blue is not unfrequent in corollas.

The prismatic colours afford some fixed points of comparison in the description of colours; but there is no similar natural standard for the discrimination of odours and tastes. However scanty and obscure the vocabulary of the former may be, that of the latter is, therefore, still more so. The sense of smelling and the sense of taste have an evident and intimate connection with each other. Herbs and fruits that are grateful to the palate have almost always a pleasant smell; but the reverse does not equally hold; an agreeable perfume does not, in all cases, warrant the expectation of delicious food. Every plant has an odour and flavour peculiar to itself, and differing from all others in kind as well as in strength. They are discriminated, according to the manner in which they affect the sense, by a few general expressions, which have little or no precise meaning.

Odours are,

Ambrosiac, or musky, as in sweet woodruff (*asperula odorata*) and musk geranium.

Fragrant, as in jessamine and violet.

Aromatic, as in cinnamon, saffras, and cloves.

Unpleasantly strong, as in garlic and herb robert (*geranium robertianum*).

Stinking, as in elder (*ebulus*) and stinking may-weed (*anthemis foetida*).

Nauseous, or disposing to vomit, as in hellebore, asarabacca, and colocintida.

Sharp, as in mustard.

Faint, as in primrose and lilac.

Tastes are,

Sweet, as in sugar-cane and fig.

Acid, as in tamarind and lemon.

Fat, or oily, as in fresh almonds and olives.

Salt, as in fassola, and other maritime plants.

Bitter, as in wormwood.

Astringent, as in the fruit of the quince. This kind of taste is either austere, partaking a little of the acid, as in unripe fruits, or acerb, rough, partaking more of the bitter, as in the common sloe.

Viscous, as in the fruit of the common jujube (*rhamnus ziziphus*). It produces only a slight sensation on the palate.

Acrid, as in garlic. It is sometimes caustic, as in the berries of daphne mezereon.

Dry and insipid, as in farinaceous seeds, and several kinds of bark.

Watery, as in cucumber and lettuce.

Nauseous, as in tobacco.

Plants affect the touch, as they are fleshy or membranous, soft or harsh, smooth or rough, silky, hairy, or prickly, &c.

V. The anatomy of plants, or description of the different visible parts of which their substance is composed. These are,

1. The *epidermis*, or thin cuticle which invests the whole of the plant.

2. The *cellular* or *reticular substance*, which appears in the young shoot of a tree after the epidermis is stripped off.

3. The *liber*, inner or true bark.

4. The *albumum*, or *blea*, improperly called by English dealers in wood, the sap, a ring of imperfect wood between the liber and the true wood.

5. The *lignum*, or true wood, consisting of concentric strata or rings.

6. The *pith*, a spongy substance inclosed in a longitudinal canal, which constitutes the innermost part of the plant.

7. The *medullary productions*, or filaments proceeding from the pith, and crossing the stem in a radiate direction, as far as the cellular substance.

8. The *medullary appendices*, filaments placed between the medullary productions, and reaching no farther than the wood.

9. The *trachea*, or air-vessels.

10. The *sap-vessels*, and

11. The vessels which secrete the peculiar juices of the plant.

VI. The physiology of plants.

A plant, like an animal, is a very compound, organized, living being, in which various operations, both chemical and mechanical, are continually carrying on, from its first production to its final dissolution. It springs from a seed fertilized by the pollen of its parent plant. It takes in foreign substances by its inhaling and absorbent vessels. It elaborates and assimilates to its own substance those parts of them that are nutritious, and throws off the rest. It secretes a variety of fluids by the means of glands, and other unknown organs. It gives that motion to its sap on which the continuance of its life depends. See the articles *PHYSIOLOGY of Plants*, *VEGETABLE*, and *VEGETATION*.

VII. The purposes to which different plants are applied, either as articles of food, ingredients in the composition of medicine, or materials and instruments in the useful and elegant arts; the soil and situation in which they are generally found, and which are most favourable to their growth; the time of the year in which they open their flowers, and ripen their fruit, with many other incidental particulars, are properly within the province of the botanist. But, as a botanist, he is concerned with nothing more than the simple facts. The best methods of cultivating such as are raised in considerable quantities for the special use or amusement of man; the theory of their nutritious or medicinal properties; and the manner in which they are to be prepared, so as to effect the intended purposes; are the province either of the farmer, the gardener, the physician, the chemist, or the artist. But as they cannot, in this work, be conveniently introduced under their respective sciences, they will generally be annexed to the botanical details of each particular plant.

VIII. The history of botany.

In all ages of the world, vegetables have been a principal article of human food. We can, therefore, scarcely doubt, that some intimations of the kinds which are most proper for

this purpose, must have been given to our first parents by immediate revelation from their Creator. Such intimations, however, would be no more than was absolutely necessary to preserve them from dying by famine, on the one hand, or by the deleterious effects of poisonous plants on the other. They would extend only to a few salutary roots, herbs, and fruits; and agreeably to the general economy of human life, all farther acquisitions in knowledge would be the result of occasional experiments and slow experience. A knowledge of the various species would then gradually increase, and some general distributions would spontaneously offer themselves to notice. A woody trunk would soon be distinguished from an herbaceous stem. A tree and a shrub, an annual and a perennial herb, would not long be confounded with each other. The most striking differences in the form and confidence of the fruit would also be readily observed. Moses, as appears from the first chapter of Genesis, was acquainted with three characteristic divisions: *grass*, of which the seed was probably for some time overlooked or disregarded; *herbs*, which bear their seed in a dry pericarp or seed vessel; and *trees*, with all other vegetables, which have their seed inclosed in a pulpy or some other eatable substance. And it is worthy of remark, that in the grant of vegetables to man for the purpose of food, only the two latter are mentioned; the first being reserved for "the beasts of the earth, and the fowls of the air, and every thing that creepeth on the earth." Among these a selection would soon be made of such as were most grateful to the palate, and the other senses. Whatever were the *Dudaim* which Rachel begged of the son of Leah, and which our translators have absurdly rendered mandrakes, it is certain, from the song of Solomon, that they were a kind of fruit which gave a pleasant smell. Solomon is celebrated for his knowledge of plants: but all that we know of it is, that he spake of them from the cedar of Lebanon to the hyssop that groweth on the wall. It could not, moreover, be very long before the early race of mankind began to perceive that some vegetable productions are mildly nutritious, and others actively medicinal. In the frequent search after new viands, which the restless curiosity and craving desire of diversified gratification, natural to man, would induce him to make, he would find some that produced violent effects on his bodily frame, and relieved or removed disorders, which are always the "sources of pain, and often the forerunners of death." This would give a new direction to his inquiries, and would present the vegetable creation to him in a more interesting point of view. Pain is, in all cases, so difficult to be borne, that whatever promises to diminish it, is sought for with unwearied assiduity.

The knowledge of medicinal plants was, therefore, regarded as a highly valuable attainment many ages before plants themselves were made the objects of a distinct science. Botany long continued the humble but engaging handmaid of surgery and medicine. The balm of Gilead bore a high price in the estimation of a Jew, because it was strongly and rapidly associated with the idea of a physician. In Homer, Patroclus staunches the bleeding wound of Eurypylos with the juice of a bitter root, the virtues of which he had learned from Achilles, and Achilles from Chiron. The power of the moly, used as an internal antidote against the incantations of witchcraft, is likewise celebrated by the same poet; and the knowledge of it is said to have been owing to the intervention of a god. That great honour was obtained by an acquaintance with the medical properties of plants, in the heroic ages, is evident from the encomium given to the wife of one of the heroes whom Nestor boasts of having slain in his youth:

"Who knew the virtues of each earth-born herb."

At a much later period, we shall search in vain for any information concerning the botany of the ancients, except in their medical writers. Hippocrates, the oldest of those of whom we have any remains, and who flourished at the beginning of the Peloponnesian war, of course makes mention of the plants which were then employed in the cure of diseases; but he gives only their names, with their real or supposed sanative qualities. Aristotle, who lived about half a century after, and whose comprehensive genius left scarcely any thing unexplored, could not overlook so obvious and attractive a pursuit: but the two books now existing which bear his name, are of such inferior merit, that they are generally thought to be spurious. Theophrastus, the disciple of Aristotle, is the first professed writer on plants, whose works have incontestably descended to modern times. He was acquainted with about five hundred, and has left descriptions of them, with slight philosophical sketches relating to some of their most prominent distinctions. But his descriptions are so vague and imperfect, that, in most cases, it is difficult, in many impossible, to determine what plant he intended. And he has made only a rude attempt to divide them into grand families, either by their size and texture, as trees, shrubs, and herbaceous plants, or by the uses to which they were then commonly applied.

From the age of Theophrastus to that of Dioscorides and Pliny, there is an interval of 400 years. Dioscorides was a physician, and wrote entirely as such. He has enumerated about 600 plants; but his account of them is so brief and indeterminate, that, in a botanical view, they are of little value. Nor, in this respect, is Pliny entitled to much greater praise.

During the dark ages which succeeded the downfall of the western empire, almost all the knowledge on this side of the Indus was confined to the courts of the Mahometan caliphs. The Arabian and Moorish physicians cultivated the art of medicine with no inconsiderable degree of success, and translated the best Greek writers on the subject into their own language. But in the investigation of plants, they were not much, if at all, superior to their masters. We are, however, indebted to them for the knowledge of *senna*, *cassia fistula*, *manna*, *tamarinds*, *rhubarb*, and some other medical drugs, which still keep a place in the *Materia Medica*.

At the revival of literature in the west, the ancients were truly considered as the depositaries of nearly all the knowledge that then existed. It seemed, therefore, as necessary as it was natural, that their writings should, for a time, be exclusively studied. For what steps towards a farther progress could be advantageously taken, till what was already done was clearly ascertained? As a general idea, it was a good one: but its application to natural history was unfortunate. For in this branch of knowledge the ancients had done nothing to much purpose. The lovers of botany, however, buoyed up by vain expectations, devoted themselves diligently to the study of Theophrastus, Dioscorides, and Pliny; and much time was idly spent in endeavouring to find, on the west of the Adriatic, all the plants which have been mentioned by those authors. Commentators succeeded commentators; conjecture superseded conjecture: till at length a few intelligent minds, weary of fruitless attempts, perceived the folly of studying a science in the imperfect remains of two dead languages, when they might have free access to the fair and legible characters of a book always open, and inviting their regard by incontestable marks of unerring knowledge and wisdom.

Gesner, in particular, the greatest naturalist whom the world had seen since the days of Aristotle, cultivated both zoology and botany, with a zeal which has never been surpassed; with a discernment and good sense which till then had never been known. He has the glory of having first discovered the expedience of dividing plants into classes, genera, and species, and the necessity of taking the distinguishing characters of each division from the flower and fruit. He died of the plague in 1565, at the early age of fifty.

Clusius, who was his contemporary, and many years his survivor, engaged in the study of plants with equal ardour, but not with equal talents for just arrangement. He distributed them chiefly according to their size, their general habit, and their other sensible qualities.

At this time also flourished Dr. William Turner, who may be accounted the father of English botany. It was he who first gave names to many English plants; and much praise is indisputably due to him for his diligence in examining, and judgment in discriminating, different species: but with respect to arrangement, he was far inferior even to Clusius; for he has disposed his plants in the alphabetical order of their Latin names. The first part of his *Herbal* was printed at London in 1551; the second at Cologne, 1562; and the third, dated Welles, in 1564. It is in the black letter; and contains figures of most of the plants.

In the same period lived Dodonæus, or Dodoens, who began to publish in 1552; and in 1583 collected all his works into one volume, which he quaintly called, "*Stirpium historix sex Pentades*," because each larger division consists of five books.

This work is the foundation of Gerard's *Herbal*, so well known in England, and so long regarded as a standard book by the merely English botanical student. It was published in 1597, and comprizes the whole vegetable kingdom in three books. The first contains the grasses, grain, rushes, reeds, flags, and bulbous-rooted plants; and exhibits a remarkable approximation to the arrangement of a very modern system, founded on natural affinities. It was suggested, however, by a regard not to the monocotyledinous character of the seeds, but to the simplicity and general form of the leaves. The second includes all herbs used for food, for medicine, or for their beauty and elegance. The third is a motley assemblage of trees, shrubs, fruit-bearing plants, reeds, gums, roses, heaths, mosses, mushrooms, and sea-plants.

It was left to the judgment of Cæsalpin to begin to execute what the penetrating mind of Gesner had first conceived; the arrangement of the whole vegetable creation in a regular system. His distinctive characters are taken from the different appearances of the fruit, sometimes modified by the consideration of other parts; and though it cannot boast of being the best in theory, or the most easy in practice, it possesses great merit as the first essay in a difficult and important undertaking. Cæsalpin is particularly worthy of regard, as the first writer who has distinctly mentioned the true difference of sexes in plants. He died in 1603.

The last of the writers of this period are the two Bauhins. John, the eldest, was the friend of Gesner, and travelled with him into Italy; but, though ardent in his love of plants, he had no turn for systematic arrangement, and added nothing to botany, considered as a science. He wrote a general history of plants; which was published in three folio volumes, but not till 1650, 27 years after his death.

Gaspard, his brother, was much his junior in years, but far exceeded him in the greatness of his conceptions, and the extent of his services to their favourite pursuit. The publi-

cation of his "*Pinax Theatri Botanici*," in 1623, makes a new era in botany. This immense work, the fruit of forty years' labour, threw over the subject, as it then stood, a clear and conspicuous light, and shewed at one view the information which had been given by a multitude of scattered authors. It afforded a resting-place, a kind of fixed point, from which new excursions were to be made, and new achievements were to be attempted. But though he smoothed and shortened the way for others, it must be acknowledged of him, as well as of his brother, that he added little to what had already been done.

Many accessions were soon after made to the number of known plants, by the labours of Pona and Zanoni in Italy, of Johnson and Parkinson in England, of Hernandez, Pison, and Marcgrave in South America, and above all, of Rheede, who, in his "*Hortus malabaricus*," brought to light about 800 plants, natives of the East Indies. But botany, as a science, made little progress for nearly half a century; when Morison, Ray, Rivinus, and Tournefort, all nearly at the same time, directed their attention to the classification of plants, and investigated the true principles on which it ought to be formed. Morison, in a second edition of Bruyner's "*Hortus regius Blefensis*," published at Paris in 1669, gave the rudiments of an arrangement, founded on the fruit; and also asserted, that the characters of the genera should be taken from the same part: but in his history of plants, printed at Oxford in 1680, he did not strictly adhere to his own principle. His system was quickly succeeded, and its fame nearly eclipsed, by that of the immortal Ray, the outlines of which were first given, in 1682, in the "*Methodus plantarum nova synoptice in tabulis exhibitæ: cum notis generum tum summorum tum subalternorum characteristicis*." The principal aim of this great naturalist was to preserve the natural families of plants, as they are connected by a similarity of fructification and general habit. Influenced by the latter consideration, he retained the ancient division of the vegetable kingdom into trees, shrubs, and herbaceous plants; making no alteration, except in classing with the latter what are generally called suffrutices or under-shrubs. This system he afterwards improved and brought nearer to a natural arrangement; but he still left the characters of his genera in a great degree indeterminate, and governed by no fixed principle. The time was not yet come for taking this farther step towards the perfection of the science.

The classification of Rivinus, derived from the structure of the corolla, was first made known to the world in 1690. It is more easy in practice than either of the former, but does more violence to the order of nature. It must, however, be mentioned, to his honour, that he was the first who perceived the propriety of not separating trees from herbaceous plants. They are accordingly blended together in different parts of his system.

As Morison soon yielded in celebrity to Ray, so Rivinus gave way to Tournefort, the glory of France, and equalled only by Ray, the glory of England. His elements of botany, in which the primary divisions are taken from the corolla, and the secondary ones from the fruit, were published in 1694. His arrangement, indeed, is not unexceptionable in all its parts, but its imperfections arise from the defects of his principle; and though he did not define his genera in plain and appropriate terms, it is evident that he had formed just ideas of them in his own mind.

The fame of these two great men, who had done so much in promoting the progress of true scientific botany, obstructed, for a considerable time, its farther advancement. It was vain for botanists to contend, either in England or France,

BOTANY.

France, with the established reputation and authority of their respectively favoured countryman. Several other systems were formed about the same time, among whom Boerhaave in particular had great merit; but none of them found many profelytes, or could boast of long duration. The first publications of Linnæus made their way slowly, and with much difficulty. In England, so late as the year 1762, Mr. Hudson was the first who published a national Flora, arranged on the principles of the Linnæan system. In France, owing to the personal antipathy of Buffon, the ideas of the learned Swede met with much greater and more pointed opposition: but they found an early advocate in the duke de Noailles; and, in 1765, the classification was adopted in the "Flora Mompeliaca," of professor Gouan.

The distinction of sexual parts in plants had been discovered, and pretty generally admitted, before the time of Linnæus; but he was the first who made it the basis of an artificial system. The first sketch of his "Systema Naturæ," was published in 1735; and the "Fundamenta Botanica," in 1736. In 1737 they were followed by the "Critica Botanica," "Genera Plantarum," "Hortus Cliffortianus," "Flora Lapponica," and "Methodus Sexualis." In 1751 appeared his great and most finished elementary work, the "Philosophia Botanica," and in 1753, the first edition of the "Species Plantarum," which completed his system, by extending it to the lowest division under which individual plants are collectively arranged. In his "Genera Plantarum," he had given a distinctness and precision to generic characters, which they had never before received; and in this last publication he conferred the same obligation on the species; with the addition of *trivial* names, consisting of a single word, instead of the tedious *specific* names, as they were called, by which the conversation of botanists had till then been burdened and embarrassed. This innovation was at first violently condemned by a few disciples of the old schools, from an apprehension that it would be unfavourable to the recollection of specific distinctions; but its obvious convenience has long gained it universal currency.

Notwithstanding the superlative merit of Linnæus, he found a rival and an opposer in Switzerland, as well as in France. The mighty genius of Haller could not condescend to wade in the trammels of another man. In his history of the plants of Switzerland, styled by the very able and judicious president of the Linnæan society, one of the most excellent and complete Floras the world ever saw, he has adopted a method depending chiefly on the number of the stamens, combined with the divisions of the corolla. But his system is now little talked of, and less studied.

Linnæus devoted the greatest part of his life to the construction and completion of a system confessedly artificial; but he was nevertheless fully sensible, that the perfection of the science requires an arrangement founded solely on natural affinities. The idea of such an arrangement had been conceived, and partly executed, by several of his predecessors. The improved system of Ray, in particular, is a noble essay towards reducing the whole vegetable creation into six natural families. All other distributions are only proofs of the present defective state of knowledge, and are to be employed merely as helps for the attainment of a consummate system. Linnæus has accordingly left what he calls fragments of a natural order, without pointing out their peculiar distinguishing characters; and the substance of his lectures on natural orders has been published, since his death, by his pupil Giseke, in which the omission is, in some degree, remedied; though, at the same time, it is strenuously maintained, that such characters as shall be at once completely comprehensive, and

exclusively discriminating, are, in the nature of things, absolutely impossible.

Adanson, a French traveller in Africa, has also attempted to form natural families of plants, not from the consideration of any particular part, but of all, without exception, from the root to the seed. But, independent of a multitude of other objections, it labours under the insuperable impediment of having the distinctive characters of each family drawn out to the length sometimes of four or five pages, without being capable of an abridgment.

The most successful attempt of this kind is that of Anthony Lawrence de Jussieu, the illustrious nephew of three illustrious brothers, who have been all distinguished for their attachment to botany, and for their eminent services to it. The outlines of this system were struck out by Bernard de Jussieu, demonstrator in the royal gardens at Paris; but owe their present more mature form to the skill and persevering application of his nephew, who succeeded him in his office. It is founded first on the number of the cotyledons of the seed; next, on the insertion of the stamens with respect to the pistil, whether immediately on the receptacle, the calyx, or the pistil itself; or mediately, by the means of the corolla, similarly situated; and so on, from the essential to the non-essential, from the more to the less important parts, in a descending progression, to such as are the most variable and of the least value.

A methodical disposition of plants, from the character of the fruit, has lately been published by Gærtner, a German botanist, who has laboured in this essential part with greater diligence and accuracy than any other writer.

But notwithstanding the acknowledged merit of these essays, the Linnæan still continues the prevailing system, to which all the new genera, constituted for plants since discovered, are regularly referred; and it is to the advantage of the science, that it should, for a long time yet to come, preserve its ascendancy. It is capable, indeed, of many improvements; but such improvements should be slowly and cautiously proposed, always keeping in view an approximation to a natural order. Most of the projects, which have hitherto been formed for this purpose, betray more rashness than acute discernment, more love of innovation than capacity for removing real imperfections. While they seem to acquire greater simplicity, they become actually more artificial, and more violently destroy the connection of natural affinities. The defalcations of the respectable Thunberg have not been generally admitted; the additional ones of Gmelin have been almost universally condemned; and Willdenow, the last and best editor of the *Species Plantarum*, has restored all the ejected classes. Dr. Smith, with his usual judgment, has only expunged the order *monogamia* from the class *syngenesia*, and retained in the class *polygamia* only such plants as have an essential difference in the structure of their perfect and imperfect flowers.

See the article *CLASSIFICATION of Plants*, where the different systems will be detailed and examined. See also the *Bibliotheca Botanica* both of Linnæus and of Haller; La Marck's Preliminary Discourse to the botanical part of the French Encyclopædia; Dr. Smith's Introductory Address to the Linnæan Society; Dr. Pulteney's View of the Writings of Linnæus; and his Sketches of the Progress of Botany in England.

BOTANY Bay, in *Geography*, a capacious bay on the eastern coast of New Holland, so called by captain Cook, who anchored there on the 20th of April 1770, from the great number of plants which were found in its vicinity by sir Joseph (then Mr.) Banks, and Dr. Solander. The land on the sea-coast is moderately high, and nearly level, but in general

general higher than it is in the interior parts, and covered with steep rocky cliffs near the sea, which resemble a long island lying close under the shore. The harbour lies about the middle of this land; and, in approaching it from the south, is discovered before the ship comes a-breadth of it; but from the north it is not discovered so soon. About the head of the harbour, there are large banks of sand and mud, on which are great plenty of water-fowl, and large quantities of oysters, muscles, cockles, and other shell fish, which supply the natives who gather them by means of their little canoes in shoal-water, with the principal means of their subsistence. From the report of Cook, who carefully examined this coast, and took possession of it in the name of the king of Great Britain, it was thought to be a desirable situation for a settlement; and accordingly it was proposed, at the close of the American war, to transport felons thither, who were sentenced to this kind of punishment. This plan was adopted in 1786; and the first ship sailed from Spithead in January, 1787, and arrived thither in the same month of the following year. It appeared, however, from the report of Cook and other navigators, that it was subject to the inconvenience of a great scarcity of water, and on the arrival of the first settlers, that it afforded advantages for the establishment of a colony much inferior to such as they expected to find; the soil being swampy, water scarce, and the bay itself inconvenient for shipping, on account of the shallowness of the water, and its exposure to the easterly winds: and it was therefore resolved by governor Philips to transfer it to another inlet, about 12 miles farther to the north, called Port Jackson, on the south side of which, on a spot called Sydney Cove, this settlement is now fixed. For a further account of the settlements; and of the country, see *NEW HOLLAND*. Two French ships, called the *Astrolabe* and *Bouffole*, which left France, on a voyage of discovery, under the command of M. la Peyrouse, in 1785, arrived in this bay in the beginning of the year 1788; and during their stay, father La Receveur, who had come out in the *Astrolabe*, as a naturalist, died of the wounds he had received in a conflict with the inhabitants of Masfusa, one of the Isles des Navigateurs, at which they touched. A monument, bearing an inscription, was erected to his memory, but was soon destroyed by the natives. But governor Philips caused the inscription to be engraved on copper, and nailed to an adjacent tree. Botany bay lies in S. lat. 34° , and E. long. $151^{\circ} 21'$.

BOTANY Island, an island in the Southern Pacific ocean, near the coast of New Caledonia; so called by captain Cook from the number and variety of plants it afforded. S. lat. $22^{\circ} 26' 40''$. E. long. $167^{\circ} 16' 45''$.

BOTARGO, a sort of sausage, made of the milts and rose of the mullet-fish, much used on the coast of the Mediterranean, as an incentive to drink. The manner of preparing botargo, as practised at Martegues in Provence, is described by Mr. Ray. The mullets, *mugiles*, are taken in "burdigoes," which are places in the shallows inclosed with hedges of reeds. The male mullets are called "alietants," the female "boter," of the roes or spawn of which the botargo is made thus:—They first take out the spawn entire, and cover it round with salt for four or five hours; then they press it a little between two boards or stones; then they wash it, and at last dry it in the sun for thirteen or fourteen days, taking it in at night. Ray Trav. p. 396, seq.

The method of making the botargo, in the towns of Koflow and Kassa, in Crim Tartary, on the coasts of the Black Sea, where the mullet abounds, is as follows:—Immediately after the fish spawns, the spawn is put whole into a strong brine, and slightly simmered; when it is thought to be sufficiently done, it is put into pots, and covered with melted

wax, to prevent it from spoiling; and it will then keep for a long while, and may be conveyed to very distant countries.

The people of Provence call it *bou-argues*. The best is brought from Alexandria and Tunis. There is also a manufacture of it near Marseilles. It is much used throughout all the Levant, and usually eaten with olive-oil and lemon-juice.

BOTARISSAS, *Strinfios* five *Botarissas*, Bell. Aq. one of the synonyms of *gadus lota*, called also *claria fluvialis* by the same author; by the English *eel-pout*, or *burbot*. See *LOTA GADUS*.

BOTATRISSA, in *Ichthyology*, synonymous with *botarissas*, *eel-pout*, and *gadus lota*. See *BOTARISSAS*, and *GADUS LOTA*.

BOTAURUS, in *Ornithology*, a species of *ARDEA*, with a smooth black head; body above cinereous and fuscous, variegated; beneath rufous; lore and orbits naked and yellow; throat white, streaked with black, and reddish. Gmel.

This is *botaurus major* of Brisson, and *grand butor* of Buffon; *greater speckled*, or *red heron* of Ray and Willughby; *greater bittern* of Latham.

Ardea botaurus is a native of Italy; length three feet nine inches; the bill is yellowish; irides yellow; feathers on the head and breast long and flowing.

BOTE, *BOTA*, in our old *Law-Books*, signifies compensation, satisfaction, or amends, for any injury done. See *ESROVERS*.

Hence *man-bote*, satisfaction due for a man slain. In king Ino's laws it is declared what was the rate ordained for this offence, according to the quality of the person slain.

Hence also *boteles* (charter of Hen. I. to Thomas, archbishop of York), where no judgment or favour will acquit a man; as, *v. gr.* for sacrilege, &c. And hence our common phrase *to boot*, speaking of something given by way of compensation.

BOTE, *cart*, *fire-bote*, *bay-bote*, *house-bote*, *kin-bots*, *plough-bote*, *teft-bote*. See the adj.-tives.

BOTEFEUX, in *Gunnery*, are sticks two or three feet long, and an inch thick, split at one extremity, to hold an end of the match twisted round it, for firing the cannon.

BOTENALKAITOS, a star in the constellation Cetus; called also *BATENKETOS*.

BOTERNHOFEN, in *Geography*, a town of Germany, in the duchy of Holstein, 9 miles S.S.W. of Nordorp.

BOTEROLL, in *Heraldry, is the tag of a broad-sword scabbard, and by the French heralds esteemed an honourable bearing.*

BOTERVIGIE VAN BOER, in *Zoology*, (*Conus glaucus*, Linn.) is described under this name by Rumphius.

BORESCART, in *Ancient English Writers*, the same with boatswain.

BOTESDALE, in *Geography*, a market-town of Suffolk, in England, is seated near the borders of Norfolk, on the turnpike road which leads from that place to Bury St. Edmund's. It was formerly called Botolph's Dale, from a chapel dedicated to that saint in a valley. This sacred structure had long continued in a state of dilapidation, but Thomas Holt, esq. and some neighbouring gentlemen, raised a subscription, and had it properly repaired and fitted up for its original destination. This town enjoys the advantage of a free grammar school, which was founded and endowed by the eminent sir Nicholas Bacon, who was created the first baronet of England. He also bequeathed other legacies to the town; and the school has been since enriched by the donations of other persons. Botesdale is annexed to the rectory of Redgrave, the church of which is highly interesting to the historian and antiquary, from its inclosing the monuments and remains

remains of Sir Nicholas Bacon and his lady, also another magnificent one for Lord Chief Justice Holt. The latter is said to have cost 1500*l.* and the former (executed by Nicholas Stone) 200*l.* Both these illustrious men were successively possessed of the lordship of Redgrave, where the abbot of Bury had previously "his fairest country-seat." The fine old mansion has been succeeded by a modern building; and the place, now possessed by a descendant of Chief Justice Holt, is considered "one of the finest in the county" of Suffolk.

Botolph has a weekly market on Thursday, and two annual fairs. It contains only 65 houses, and 536 inhabitants, of which number 222 are employed in manufactures. From Norwich it is 27 miles, and from London 86 miles N.E. Gough's Camden, vol. ii. Magna Britannia, vol. iv.

BOPEFOURT, one of the American counties in the state of Virginia, situate between the Alleghany and Blue ridge; its chief town is Fincastle. The county is 44 miles long and 40 broad; and contains 8482 free inhabitants, and 1243 slaves.

BOTH, JOHN, in *Biography*, an eminent landscape painter, was born at Utrecht in 1610, and, after having been the disciple of Abraham Bloemart, went for improvement to Rome, where he resided many years; directing his attention to landscape, in which he attained to high perfection. His model was the style of Claude Lorraine; and some of his performances are mentioned in competition with those of Claude. The warmth of his skies, the judicious and regular receding of the objects, and the sweetness of his distances, afford a pleasure superior to that produced by the works of almost any other artist. His tints are so admirably formed as to express not only the light of the morning breaking from behind hills and woods, and diffusing a warm glow over the whole face of nature, and also the setting of the sun with its tinge in the clouds, but even the different hours of the day. By his colouring he obtained the distinction of being called "Both of Italy." We have also by his hand a set of ten landscapes, which are etched in a slight, free, masterly style. He lost his life by accidentally falling into a canal at Venice in 1650. Pilkington and Strutt.

BOTH ANDREW, brother of the former, and disciple of Bloemart, accompanied him to Rome, and applied to the study of figures, in which he imitated the style of Bamboccio with great success. The two brothers mutually assisted each other till the death of John; and then Andrew returned to his own country, where he painted sometimes portraits, and sometimes landscapes, in the manner of his brother, and also conversations, and players at cards, in the manner of Bamboccio; and where he died in 1656. Andrew Both also etched some few plates in a free, masterly style, resembling that of Ottade, viz. six small upright plates of "Dutch merry-making," to which he affixed his name; "St. Antony praying with a skull before him," and "St. Francis with a crucifix before him," its companion. Pilkington and Strutt.

BOTH, in *Geography*, a river of Germany, in the circle of Bavaria, which runs into the Inn, near Scherding.

Both-fleets ast, in *Sea Language*, expresses the situation of a ship sailing right before the wind.

BOTHAGIUM, BOTHAGE, or BOOTHAGE, customary dues to the lord of the market, for the liberty of pitching and standing of booths.

BOTHENA, BOTNA, or BORTNA, in the Scotch Law, a park or field wherein cattle are inclosed, and fed. The word is also written *larthena*; formed from the ancient Scottish *buth*, a flock of sheep.

BOTHENA is also used for a barony, lordship, or sheriff-

dom. In which sense it is ordained by statute, that the king's moot or court of each bothena, that is, each sheriffdom, shall be held within forty days.

BOTHFELD, in *Geography*, a district of Germany, in the bailiwick of Calenberg, consisting of five villages, of which Botfeld is parochial.

BOTHMAR, a county of Germany, in the principality of Zell, and 7 leagues W. of it; situate on the Reuse.

BOTHNIA, East. *Oster bothnia*, Lat. *Ojstro-bothnia*, a province of Sweden, situated on the east side of the gulf of Bothnia, whence it derives its name, is bounded on the north by Swedish Lapland, on the east by Russia, on the south by Finland, to which it properly belongs, and on the west by the gulf of Bothnia. Its extent has not been accurately ascertained; by some it has been computed to be about 90 Swedish miles long, and 40 broad; and by others its length has been estimated at 66 Swedish miles, and its breadth at 12. It is separated from Russia and Finland, properly so called, by a chain of hills, which runs along its east side. These mountains supply large rivers, of which some discharge themselves into the White sea, and others into the gulfs of Bothnia and Finland. The country, especially on the sea coast towards the south, is low and marshy; however, the industry of the inhabitants has made it productive of corn, though the cold and frost often disappoint their hopes, and several tracts of land lie waste. It abounds with wood, and its lakes and rivers yield plenty of fish. Some of the rivers are said to have furnished pearls. The inhabitants derive their chief subsistence from agriculture, grazing, burning lime and tiles, and making pitch and tar. They also employ themselves in fishing and hunting, ship-building, and the manufacture of wooden-ware. Those who inhabit the rocky islands near the sea-coast speak the Swedish language, but those of the inland parts use that of Finland. The number of inhabitants is estimated at about 80,000, who are scattered over 23 parishes, 19 of which are occupied by Finns, and nine by Swedes, and which are under the jurisdiction of the bishop of Abo. The commodities furnished by this country for exportation are timber, butter, cattle, fish, oil, pitch, tar, &c. East Bothnia is divided into three parts, or lehn, which are under one governor. Its chief towns are Cajna or Cajneborg, Utea, Brahestad, Gemla-Carleby, Ny-Carleby, Jacobstad, Wafa, and Christinestadt.

BOTHNIA, West, a province of Sweden, lying on the west side of the gulf of Bothnia, and bounded on the north and west by Lapland, on the south by Angermanland, and on the east by the gulf of Bothnia. That part of this province which is inhabited extends from the frontiers of Angermanland to the church of upper Tornea, and is computed to be about 58 Swedish miles in length, and from 16 to 18 miles in breadth. Off the coast of this province are several pleasant islands, and its interior has several forests, with lakes and rivers. It has also excellent pastures among the mountains, the summit of which supplies the rein-deer with moss. The soil is tolerably fertile, and produces corn, which is sown late, and ripens in six, seven, or eight weeks, but which is often injured by the sudden frosts of July. This province has several mines of copper and iron. The inhabitants are celebrated for their hardiness and valour; they subsist by agriculture, grazing, hunting, and fishing; and even in fruitful years mix their corn with chaff and pulverized pine bark, with which they make their "stampe brot," or pounded-bread. They traffick in beams, deal-boards, and other timber, shingles, tar, salted and smoke-dried salmon and other fish, wild fowl, venison, common train-oil, tallow, butter, and cheese; and also in fables, and skins of blue and white foxes, ermines, bears, wolves, martens, hyenas, beavers, and rein-deer. These commodities are carried by them, not only

only to other parts of Sweden, but over the mountains to Norway, and through extensive deserts to Russia. It is divided into four vogteys or inferior governments, contains two provincial jurisdictions, and, with regard to its ecclesiastical state, belongs to the see of Hernofand. The principal towns are Umea, Pitea, Lulea, and Tornea.

BOTHNIA, *gulf of*, one of the branches into which the Baltic is divided; the other being the gulf of Finland. The former is separated from the Baltic by the isles of Aland, is bounded on the east, west, and north by the Swedish dominions, and extends between them, from Aland to Tornea, about five degrees and a half in latitude, or about 127 leagues from north to south, and from 18 to 35 in breadth from east to west.

BOTHNICUS, in *Entomology*, a species of *CRYPTOPHAGALUS*, *Chrysomela bothnica* of Linnæus. The colour is deep black, with a longitudinal red line on the thorax. Inhabits Sweden.

BOTHOA, or БОТОНА, in *Geography*, a town of France, in the department of the north coast, and chief place of a canton, in the district of Guingamp; the place contains 2021, and the canton 7854 inhabitants; the territory comprehends 207½ kilometres, and 8 communes.

BOTHWELL, an ancient barony and parish of Scotland, which includes an area of about 8½ miles in length by 4 miles in breadth. The bridge in this parish, which crosses the Clyde river, is memorable for an engagement fought on the south side of it, June 22, 1679, between the royalists, under the duke of Monmouth; and the presbyterian insurgents. In this fatal conflict the latter were defeated, with the loss of 400 slain, and 1200 taken prisoners. Here are the remains of a castle, which appears to have been formerly of very large dimensions. It is frequently mentioned in the annals of Scottish history. Sir John Sinclair's Statistical Account, vol. xvi.

BOTI, in *Geography*, a town of Siberia; 32 miles S. of Orlenga.—Also, a town of Siberia, 76 miles N.E. of Nerchinsk.

BOTICUM, in *Ancient Geography*, a town of Asia Minor, in Phrygia, which had a marsh that produced salt. Steph. Byz.

BOTISAS, a name given in Spain to a smaller sort of alcarrazas, or vessels used for cooling water; the larger fort being called jarras. See *ALCARRAZAS*.

BOTISTMENI, in *Geography*, the name of a mountain in the southern part of the island of Madagascar.

BOTLAN, AL MOHTAR BEN HASSAN, BEN ABOUN, or D'EBN BOTLAN, in *Biography*, a Christian physician of Bagdat, the contemporary and antagonist of Ebn Rodwan. It is said that Botlan, in order to be personally acquainted with his adversary, made a voyage into Egypt, A. D. 1047. On leaving Egypt, he went to Constantinople, where he lived a year. He is the author of the following works, viz. "Kenafsch," or a compendium of medicine, for the use of the convents; "Instructions how to buy slaves, and to make profit of them;" "Tables of health;" "Of the diseases of physicians;" "Introduction to the art of medicine;" "Devar et athebbai," or the religion of physicians; and "Of the cure of a child who had the stone." D'Herbelot.

BOTNA, or KAUZEN, in *Geography*, a river of European Turkey, which runs into the Dnieper, near Bender.

BOTOL, or BOTEL *Tabago-Xima*, *Tabaco-Xima*, or *Tabaco-Sima*, the name of two islands in the Chinese seas, situated at the distance of about 5 leagues from the south point of Formosa, and on the same parallel. The great island, at its south-east point, is placed, by captain Marc-

hand, in N. lat. 22° 3'. and E. long. 121° 34'; by Dalrymple's chart, in N. lat. 22° 6' 30". E. long. 121° 50'.; by La Pérouse, in N. lat. 21° 57'. E. long. 121° 52'.; by Chanal, in N. lat. 22° 3'. E. long. 121° 54'. and by G. Robertson, in his table of positions, in N. lat. 22° 6'. E. long. 121° 41' 45". This island is sufficiently elevated to be seen at a distance of 15 leagues, when the sky is clear; it is about 4 or 5 leagues in circumference; and it is well peopled with inhabitants, as Marchand observed fires blazing during the night, and La Pérouse, on approaching very near to it, distinguished three extensive villages within the space of a league. It is very woody from about one-third of its elevation, taken between the water's edge and its summit, which appeared to be crowned with trees of the largest size. The declivity of the space between these forests and the beach is very rapid. It was covered, says La Pérouse, with the most beautiful verdure, and in many places cultivated, though furrowed by the torrents that descend from the mountains. The small island of the same name, the only one, probably observed by lord Anson, the other being very often covered with fogs, lies to the south by east of the great one, in N. lat. 21° 57', and E. long. 121° 56', on the same parallel with the middle of the great island, according to Dalrymple's chart; but on the parallel of its south-east point, according to that of La Pérouse. It is somewhat less elevated than the larger island, (not half so high, says La Pérouse,) but, however, sufficiently lofty to be seen at the distance of 10 or 12 leagues. These two islands are separated by a channel half a league in width; and both shores, as well as the channel, appeared to Marchand, equally free from rocks or shoals. On the small island La Pérouse perceived some little verdure and a few bushes; but he says, that it is neither inhabited nor habitable. He adds, that if there be any anchorage at the great island, it is extremely near the coast. Marchand's Voyage, vol. ii. p. 60. La Pérouse's Voyage round the World, vol. ii. p. 9. Eng. Ed.

BOTONE, in *Heraldry*. See *CROSS BOTONE*.

BOTONTINI, in *Middle Age Writers*, denotes mounts or hillocks, raised to serve as land-marks, or boundaries of grounds. The word is also written *botontones*, *botones*, and *bodones*. Du-Cange Gloss. Lat.

BOTOTOE, in *Ornithology*, a name given by the people of the Philippine islands to a beautiful bird of the parrot kind, but of what species is rather uncertain. It is described as being smaller than the common parrot, and the plumage totally of a fine blue colour. It agrees with the blue parakeet of Otaheite, *Pittacus Cyanus*, and may very possibly be the same.

BOTOVSKAIA, in *Geography*, a town of Russian Tartary; 20 miles S.S.W. of Koperik.

BOTRIA, in *Botany*, Bosc, in *Nouveau Dictionnaire d'histoire naturelle*. Class, *pentandria monogynia*. Gen. Char. Cal. *perianth*, bell-shaped, five-toothed. Cor. petals five, sharp-pointed, fleshy, recurved at the point. Stam. filaments five, flat, attached to the claws of the petals. *Pist.* germ. superior. Stigma sessile, concave. *Per.* a berry with one seed.

There is only one species known, which is a climbing shrub, with scattered heart-shaped, three or five-lobed, veined, crenulated, villous leaves; and small reddish flowers on common axillary peduncles, which terminate in tendrils. It is found on the coast of Zanguebar, where it is esteemed a diuretic. Its berries are eaten; and a decoction of its root is given in cases of pleurisy, inflammation, and abscess.

BOTRO, in *Geography*. See *BOURROS*.

BOTRODUS, in *Ancient Geography*, a place of Spain in Celtiberia, mentioned by Martial in his epigrams.

BOTRYTES, in *Natural History*, a stone of the gem kind,

kind resembling a branch of young grapes. The word is formed from *botrus*, a grape. In English writers, it is sometimes called the grape-stone.

BOTRYTES, or *Detrites*, also denotes a sort of burnt cadmia, found somewhat in the form of a bunch of grapes, adhering to the upper parts of furnaces, where that mineral is calcinated. It differs from the placites, which is that gathered on the lower parts of the furnace; though Schröder gives a different distinction, viz. into botrites, found in the middle of the furnace, placites in the upper, and oltracites in the lowest part.

BOTRYLLUS, (*botryllus conglomeratus*), in *Zoology*, the name of *alcyonium conglomeratum* of Gmelin in Gærtn. ap. Pallas Spic. Zool.

BOTRYOIDES, in *Natural History*, a species of *MADREPORA*, having thick, fastigate, obtuse, clustered branches, with reticulate, craggy undulations. Habitat. unknown. Described in Solander and Ellis's Corallines.

BOTRYS, in *Ancient Geography*, a city of Phœnicia, near the coast and south of the river Eleutherus, mentioned by Ptolemy, Mela, and Polybius. According to the latter (lib. v.) it was built by Ethbal or Ithobal, who reigned at Tyre in the time of Ahab, about the year 923, B. C. Stephanus Byz. thinks that this was the city which is called by Josephus (xvi. 6) *βῆζρ*, *betser*, and by the LXX *βηζρ*, and enumerated among the 48 cities which were assigned to the Levites. This city, in Christian times, became an episcopal see, and its bishop, Porphyry, assisted at the council of Chalcedon, held A. D. 449.

BOTT, among *Bone lace Weavers*, a kind of round cushion of light matter placed on the knee, whereon they work or weave their lace with bobbins, &c.

Among the French the *bott*, called *oreiller*, is a little square wooden frame or desk, covered ordinarily with green stuff.

BOTT, in *Entomology*. See **BOTTS**.

BOTTENSTEIN, or **POTTENSTEIN**, in *Geography*, a town of Germany, in the circle of Franconia, and bishopric of Bamberg; 22 miles E.S.E. of Bamberg.

BOTTERT, HENRY, in *Biography*, a learned physician of Amersfort, professor of medicine in the university of Marburg, published, in 1621, "Epistola de expurgatione empyematis," 4to. and in 1646, "De scorbuto tractatus," 4to. Lubeck. Haller Bib. Med.

BOTTESDALE. See **BOTESDALE**.

BOTTESSTANO, a town of Germany, in the county of Tyrol; 10 miles S. of Bruneck.

BOTTIA, or **BOTTIAA**, in *Ancient Geography*, a country of Macedonia, in the neighbourhood of Thrace. Its limits are not ascertained by the ancient geographers, who mention it. Herodotus places it at the towns of Ichnæ and Pellæ.

BOTTLE, a small vessel proper for holding liquors.

The word is formed from *butellus*, or *butellus*, used in barbarous Latin writers, for a lesser vessel of wine; being a diminutive of *buta*, which denoted a butt or cask of that liquor. It is evidently derived from *butte*, *botte*, *buta*, *buticula*, *buticella*, which occur in the middle ages.

We say a glass bottle, a stone bottle, a leathern bottle, a wooden bottle, a sucking bottle.

Of glass bottles, says Beckmann (*Hist. of Inventions*, vol. ii. p. 124.), no mention occurs before the 15th century: for the "Amphoræ vitreæ diligentèr gyplata" of Petronius, (Sat. c. xxxiv. p. 86.) to the necks of which were affixed labels, expressing the name and age of the wine, appear to have been large jars, and to have formed part of the many uncommon articles by which the voluptuary Trimalchio

wished to distinguish himself. It is, however, singular, that these convenient vessels were not thought of at an earlier period, especially as among the small funeral urns of the ancients, many are to be found which, in shape, resemble our bottles. Mr. Beckmann conceives, that he discovers the origin of our bottles in the figure of the Syracusan wine-vessels. Charpentier (*Gloss. Nov. i. p. 1182.*) cites, from a writing of the year 1387, an expression which seems to allude to one of our glass bottles; but this, attentively considered, refers merely to cups or drinking glasses. The name *boutiaux*, or *boutilles*, occurs in the French language for the first time in the 15th century; but if it were more ancient, it would prove nothing, as it signified originally, and still signifies, vessels of clay or metal, and particularly of leather. Such vessels, filled with wine which travellers were accustomed to suspend from their saddles, might be stopped with a piece of wood, or closed by means of wooden or metal tops screwed on them; and such are still used for earthen pitchers. We shall here add, that stoppers of cork must have been introduced after the invention of glass bottles. In 1553, they were little known; and their introduction into the shops of the apothecaries in Germany took place about the end of the 17th century. Before that period, they used stoppers of wax, which were more troublesome and more expensive.

The ancient Jewish bottles were cags made of goats' or other wild beasts' skins, with the hair on the inside, well sewed and pitched together; an aperture in one of the animal's paws serving for the mouth of the vessel. Calmet.

Bottles of this kind are mentioned in scripture, and called *amra*; and they were used for carrying water through the deserts of Arabia and other countries, where springs and streams are scarce. Such bottles, indeed, have been in common use both in ancient and modern times. They are mentioned by Homer, *Od. 2. 77. Il. F. 246, and Od. E. 265.* Sallust speaks of them in *Bell. Jug. 96*, where he says "Ex coriis utres uti fierent curabat;" i. e. He provided bottles made of skins. That the ancient Romans were acquainted with goat-skin bottles is also evident from two lines of Virgil (*Georg. ii. v. 383, 384.*)

"— Inter pocula læti

Mollibus in pratis unctos salicè per utres."

From the circumstances here alluded to we may infer, that these were leather bottles, which were oiled on the outside to make them more slippery, and more likely to occasion the fall of those that hopped upon them. Horace (*l. ii. Sat. ii. v. 68, 69.*) mentions greasy water, which was given to his guests by Nævius, a man of a parsimonious disposition. Thus,

"— Neque sicut simplex Nævius, unctum

Convivis præbebit aquam. Vitium hoc quoque magnum."

This "acqua uncta" has puzzled commentators; but it probably refers to an oiliness, which the water contracted by being fetched in unclean leather bottles. Those, however, to which the same appellation of bottle is applied in our translation of the Old Testament, are expressed by different terms in the original; and they were made of various forms, and consisted of different materials. Thus, in *Gen. xxi. 14.* the "bottle" of water, given by Abraham to Hagar for herself and Ishmael, is in the original *חֶמֶת*, *chemeth*, which denotes an earthen pitcher; and it appears from *Isaiah* (chap. ii. v. 15.), that they were accustomed to drink out of these *chemeths*. Sir John Chardin, however, supposes that the bottle given to Hagar was a leather one. The "bottle" of wine, which Samuel's mother brought to Eli, (*1 Sam. i. 24.*) is called *נֶבֶל*, *nabel*, and was probably an earthen jar or jug; and the same word is also used *1 Sam.*

x. 3. and 2 Sam. xvi. 1. But the term, translated "earthen bottle," in Jerem. xix. 1. is בקבוק, *bakkuk*. A very different word is used in Judges iv. 19. to signify the vessel out of which Jael gave milk to Sisera, it is called נאד, *naud*, which, having some reference to moist or oozing, was probably made of goat-skin, or the skin of some animal, and being constantly kept full of milk, was preserved in a pliant state. The same word is also used to denote the bottle in which Jesse sent wine by David to Saul, 1 Sam. xvi. 20. *Naud* is also used to express the bottle into which the Psalmist desires that his tears might be collected, Ps. lvi. 8.; and that to which he resembles himself, Ps. cix. 83. He says "I am become like a bottle in the smoke," i. e. like a bottle kept in the tents of the Arabs, blackened with smoke. To the meanness of such a drinking vessel as a goat-skin bottle, as well as to the blackness contracted in the Arab tent, the Psalmist probably refers; and it was a most natural image for him to use, driven from among the vessels of silver and gold in the palace of Saul, to live as the Arabs did, and consequently to be obliged frequently to drink out of a smoked leather bottle. The word used by Job (ch. xxxii. 19.) in the plural, is אבות, *abuth*; and as אב, *ab*, signifies, in general to swell or distend, it is properly used to express a skin bottle, which would be made to swell by the liquor poured into it, and which would be more distended and enlarged, till they would at last burst, if they had no vent, by the fermentation of the liquor as it advanced towards ripeness. Hence we perceive the propriety of putting new wine into new bottles, &c. according to the appropriate allusion in the gospels (Matt. ix. 17. Mark, ii. 22. Luke v. 37, 38.), which being moist and strong, would resist the expansion, and preserve the wine to due maturity; whereas old bottles of this kind, being dry and more brittle, would be in danger of bursting, and were best adapted to receive old wine, the fermentation of which had ceased. These leather bottles are supposed, by a sacred historian, not only to be frequently rent, when grown old and much used, but also to be capable of being repaired (Josh. ix. 4.). Modern travellers, as well as ancient authors, frequently take notice of these leather bottles. The Arabs, says Sir John Chardin, and all those who lead a wandering life, keep their water, milk, and other liquors, in these bottles, the manner of repairing which he also describes. They serve, according to this writer, to preserve their contents more fresh than in any other way. They are made, he says, of goat-skins: when the animal is killed, they cut off its feet and its head, and in this manner they draw it out of the skin without opening its belly. They afterwards sew up the places where the legs were cut off, and the tail, and when it is filled, they tie it about the neck. These nations, and the country people of Persia, never go a journey without a small leather bottle of water hanging by their side like a scrip. The great leather bottles are made of the skin of an he-goat; and the small ones, that serve instead of a bottle of water on the road, are made of a kid's skin. In speaking of the Persians, the same traveller says, that they use leather bottles, and find them useful in keeping water fresh, especially if people, when they travel, take care to moisten them, wherever they find water. The evaporation thus furnished serves also to keep the water cool. He says, that the disagreeable taste of the leather is taken off, by causing it to imbibe rose-water, when it is new, and before it is applied to use. Formerly, it is said, the Persians perfumed these leather vessels with mastic, or with incense. From him also we learn, that they put into these goat-skin and kid-skin vessels every thing which they want to carry to a distance in the East, whether dry or liquid; they are thus preserved

fresher than if they were conveyed in boxes or pots; the ants and other insects are prevented from getting among them; and they are thus kept free from dust; and for these reasons butter, honey, cheese, and other such aliments, are inclosed in vessels made of the skins of these animals. Accordingly, the things, particularly the balm and honey, which were somewhat liquid, that were carried to Joseph as a present, (see Gen. xlii. 11.) were probably inclosed in little vessels made of kid-skins. Homer also refers to this mode of preserving various kinds of provision in leathern vessels. Od. B. 354.

The bottles made of skin resemble the "Girba," described by Mr. Bruce, in his Travels through Abyssinia, vol. iv. p. 334. "This," he says, "is an ox's skin squared, and the edges sewed together very artificially by a double seam, which does not let out water, much resembling that upon the best English cricket balls. An opening is left in the top of the girba, in the same manner as the bung-hole of a cask. Around this the skin is gathered to the size of a large handful, which, when the girba is full of water, is tied round with whip cord. These girbas generally contain about 60 gallons each, and two of them are the load of a camel. They are then all besmeared on the outside with grease, as well to hinder the water from oozing through, as to prevent its being evaporated by the action of the sun upon the girba, which, in fact, happened to us twice, so as to put us in imminent danger of perishing with thirst."

Glass bottles are better for cyder than those of stone. Foul glass bottles are cured by rolling sand or small shot in them; musty bottles, by boiling them.

Bottles are chiefly made of thick coarse glass; though there are likewise bottles of boiled leather made and sold by the case-makers.

Fine glass bottles covered with straw or wicket, are called *flasks*, or *bettées*.

The quality of the glass has been sometimes found to affect the liquor in the bottle. Mem. Acad. Scienc. 1704.

BOTTLE, is also a measure at Amsterdam, the same with the mingle.

BOTTLE, *blue*, in Botany. See CENTAUREA CYANUS.

BOTTLE, *moft*. See SPLACHNUM.

BOTTLE, *white*. See CUCUBALUS BEHEN.

BOTTLE-head, a species of whale.

BOTTLE-nose, in Natural History, a name given by the English to various animals; the *cachalot* is called the bottle-nose; so also any of the whale tribe distinguished by the gibbosity of their snout. In some parts of England the *anas arctica* of old writers is called the bottle-nose.

BOTTLING, or BOTTLING, the operation of putting up liquors in bottles corked, to keep, ripen, and improve.

The writers on good husbandry give divers rules concerning the bottling of beer, cyder, and the like. The virtues of Spa, Pyrmont, Scarborough, and other waters depend on their being well bottled and corked, otherwise they lose both their taste and smell. To preserve them, it is necessary the bottles be filled up to the mouth, that all the air may be excluded, which is the great enemy of bottled liquors. The cork is also farther secured by a cement. Some improve their bottled beer, by putting crystals of tartar and wine, or malt spirits; and others, by putting sugar boiled up with the essence of some herbs and cloves, into each bottle.

Cyder requires special precautions in the bottling; being more apt to fly, and burst the bottle, than other liquors. The best way to secure them, is to have the liquor thoroughly fine before it be bottled. For want of this, some leave

leave the bottles open a while, or open them after two or three days bottling, to give them vent. If one bottle break, through fermentation, it is best to give them all vent and cork them up again. Mean cyder is apter to break the bottles than rich. Some soak the corks in scalding water, to render them more pliant and serviceable. See CYDER.

Another particular to be observed is, to lay the bottles so as that the liquor may always keep the cork wet and swelled. Something also depends on the place where the bottles are set, which ought to be such as exposes them as little as possible to the alterations and impressions of the air: the ground is better for this purpose than a frame; sand better than the bare ground; and a running water, or a spring often changed, best of all.

To hasten the ripening of bottled liquors, they are sometimes set in a warm place, or even exposed to the sun, when a few days will bring them to maturity.

BOTTOM, the lowest part of a thing as contradistinguished from the top.

Hydrostatical writers speak of the pressure of fluids, on the bottom of vessels; in which case, the law of gravitation is, that the altitude remaining the same, the pressure will be at the bottom. M. Leibnitz has asserted, that a body, in falling through a fluid, does not press on the bottom, that is, does not increase the pressure on it; which is found to be false. Phil. Trans. N^o 351. p. 570. A.D.S. an. 1692. p. 16.

When water boils, the bottom of the vessel is found considerably colder than it was some time before boiling; inasmuch that the hand may bear it in the former case, not in the latter. Hist. Ac. Sc. ann. 1703. p. 29. See BOILING.

BOTTOM, in *Navigation*, denotes the ground or surface of the earth under the water.

They say a rocky, sandy, gravelly, clayey bottom; a bottom with good hold, with a bad hold, &c.

The bottom of the sea, Ray observes, is level, *i. e.* the descent from the shore to the deep is equable and uniform: but the bottoms of some seas are found higher than those of others. Count Marsigli has made divers inquiries into the structure of the bottom of the sea, and its beds of stones, salt, bitumen, &c. Ray, Wisd. of Creat. part i. p. 84. See SEA.

Over the natural bottom of the sea is formed an accidental bottom, by the mixture of different matters, sand, shells, mud, &c. strongly compacted by the glutinous quality of the sea-waters, almost to a degree of petrification. These incrustations being necessarily formed in strata, there are some places wherein the fishermen can distinguish the annual augmentations. Hist. Acad. Sc. 1710.

BOTTOM of a Ship, that part of a ship below the water. This is also called the *quick work*: and that above the water is called the *dead-work*. As the good or bad qualifications of a ship, with regard to sailing, steering and staying well, veering, carrying sail, stowing her cargo, carrying her guns, &c. depends, in a great measure, upon the form of the bottom, every attention ought, therefore, to be paid to this particular point; and hence the method of constructing the bottom of a ship, so as to answer any intended purpose, is the nicest and most difficult part of ship-building; to this article the reader is referred.

That a ship may sail well, it is necessary to give her a long floor, with little rising both fore and aft, and the capacity of the fore-body equal, or nearly so, to that of the after-body.

In order to make a ship steer well, the after-part of the bottom must not be full; the wing-transom carried pretty high; the fashion-pieces well-formed, and not full below the

lead-water line; the midship-frame carried well forward; to draw more water aft than at the stem; a considerable rake forward; but the stern-post to be nearly perpendicular to the keel; and the upper works to be tight and as low as possible.

That a ship may carry a press of sail, the floor-timber must be flat and long; the lower futtock full; upper futtock nearly straight; the breadth to be thrown out aloft; the main breadth carried high; the upper works light; and hence, the centre of gravity low.

To make a ship keep a good wind, and drive little to leeward, requires a considerable length of keel, with respect to her breadth; a deep hold, and, consequently, a short floor-timber, with a considerable rising.

In order that a ship may carry her guns well above the water, she must have a long floor-timber, and not much rising; a full midship-frame; a low wing-transom; and light upper works.

To obtain the preceding properties, very opposite rules must be followed; and hence it appears to be almost impossible to construct a ship so as to be possessed of them all. The body, however, must be so formed, that as many of these properties may be retained as possible; always observing to give the preference to those which are most required. If it is known what particular employment the ship is wanted for, those qualities then are to be principally adhered to, which are most essentially necessary for that employment.

BOTTOM, Copper, a practice now become pretty general in Britain, of covering the bottom with sheets of copper, which accelerates the sailing of a ship, prevents the bottom from being worm-eaten, and keeps it long clean. It is, therefore, necessary, that ships making long voyages, should be coppered.

BOTTOM, Double; a ship of this kind was constructed by Sir William Petty in the year 1663; which was found to sail considerably faster than any of the ships with which it had an opportunity of being tried. Her first voyage was from Dublin to Holyhead; and in her return, she turned into that narrow harbour against wind and tide, among rocks and ships with such dexterity as many old seamen confessed they had never seen the like. This vessel, with seventy more, were lost in a dreadful tempest.

BOTTOM, Foul, that is, when the bottom of a ship is covered with shell-fish, weeds, &c. This greatly retards the rate of a ship, and prevents her from steering and working; and, besides, proves sometimes fatal. An instance of this happened to a large built ship from Africa, in this foul condition, that could not be steered into Liverpool, but was lost, entirely owing to her bottom not being scrubbed during the voyage. Every possible means ought, therefore, to be used to keep the ship's bottom clean. For this purpose, a calk-scrubber has been found to answer with success when at anchor, and in calm weather on the open ocean. This scrubber is made of elm, about an inch thick, and a foot broad, the middle part of the frame just to fit a ten gallon cask, that was lashed to the battons at each end, and the long square spaces on each side of the cask were filled with birch-broom stuff, which projected about six inches without the frame, and wedged fast towards the ends, with long wedges against boards that slide with small tennons at each end in a groove, to keep the birch fast and firm. Two of these were connected together by iron-work, having a joint, that they may the more naturally ply to the curved or rounding parts of the ship's bottom. In using this scrubber, a block was fastened under the bowsprit end, and another on the driver boom, rigged out right aft; a single block is reeved in these blocks, and made fast to the slings, and just long enough

to veer and haul the scrubber along the bottom fore and aft, close to the keel. Another rope is bent to the lower part of the scrubber, and hauled tight under the bottom, and made fast to the inside of the boat's main-thwart, the upper part of the scrubber being even with the water's edge, at midships, on the other side. The people are then ordered to walk fore and aft with the rope to the scrubber, till it comes to the water's edge both ways, the boat moving the same way with the scrubber, the people in her helping, by pushing their hands against the ship's side, till the first depth is thought to be clean enough; then the people in the boat haul by their rope the scrubber a depth lower, by which, and the empty casks, it is confined and pressed to the bottom, at the different depths, till it is scrubbed down to the keel; and even the keel itself, by the rope going fore and aft under it.

Bottom, Hogged, a concave keel by which the sheer of the ship is apparently broken. Ships with long straight floors are most liable to this defect, either from accident, in taking the ground, improper stowage of the cargo, or otherwise. To prevent this, Mr. Hutchinson advises to build ships with their floors and bottoms lengthways, to form an arch with the projecting part downwards, which will naturally not only contribute greatly to prevent their taking damage by their bottoms hogging and straining upwards, either aground or afloat, but will, among other advantages, be a help to their sailing, steering, staying, &c. This curved bottom is one of the principal properties of the life-boat.

Bottom having several keels, which, upon account of the very different form of the bottom from the common form, requires a particular description. This is a proposal of Thomas Gordon, esq. of Premnay, in his "Principles of Naval Architecture," printed at Aberdeen in the year 1784, in order to unite the several properties of ships, which has hitherto been deemed impracticable; such as to make a ship sail well, draw little water, keep a good wind, &c. For this purpose the bottom, says Mr. Gordon, should be formed quite flat, and the sides made to rise perpendicular from it, without any curvature; which would not only render her more steady, as being more opposed to the water in rolling, but likewise more convenient for stowage, &c., while the simplicity of the form would contribute greatly to the ease and expedition with which she might be fabricated. Though diminishing the draught of water is, *ceteris paribus*, undoubtedly the most effectual method of augmenting the velocity with which vessels go before the wind, yet, as it proportionably diminishes their hold of the water, it renders them extremely liable to be driven to leeward, and altogether incapable of keeping a good wind. This defect may, however, be remedied, in a simple and effectual manner, by proportionally augmenting the depth of the keel, or, as so large a keel would be inconvenient, on many accounts, proportionally increasing their number; as, in place of adding a keel eight feet deep to a vessel drawing six feet water, to affix to different parts of her flat bottom, which would be well adapted for receiving them, six different keels of two feet deep each, at equal distances from each other, with proper intervals between; which will be found equally effectual for preventing these pernicious effects.

Thus then it appears, that a vessel drawing eight feet water only, keels and all, may be made to keep as good a wind, or be as little liable to be driven to leeward, as the sharpest built vessel of the same length drawing fourteen, nay twenty feet or upwards, if a few more keels are added, at the same time that she would be little more resisted in moving in the line of the keels, than a vessel drawing six feet only. These keels, besides, would strengthen the vessel considerably,

would render her more steady, and less liable to be overfet, and thereby enable her to carry more sail, &c. Vessels of this kind would likewise be well qualified for lying in docks and harbours when dry; and though the very quickest sailers of any, might be navigated in the shallowest water; from which latter circumstance many important advantages would result, as running little danger from sand-banks, rocks, &c. being capable of riding in many bays, and entering many harbours, rivers and creeks inaccessible to others, whether as an asylum, or for the purposes of trade or war; for bombarding, or making descents on an enemy's coast. By enlarging, perhaps doubling, the breadth of ships, and forming their bottoms flat, and well furnished with keels, they must, in the first place, become much steadier, so as to carry their guns well, roll little, if at all, and be enabled to carry greatly more sail, and that in a better direction; at the same time that they would be in no danger of being dismasted or overfet, unless the masts were of a most extraordinary height indeed. Secondly, that they could carry more guns on their bow and stern, would have little or no occasion for ballast; and if any was used, would incur less danger upon its shifting. Thirdly, that there would be much more room upon deck, as well as accommodation below, the breadth being so much increased without any diminution of the height above the load-water line, and without occasioning any necessary augmentation in the number of men for working the vessel, &c. These are the principal advantages of a ship of this construction; Mr. Gordon, however, proceeds to enumerate others.

Bottom with sliding keels. See *SHIP with sliding keels*.

Bottom, fagged, the keel having a convex curvature. Long straight-floored ships are most liable to be fagged, as well as hogged. This defect arises, in a great measure, from loading the ship with a weighty cargo, as lead, iron-ore, stones, &c. and stowing it in the main-body of the ship. This fagging of the bottom has, from experience, been found to increase the velocity; but, on the other hand, the ship is generally in a leaky condition. The principal method of remedying this defect, is to distribute the cargo more equably, so that the upward and downward pressures may nearly counterbalance each other. This may be accomplished by means of a form-gage; for an account of which see that article.

Bottom, to prevent from being worm-eaten. One of the best remedies hitherto discovered for preventing worms from destroying the bottom of a ship, seems to be the coal-tar, invented by the earl of Dundonald, and manufactured at Culrofs in Scotland. By many comparative trials, by sinking piles of wood for some considerable time in the water, some of which were payed with coal tar, and the others with common vegetable tar; it was found that, in those payed with coal-tar not the least appearance of the worm could be traced, the tar still remaining black and smooth upon the wood, which, on being cut, emitted a strong smell of the tar; whereas, the other piles were observed to be full of worms. Some proofs of the efficacy of this tar will be inserted under the proper article.

A mixture of the oil of the cocoa-nut with lime has also been used to pay the bottoms of ships, in order to exclude worms.

Bottom, is also used to denote a whole ship, or rather vessel.

In this sense we say English bottoms, foreign bottoms. By the act of navigation, certain commodities imported in foreign bottoms, pay a duty called petty custom; from which they are exempt, if imported in English bottoms.

BOTTOM is also used for what remains at the bottom of a vessel. In this sense, Paracelsus calls the sediment of urine, *fundus urinae*.

BOTTOM-Stone, a kind of iron-stone, or ore, in the Staffordshire mines.

BOTTOM-Nails. See **NAIL**.

BOTTOMRY, in *Navigation and Commerce*, is a contract, in the nature of a mortgage of a ship, on which the owner borrows money, to enable him to fit out the ship, or to purchase a cargo for a voyage proposed; and pledges the keel or *bottom* of the ship (*parlem pro toto*), as a security for the re-payment. It is moreover stipulated, that if the ship be lost, in the course of the voyage, by any of the perils enumerated in the contract, the lender also shall lose his money; but if the ship should arrive in safety, then he shall receive back his principal, and also the interest agreed upon, generally called the "Marine Interest," however this may exceed the legal rate of interest. The person of the borrower, as well as the ship and tackle, if they arrive safe, are answerable for the money lent, and the marine interest. But if the loan is not upon the ship, but upon the goods and merchandize, which must necessarily be sold or exchanged, in the course of the voyage, then only the borrower, personally, is bound to answer the contract; who is therefore, in this case, said to take up money at "*Respondentia*." Bottomry is a loan upon the ship, and respondentia upon the goods. However, in the latter case, the personal responsibility of the borrower is not always the only security of the lender. If the money be lent for the outward and homeward voyage, the goods of the borrower on board, and the returns for them, either in money, or in other goods, purchased with the proceeds of them, are liable to the lender. The money is to be repaid to the lender, with the marine interest, upon the safe arrival of the ship, in the one case, and of the goods, in the other. Such are the leading circumstances that discriminate these two contracts; in all other respects, they are nearly the same, and are governed by the same principles.

This kind of contract by bottomry, or rather respondentia, was known to the Romans; they denominated it, "*nauticum foenus*," or "*contractus trajecitiae pecuniae*;" and it is treated of, both in the Digest, and the Code, "*De nautico foenere*." They called the sum lent, "*pecunia trajecititia*," perhaps, because the borrower was accustomed to take the money on board with him in specie, in order to employ it in trade, in the course of the voyage; which money was to be repaid, after a fortunate voyage, with a stipulated interest, called "*periculi pretium*;" and sometimes, "*usura maritima*," or "*usura nautica*;" but it was lent on this condition, that if the ship should be lost, by the perils of the sea, in the course of the voyage, the lender should lose both principal and interest.

Bottomry essentially differs from a simple loan: because, in a loan the money is at the risk of the borrower, and must be paid at all events; but in bottomry, it is at the risk of the lender during the voyage. Accordingly, upon a loan, the legal interest only can be reserved; whereas, upon bottomry, any interest may be legally reserved, which is agreed upon between the parties.

The contracts of bottomry and insurance resemble one another in several particulars; the lender and the insurer are alike liable to the perils of the sea; the former receives the marine interest, and the latter the premium, as the price of the risk, which of course varies, according to the length, and danger of the voyage. The perils to which both are exposed, commence and terminate together. The marine, and also the premium of insurance, are not due, if

no risk be run, though this be prevented by the voluntary act of the borrower. These contracts, however, materially differ in a variety of respects. In bottomry, the lender supplies the borrower with money, to purchase the goods that are risked; but an insurer furnishes no part of the property insured. The lender, in taking on himself the risk of the goods, does not contract any obligation to the borrower; a loss by the perils of the sea does not make him a debtor to the borrower, but only prevents the borrower from becoming his debtor; whereas, in case of loss, the insurer becomes a debtor to the insured, to the amount of such loss, not exceeding the sum insured. In case of shipwreck, the lender, by the general law, has a *lien* on the effects saved, to the extent of the sum lent, and the marine interest, to the exclusion of the borrower; whereas, an insured person has an interest in the effects saved, in common with the insurer, so far as he was uninsured. The lender is not liable for particular average; but the insurer is liable for this, unless he be exempt by express stipulation. By the clause, "*free of average*," insurers may be exempted from general average; but, in a case where the lender is liable by law to general average, such a clause would be illegal and void. If the voyage be divisible into several distinct risks, the premium of insurance may be apportioned to each, and there may be a return for such as have not been begun; but in bottomry, if the risks be once commenced, and no loss happen, the marine interest must be paid entire.

This contract is eminently useful in a country, where persons in trade have not capital sufficient to carry on their foreign commerce; and by means of it a kind of partnership is formed between the lender and the borrower, in which one supplies money, and the other skill, experience, and a spirit of adventure; in which one risks the perils of the sea, and the other compensates him by a share of the profits of the adventure. But in other respects this contract bears no resemblance to a partnership, as it has no community of capital nor any community of loss.

Formerly contracts of this kind were more common in this country than they are now; because the immense capitals engaged in every branch of commerce superseded the necessity of such loans. On this account money is now seldom borrowed in this manner, unless it be by the masters of foreign ships, who, being in our ports, need pecuniary assistance to refit, to pay their men, to purchase provisions, &c. or by officers and others belonging to ships engaged in long voyages, who are allowed to trade to a certain extent with the prospect of great profit, but without capitals of their own; in this case, though it now seldom occurs in this country, they take up money on respondentia to make their investments.

This contract, required to be always in writing, is sometimes made in the form of a deed poll, called a "*bill of bottomry*," executed by the borrower; sometimes in the form of a bond or obligation, with a penalty. But whatever may be its form, it must contain the names of the lender and the borrower, those of the ship and master; the sum lent, with the stipulated marine interest; the voyage proposed, with the duration of the risk; and it must also specify, whether the money be lent on the ship, or on the goods on board, or on both; together with any other stipulation agreed by the parties to be introduced into the contract. It is also essential to this contract, that the marine interest be expressly reserved in it.

Concerning the parties in this contract we observe, that any person, who is capable of contract, may lend money on bottomry. Any person, who has a vested assignable property

perty in a ship or cargo, may borrow money on bottomry or respondentia, to the extent of his interest. The contract itself seems to have originated from the practice of permitting the master of a ship, in a foreign country, to hypothecate the ship, in cases of necessity, for the purpose of raising money to refit; and, indeed, it is necessary for the safety of the ship, and in order to ensure the success of the voyage, that the master, in the absence of the owners, should have this power, implied by the marine law in his appointment. However, with respect to the purposes of this contract, he possesses no such power, till he becomes actually master, or as far as this business is concerned, till after he sets sail. Hence, if he borrows money on bottomry in the place where the owners reside, without their express authority, the act can only concern himself, and affect his own interest on board. In a foreign country, and in the absence of the owners, the master cannot raise any money on bottomry for any debt of his own, but merely for the use of the ship, in cases of necessity; and this necessity must appear in the written contract, or else the lender will have neither a *lien* on the ship, nor an action against the owners; the master alone being liable. Nevertheless the lender is not bound to look to the application of the money, but may have his action against the owners and his *lien* on the ship, without being obliged to prove that the money was properly applied, unless indeed he be an accomplice in any fraudulent misapplication of it; in which case the owners may impeach the contract upon that ground. As an insurance upon any trade with the enemies of the state in time of war is void, the lending of money upon bottomry is illegal.

As to the articles hypothecated, they may be the body, tackle, furniture, and provisions of the ship, the whole or any part of the cargo, or both ship and cargo. On respondentia, indeed, money may be borrowed without hypothecating any thing; and the borrower may take money on board with him in specie, for the purpose of employing it in trade, during the course of the voyage. But it is essential to the nature of the contract, that the money lent, or some equivalent to it, be exposed to the perils of the sea, at the risk of the lender. The same reasons of policy which forbid gaming insurances, equally apply to wagers in the form of bottomry loans. The mischiefs likely to result from this practice have been restrained by our legislature. Accordingly the statute 16 C. II. c. 6. re-enacted and made perpetual by 22 C. II. c. 11. § 12. after reciting "that masters and mariners of ships, having insured, or taken upon bottomry, greater sums of money than the value of their adventure, do wilfully cast away, burn, or otherwise destroy the ship under their charge, to the great loss of the merchants and owners," enacts, for future prevention of the same, "that if any captain, master, mariner, or other officer belonging to any ship, shall wilfully cast away, burn, or otherwise destroy the ship to which he belongs, or procure the same to be done, he shall suffer death as a felon." When this species of gaming came into use in England, and persons borrowed money "on the voyage," as it was called, without any interest in the ship or cargo, which they could hypothecate, the statute 19 Geo. II. c. 37. § 5. directed, that upon East India voyages the money should only be lent on the ship or goods on board, with benefit of salvage to the lender. As many British subjects, in the reign of George I. fitted out ships, and clandestinely traded to the East Indies under colour of foreign commissions, the statute 7 Geo. I. c. 21. § 2. made to restrain these practices, and to protect the monopoly of the East India company, declares, "that all contracts and agreements, made or entered into by any of his majesty's subjects, or any person or per-

sons in trust for them, for the loan of any money; by way of bottomry, on any ship or ships in the service of foreigners, and bound to, or designed to trade in, the East Indies, shall be void." This clause expressly, and in the most unqualified terms, restrains the lending of money on bottomry, on any ship or ships in the service of foreigners. But whether a ship, the property of British subjects, fitted out by them, and laden with their merchandise, can be said to be in the service of foreigners, merely because she is furnished with a commission from a foreign state, is a question upon which there has not yet been any judicial decision. Freight may be both insured and hypothecated upon a bottomry contract. Seamen may borrow money on any goods which they have on board; but with respect to their wages, they can neither insure them nor borrow money upon them.

As to the rate of marine interest, Justinian, who, in ordinary cases prohibited the *centesima*, or one *per cent.* per month, or 12 *per cent.* per annum, allowed it in this contract, and forbade any higher interest. But in modern times, when commerce is carried on between countries remote from one another, it is impossible to fix any precise standard by which this may be regulated. The legality of marine interest, however exorbitant it may seem, is allowed by course both of law and equity; nor can it be deemed usury, provided the money lent be *bonâ fide* put in risk. This interest commences with the risk, and also terminates with it. But if the time of the contract be a fixed period at a stipulated rate, and the voyage be performed within that period, the marine interest for the whole period will be due; but if the voyage exceed that period, the risk of the lender will cease, and the debt become obsolete, though the voyage should not be ended. The risk also will cease, if the ship has been prevented by unavoidable accident from performing her voyage within the time limited. Upon the cessation of the sea-risk, if the borrower delays the payment, common interest begins to run on the principal, exclusive of the marine interest, "*ipso jure*," without any demand.

The perils of the sea, which constitute the risk of the lender, comprehend all those accidents and misfortunes to which ships at sea are liable, and which no human foresight or precaution can prevent. Accordingly contracts on bottomry and respondentia expressly provide, that "if, in the course of the voyage, and within the time prescribed, an utter loss of the ship by fire, enemies, men of war, or any other casualties, shall unavoidably happen," the bond shall be void, and the borrower discharged; so that the perils are nearly the same with those to which the under-writers upon a policy of insurance are liable. A loss by pirates, though not usually expressed in securities of this kind, is included in the risk. Nothing, however, but a total loss will discharge the borrower; and the obligation remains, notwithstanding, any damage which the goods may sustain by the perils of the sea; nor is there any deduction on account of such damage. In this respect the lender on bottomry is in a better situation than an insurer, who is obliged to indemnify the insured, to the extent of the sum insured, from all damage arising from any of the perils against which the insurance is made. No capture or detention, that does not amount to a total loss, in a case of insurance, can discharge the borrower. Lord Mansfield, in delivering the opinion of the court, in a case of this kind, said, "It is clear, that by the law of England, upon a bottomry contract, there is neither average nor salvage." But the lender is not liable for loss proceeding from the internal defect of the thing that is hypothecated, unless by express stipulation, such as the ship's not being sea-worthy, and perishing by age, rotteness, or any such cause, or the goods perishing of themselves,

liquors running out through the defect of the casks, dry goods heating and fermenting by length of time, &c.; nor is the lender liable for the act of the owners or master of a ship, as if the voyage be changed by order of the owners, or if a loss happen by the barratry of the master, or by the misconduct of the merchant. In these cases the borrower is not discharged, except by express stipulation, which shall render the lender liable for every loss not occasioned by the act of the borrower. Nor is the lender liable for any loss by smuggling, which occasions a forfeiture of the ship, and a confiscation of the goods, unless he was privy to it. In England, if the money were lent to be employed in a trade prohibited by law, the contract would be void; and the sum lent could never be recovered from the borrower, even though no loss had happened. The lender, like an insurer, is only answerable for losses that happen within the time and place of the risk, specified in the contract; and, therefore, if the ship deviate from the voyage, without necessity, neither the lender nor the insurer will be liable to any loss that may afterwards happen. (See INSURANCE.) If the ship be pressed into the king's service, this will excuse a deviation; but if the borrower allege a deviation, this must be explicitly denied. A change of the ship, without necessity, discharges the lender. Money is generally lent for the whole voyage, outward and homeward; or for either separately; or for a limited time. The contract usually specifies the commencement and end of the risk; and any misfortune, happening before or after, is at the risk of the borrower. If the voyage be described in the bond, but the time of the commencement and end of the risk be not specified, the risk, as to the ship, shall commence from the time of her setting sail, and continue till she anchors in safety at her port of destination; and as to goods, from the time of their being shipped till they are safely landed. When the loan upon goods is both for the outward and homeward voyages, the lender continues liable to the risk, during the homeward voyage, on the goods by which those have been replaced on which the money was lent.

Between insurance and bottomry there is this difference; that an insurer, independently of previous stipulation to the contrary, is liable to the charge of particular average, whereas, a lender without express stipulation is exempt from it: but, by the general law of merchants, in case of gross or general average, the lender shall contribute to discharge the borrower; and it is maintained by some writers, that the nature and object of the bottomry contracts seem to require, that the lender should be liable for general average. Lord Mansfield, however, as we have already observed, is of opinion, that, by the law of England, there is neither average nor salvage upon such contracts; and in this opinion lord Kenyon concurs. But serjeant Marshall observes, that he has not been able to discover any decided rule, or authority in the law, to warrant this doctrine. He also differs from another learned writer, (Park,) who thinks, that the stat. 19 Geo. II. c. 37. § 5. which provides, that the benefit of salvage shall be allowed to the lender, on East India voyages, conclusively proves, that there was neither average nor salvage upon bottomry contracts at common law. Mr. Marshall is of opinion, that this statute has not introduced any new principle into the law, either of insurance or bottomry contracts; but merely restored them to their original and proper use, from which a spirit of gaming had perverted them. Nor can he admit, that, because the statute gives the benefit of salvage to the lender upon East India voyages, he was not therefore entitled to this at common law. But admitting this to be the case; does it hence follow, that he was not liable to general

average at common law? The statute makes no mention of general average. It has been determined, however, that if an insurance be made in England, upon a respondentia interest, upon a foreign ship, and it appears that the lender is liable, by the law of the country, to which the ship belongs, to contribute to a general average, the under-writers upon the policy will be liable for such contribution.

As the statute 19 Geo. II. c. 17. gives the benefit of salvage to lenders on bottomry, and respondentia securities, restricted to East India voyages, it has been a subject of inquiry, whether, before that act, the lender upon any voyage was entitled to the benefit of salvage. By the general law of merchants, the event upon which the borrower is discharged, is the total loss of the ship or goods, upon which the money is lent, in consequence of the perils mentioned in the contract. The borrower is bound to pay principal and marine interest, provided the ship or goods, on which the money is lent, arrive at its destined port, however damaged or depreciated by the perils of the sea; nevertheless, if part should be captured or lost, the borrower is only bound to pay in proportion to what remains. If the ship be lost, and the goods saved, the contract remains in force, and the borrower becomes liable, provided another ship can be procured to convey the goods to the place of their destination. But for the expence of this other vessel, the lender is accountable; and if no other can be procured, the borrower will be discharged, on accounting to the lender for the proceeds of the goods saved. By the law of England, according to the opinion of lord Mansfield, already cited, "there is neither salvage nor average upon bottomry contracts;" however, without the benefit of salvage, this contract must partake, in a great degree, of the nature of a wager, even when the money is lent upon goods on board, of equal value. In case of a total loss of the ship, the lender loses all, though all the goods are saved. Blackst. Comm. vol. ii. p. 457. Marshall on the Law of Insurance, vol. ii. b. ii. p. 632.

BOTTOMRY, *bill of*, is a contract between two persons, the one borrowing, and the other lending a sum of money, by which the borrower, setting forth his intention to make a voyage in a certain ship therein named, acknowledges the receipt of a certain sum of money from the lender, on this condition, that if the ship does happily perform her voyage, without any disaster by enemies or otherwise, then he is to restore that sum to the lender, with an additional sum, therein expressed, for the interest, within a certain time after his return; but that if the ship be lost, or taken by enemies or pirates, then the person of the borrower to be for ever discharged, and the lender to bear the loss. For the form of such a bill by deed, and when the ship is to go to several ports, see Marshall's Treatise on the Law of Insurance, vol. ii. Appendix, p. 718. See BOTTOMRY.

BOTTONI, ALBERTUS, in *Biography*, of an illustrious family, originally from Parma, was born at Padua, in the early part of the 16th century. After passing through the usual school education, in which he distinguished himself, he applied to the study of medicine, took the degree of Doctor, and was soon after advanced to the chair of professor in that faculty, which he filled many years, with singular credit. He died at a very advanced age, in 1596, leaving behind him, Haller says, an immense property. He published, "*De vita conservanda*," Patav. 1582. 4to. "*De morbis muliebribus*," 1585, reprinted in the collections of Baulhne and of Spachius. "*Methodi medicinales dæ, in quibus legitima medendi ratio traditur*." Francof. 1593. 8vo. For the titles of other publications by this author, see Haller Bjb. Med. Eloy. Dict. Hist.

BOTTONI, DOMINIQUE, the son of Nicholas Bottoni, a celebrated philosopher and physician of Lentini, in Sicily, born the 6th of October 1641, received his education under Peter Castello. In 1658, he was admitted to the degree of doctor in medicine, and was soon after made physician to the marquis De Villa Franca, viceroy of Sicily, physician to the royal hospital of Messina, and superintendant of the physicians there, with a pension of 50 crowns per month. He afterwards enjoyed a similar situation under the viceroy of Naples. In 1697, he was made corresponding or honorary member of the Royal Society of London, to which he had previously sent his "Idea historico-physica de magno trinacriæ terræ motu," which is published in their transactions. We have also by this writer "Pyrologia topographica, id est, de igne dissertatio, juxta loca, cum eorum descriptione," Neapoli, 1692, 4to. "Febris rheumaticæ malignæ, historia medica," Messina, 1712, 8vo. "Preserve salutari contro il contagiofo malore," Messina, 1621, 4to. He died about the year 1731. Eloy. Dict. Hist.

BOTTONO, in *Geography*, a town of Italy, in the duchy of Parma; 9 miles S.S.E. of Parma.

BOTTRYTS, in *Botany*. See *CHENOPODIUM*.

BOTRYTIS. See *BYSSUS*.

BOTTS, in *Zoology*, bots and horfeworms. See *OESTRUS* genus, and species *EQUI*, *BOVIS*, *HÆMORRHOIDALIS*, *VETERINUS*, *OVIS*. These are a peculiar kind of grub, found not unfrequently in the stomach of the horse, of a cylindrical figure, pointed at one extremity, and obtuse at the other, and beset every where with numerous rigid spines. There are at least two different kinds inhabiting the stomach of the horse, which at length produce, on their arriving at maturity, a two-winged insect of the fly kind.

Besides those of the horse, there are others of a distinct kind, but belonging to the same family, which live in their grub state under the skin of the backs of oxen, the deer, and the rein-deer; and others, again, occupy for a dwelling the frontal cavities of the head of the sheep, and cells at the base of the horns; and others inhabit also the same situations in the deer. They exist on the pus and lymph they create on these membranes by their irritation; and when full fed, they fall to the earth, and undergo the usual transformations of other insects.

The inaccessible situations of these animals in their larva state, and the impossibility of raising them out of those situations, has been the cause, probably, of their history having so long remained in the greatest obscurity.

They have been generally considered by the vulgar as true worms of the intestines, and similar in their origin to other worms of the intestinal canal, than which nothing can be more untrue.

The following is a concise detail of what is at present known respecting them; the account pursuing nearly the order in which the discoveries have been made. The first who laboured to unveil the hidden and extraordinary economy of these animals was Vallisnieri, an Italian of Padua, and the pupil of Malpighi. Before his time, the most absurd notions prevailed respecting them. The Romans, who had seen them hanging to the extremity of the rectum of the horse, believed them to be pieces of the intestine itself torn away by the worms and animals existing within them: and Vegetius has thus described them; "Hujusmodi passionis signum est (morbus coriaginosus,) cum invenitur humor in ano fabæ coctæ similis: est namque sanies ex illis vulneribus quæ bestiolæ intrinsecus fecerunt." Vallisnieri, in his first essay, described the changes of the *oestrus bovis*; giving indifferent figures of them, and tracing them from the back of the ox

to the perfect state of a fly. This essay was published soon after the year 1700. Indeed, all that is known respecting them was discovered within the limits of the last century.

The next essay develops the history of the *oestrus ovis*, or of that insect which is found infesting the nostrils and cavities of the face of the sheep; and in a subsequent volume (ed. Venezia, vol. ii. p. 1633.), he published his observations on the bots of the horse. He was embarrassed by the great difference he found in the appearance of the bots of the stomach; and hardly knew whether to attribute it to a difference of sex, of feeding, or of their being two distinct kinds, which subsequent discoveries have fully confirmed to be the case. His figures of them are very obscure, and ill expressed, so much so that it requires an eye accustomed to the appearance of these insects, at all to identify them. They are, however, without doubt, designed to represent the *oc. equi* and *oc. hæmorrhoidalis*.

The next labourer in this obscure path of natural history, was the celebrated Reaumur, vol. iv. p. 503. of the "Mémoires pour l'Histoire des Insectes." He repeated all the experiments of Vallisnieri respecting the above three species, and fully confirmed all he had said respecting them; accompanying his account with ample details of their appearance and habits, and his descriptions with much better representations of them than his predecessor. Madame de Breauté, an abbess, in whose praises he sufficiently enlarges, at length furnished him with an opportunity of getting the larvæ of the *oc. bovis* from some of the cows belonging to her convent; and on them he made his observations. Among other remarks, in this interesting memoir, he mentions, that by a singular chance he observed a line of small air-bubbles arranged along the side of the insect, and placed opposite to the spiracula, being entangled in the pus, which every where covered its surface, and corresponding in number and position to these openings; which would seem to prove that these spiracula are designed, not for the admission of air, as is generally conceived, but in reality for its exit; the air being received by a cartilaginous tube opening at one end of the insect, viz. that extremity which is placed next the external opening of the skin, and which becomes the tail part of the future insect, the larva being, in reality, inverted in the abscess. He very candidly observes, however, that he could not force any air through these apertures, by holding the larva under water, and compressing it with the fingers.

He also noticed, that the opening in the skin, through which the larva breathes and evacuates, is considerably enlarged about the period of its exit, by the animal raising itself in the abscess, and pressing against it; and after some days of this discipline, the aperture being enlarged, he works himself through by successive efforts, and falls to the ground. This excellent observer particularly mentions also their launching themselves from the back of the animal at an early hour of the morning in preference to any other part of the day.

The perfect insect, he observes, could not be induced to take any kind of food or nourishment, though he presented it with a great variety; a circumstance, indeed, that is not so much to be wondered at, since a large share of the insect world appear to pass the last stage of their lives, not only without food; but without organs for receiving it. Generation would appear to be the leading purpose of this state of their existence.

It is particularly worthy of remark, as it may be the means of exciting those who may be possessed of the opportunity to farther research, to make mention of the recitals given by this celebrated observer in another memoir (vol. v. p. 66.),

p. 86.), where he describes the larvæ found in the cavities of the face of the itag; and it is evident that they are widely different from those inhabiting the same place in the sheep, or indeed from any other species at present known. He did not succeed in his attempts to breed the fly from these larvæ; and we are therefore in the dark respecting this insect; and, unless it be the *oestrus nasalis* of Linnæus, which, on several accounts, it does not appear probable that it is, it must be a new species.

Reaumur seems fully to have believed the absurd doctrine of Vallisnieri, that the parent fly entered actually into the nostrils and fauces to deposit its eggs, of which we shall have occasion to speak hereafter more particularly.

Next to the works of Reaumur, in this line of research, follow the writings of baron De Geer, who has followed and confirmed the discoveries of Vallisnieri and Reaumur, without adding any thing of importance to their observations. He seems also to entertain, without hesitation, the opinion of Vallisnieri, that the *oestrus equi* enters the rectum to deposit its eggs. We find, however, that he was aware that Linnæus, under the title *æ. bovis*, had confounded two distinct species.

He also erroneously appears to have considered the *æ. bovis* and *hemorrhoidalis* as one species, being deceived by the circumstance of their description, which, as to colours, is very similar.

Linnæus next, by the extraordinary conciseness of his writings, seemed to satirize the enormous details in the natural historians of the preceding age, whose works were rapidly becoming too voluminous even for perusal. On most occasions he brought what was important to be known within the narrow limits of a few Latin phrases well expressed. He marshalled, for the first time, the scattered members of this extraordinary race under the common family title of *oestrus*. He, however, was only acquainted with five species, all European; *bovis*, *tarandi*, *hemorrhoidalis*, *nasalis*, and *ovis*. His specific characters are very appropriate; and we shall have occasion, in enumerating the species at present known, at the conclusion of this general account, to give them nearly as he had done.

Fabricius next added to this family three more species; the *æ. luccæus*, *æ. pecorum*, *æ. trompe*. Describing from cabinets, without entering into their history, has been the source of the greatest confusion. His *æ. vituli* is a mere variety of the *equi*; and the Linnæan *bovis*, which is the commonest species, seems to be altogether omitted in his enumeration.

Gmelin next occurs; and, collating from all quarters, without any acquaintance with the animals themselves, has added three more species, which he believes to be new, from the works of professor Pallas. These are indicated by the names of *antilopa*, *fasciculatus*, and *hominis*.

The European species, especially those that infest our cattle, horses, and sheep, in Great Britain, being the most interesting, we shall proceed to illustrate the most curious circumstances of their history, and barely mention the names of the rest, and the animals and country they inhabit.

Linnæus, through the whole course of his life, had never met with the true fly produced by the ox-bot, but had constantly taken a very dissimilar one which infests the horse for it. Indeed, this insect is truly rare. Vallisnieri had never seen but one, and that was mutilated. Reaumur, with uncommon pains, had raised two or three to the perfect state of a fly, and informs us, that to effect his purpose more completely, he employed a cow-herd to collect for him, promising him the price of half a day's labour for each he should bring; but out of thirty procured by this means not one

lived. The cow-keeper, no doubt, too eager for his reward, had pressed them with his fingers from their situations under the skin, before they were perfectly ripe and full fed; in which case they would certainly all perish, even though within a day of this period.

There is only one good specimen of this insect that we know of in England, even at this time, which is in the collection of Mr. Thomas Allen, and was taken from the back of a cow near Hampton court. By rare chance we took another of these in the Alps, between Salanche and Bonneville, after observing it to settle on some dung that lay in the road where some cattle had recently passed, and which, on our return through Germany, we presented to the venerable and very respectable professor D. Schreber of Erlang, the intimate friend and pupil of Linnæus, who, we were surprised to find, till that time had not seen it.

Nothing is, however, more easy than to procure these insects by the simple means we formerly used, and the detail of which may not be unacceptable to the public, especially to those who wish to see them from curiosity, or from a desire to procure them for their cabinets. During the latter months of the summer, at which time these larvæ are most frequently found of a mature age, and ready to quit their habitations, which is discoverable by the superior size of the tumor, and by the increased diameter of the external opening in the skin; selecting such as these, the hairs are to be removed with a pair of scissors to some little distance from the tumor, and a piece of leather thickly spread with pitch, through the centre of which a hole is cut, and into this is inserted a small gauze pouch or bag; the pitched leather is now placed on the skin, to which it readily adheres, and the insect, when it falls from the abscess, is caught by the bag, where, as it cannot escape, it remains till removed by the person who looks after them. Three larvæ, procured in this way, produced two flies in very good condition: one fled away during some experiments that we were making with it; the other was given to Mr. Allen, as above stated, after drawings had been made of it for the use of the Linnæan society.

We are now under the necessity of adverting to a small communication sent to the Linnæan society by the writer of this article, in the year 1796, and published in the third volume of their Transactions, p. 289, as this memoir contains some farther observations and discoveries than those which had fallen within the notice of Vallisnieri and Reaumur, we shall briefly extract from them what is new or useful.

Page 291. "The larva of the *oestrus bovis* is very unlike the other larvæ of this genus, so much so that I did not imagine, till I had procured the fly from it, that it was the larva of an *oestrus*. It neither possesses the aculei, the lips, or the marginal setæ, which are the prominent characters of the larvæ of the *æ. equi* and *hemorrhoidalis*. When young, the larva is smooth, white, and transparent; as it enlarges, it becomes browner; and about the time it is full grown, it is totally of a deep brown colour, having numerous dots on its surface, disposed in transverse interrupted lines passing round the segments. Two distinct and different kinds of lines are seen on each segment; the uppermost of them is narrower, and consists of larger dots. Underneath these there is a broader line, and the dots smaller. The first are easily seen, by using the lens, to be real hooks bent upwards, or towards the tail of the insect; and on examining the broader line of small dots, with a tolerably powerful magnifier, they were found also to be real hooks turned in an opposite direction to the former, that is, downwards in the abscess, and towards the head of the insect. This singular arrangement of hooks round the body of the larva, in this instance, serve the purpose of legs in other larvæ, enabling it to move about

in the abscess at pleasure, and to crawl out of it when ripe, and renders the use of the tentacula, observable at the small end in the other species, not necessary in this.

"These hooks, being erected by the muscles of the skin, according to the series of them used by the larva, it appears to be raised or depressed in the abscess; and by this motion, and the consequent irritation, a more or less copious secretion of pus is produced for the sustenance of the larva. The *chrysalides* continued in that state from about the latter end of June till about the middle of August, when the fly, forcing open a very singular margined triangular lid, or *operculum*, at the small end, made its appearance.

"Although its effects on the cattle are so often remarked, yet the fly itself is rarely seen or taken, as the attempt would be attended with considerable danger, if in pursuit of the oxen. The pain it inflicts in depositing its eggs, appears to be very severe. When one of the cattle is attacked by this fly, it is easily known by the extreme terror and agitation of the whole herd. The unfortunate object of the attack runs bellowing from among them to some distant part of the heath, or the nearest water. The tail, from the severity of the pain, is held with a tremulous motion straight from the body; and the head and neck stretched out to the utmost. The rest, from fear, generally follow to the water, or disperse to different parts of the field.

"When the oxen are yoked to the plough, the attack of this fly is attended with real danger to the drivers: since they become perfectly uncontrollable, and will often run with the plough directly forwards through the hedges, or whatever obstructs their way.

"There is provided, on this account, to many ploughs a contrivance immediately to set them at liberty. The singular scene attending the attack of this fly on the herd, has often been the subject of poetical description; no one has, however, more naturally or elegantly delineated it than the bard of Mantua:

"——— Est lucos filari circa ilicibusque virentem
Plurimus alburnum volitans cui nomen asilo
Romanum est, oestron Graii vertere vocantes:
Asper, acerba, sonans: quo tota exterrita sylvis
Diffugiunt armenta; furit mugitibus æther
Concussus, sylvæque, et sicci ripa Tanagri."

Georg. lib. iii. ver. 146—151.

"The strongest and healthiest beasts seem constantly to be preferred by this fly; and their possessing them in their backs is considered as a criterion of goodness with the dealers in cattle; and the tanners observe, that their best and strongest hides have the greatest number of bot-holes in them.

"The whole of this family of insects appear to have a strong dislike to moisture; since the animals find a secure refuge, when they get into a pond or brook, where the other flies which annoy them, follow without hesitation, but the oestri rarely or never; and during very cold, rainy, or windy weather, they are not to be seen.

"Among the country-people, the larvæ of this insect are commonly known by the name of warbles, wormuls, or wormuls, or more properly bots."

We now transcribe from the above memoir what is most worthy of notice respecting the *oestrus equi*, or large horse-bot.

"These larvæ attach themselves to every part of the stomach, but are in general most numerous about the pylorus, and are sometimes, though much less frequently, found in the intestines. They hang most commonly in clusters; being fixed by the small end to the inner membrane of the stomach, where they adhere by means of two small hooks or *tentacula*. When removed from the stomach, they will attach

themselves to any loose membrane, and even to the skin of the hand; for this purpose, they draw back their hooks almost entirely within the skin, till the two points of these hooks come close to each other; they then present them to the membrane, and keeping them parallel till it is pierced through, they expand them in a lateral direction; and afterwards, by bringing the points downwards, or towards themselves, they include a sufficient piece of the membrane with each hook, and thus remain firmly fixed, for any length of time, without any farther exertion from the animal.

"All those bots which feed on the mucous membranes lining the canals of the body, are provided with these tentacula; whilst those which inhabit beneath the skin, will be found universally without them. The oestrus of the sheep has them also, but uses them only in passing over the membranes on which it lives, making them a fixed point to which it draws up its body, and thus secures its passage along those smooth and lubricated surfaces of the nostrils.

"The larva of this bot, when very young, is of a cylindrical figure, of a pellucid ruby red, and appears without spines to the segments. As it acquires an increase of size, it assumes a more flattened appearance, becomes whiter; and the spines, which are tipped with black, become very visible, being placed in double lines, and are directed towards the tail, or truncated end of the larva.

"Their food is probably the chyle, which, being nearly pure aliment, may go almost wholly to the composition of their bodies without any excrementitious residue; though, on dissection, the intestine is found to contain a yellow or greenish matter, which is derived from the colour of the food, and shews that the chyle, as they receive it, is not perfectly pure.

"The slowness of their growth, and the purity of their food, must occasion what they receive in a given time to be proportionably small; from whence probably arises the extreme difficulty there is found in destroying them by any medicine or poison thrown into the stomach. Opium, tobacco, or the drastic purgatives, which often bring away in abundance the common worms of the intestines, produce little or no effect on these.

"On opening the body of the bot, and removing the gelatinous matter, the air tubes are seen, and seem of a splendid silvery colour, glittering very beautifully, as though they were injected with the purest mercury; they remain distended by their own inherent elasticity, and are filled with air to their minutest ramifications.

"Respiration appears to be the office of these air-canals, which are the lungs of the larva; and, considered in this point of view, they are much larger than the respiratory organs of any other animal, which is the more extraordinary, if the respiration of animals be for the production of animal heat; this being unnecessary to larvæ, that are supplied so abundantly with it from the high temperature of their residence in the living stomach. Nor can these organs be formed for the purposes of the future insect, since they cannot be detected in either the chrysalis or fly. One should almost, from this circumstance, be led to suspect that the respiration of animals was more intimately connected with the reception of food, and the converting it into living matter than any other design. Though it would also appear, that the impurity of the air in the stomach; and its casual supply might render these larger reservoirs necessary.

"The larvæ of the large horse-bot attain their full growth about the latter end of May, and are coming from the horse from this time to the latter end of June, or sometimes later. On dropping to the ground, they find out

some convenient retreat, and change to the chrysalis; and in about six or seven weeks, the fly appears; for the description of which, see the conclusion.

"The mode pursued by the parent fly, to obtain for its young a situation in the stomach of the horse, is truly singular, and effected in the following manner. When the female has been impregnated, and the eggs are sufficiently matured, she seeks among the horses a subject for her purpose; and advancing on the wing, she holds her body nearly upright in the air, and her tail, which is lengthened for the purpose, curved inwards and upwards. In this way, she approaches the part where she designs to deposit the egg; and suspending herself for a few seconds before it, suddenly darts upon it, and leaves the egg adhering to the hair; she hardly appears to settle, but merely touches the hair with the egg held out on the projected point of the abdomen. The egg is made to adhere by means of a glutinous liquor secreted with it. She then leaves the horse at a small distance, and prepares a second egg; and poising herself before the part, deposits it in the same way. The liquor dries; the egg becomes firmly glued to the hair; and this process is repeated by various flies, till four or five hundred eggs are sometimes placed on one horse.

"The horses, when they become used to this fly, and find it does them no injury, as the *tabani* and *canopes*, by sucking their blood, hardly regard it, and do not appear at all aware of its insidious object.

"The inside of the knee is the part on which these flies are most fond of depositing their eggs, and, next to this, on the side and back part of the shoulder, and less frequently on the extreme ends of the hairs of the mane. But it is a fact worthy of attention, that the fly does not place them promiscuously about the body, but constantly on those parts which are most liable to be licked with the tongue; and the ova, therefore, are scrupulously placed within its reach. Whether this be an act of reason or instinct, it is certainly a very remarkable one; and one should suspect, if it was the latter, it ought to direct the performance of the act in one way only.

"Whichever of these it may be, it is without doubt, one of the strongest examples of pure instinct, or of the most circuitous reasoning, any insect is capable of. The eggs thus deposited, I at first supposed were loosened from the hairs by the moisture of the tongue, aided by its roughness, and were conveyed in this way to the stomach, where they were hatched: but on more minute search, I do not find this to be the case, or at least only by accident; for when they have remained on the hairs four or five days, they become ripe, after which time the slightest application of warmth and moisture is sufficient to bring forth in an instant the latent larva. At this time, if the tongue of the horse touches the egg, its *operculum* is thrown open, and a small active worm is produced, which readily adheres to the moist surface of the tongue, and is from thence conveyed with the food to the stomach.

"I have often clipped off with a pair of scissors some hairs, with the eggs on them, from the horse; and on placing them in the hand moistened with saliva, they have hatched in a few seconds. At other times, when not perfectly ripe, the larva would not appear, though held in the hand, under the same circumstances, for several hours; a sufficient proof that the eggs themselves are not conveyed to the stomach.

"It is fortunate for the animals infested by these insects, that their numbers are limited and kept within bounds, by the hazards they are exposed to. I mould suspect near a hundred are lost for one that arrives at the perfect state of a fly. The eggs, in the first place, when ripe, often hatch

of themselves; and the larva, without a nidus, crawls about till it dies; others are subject to be washed off by the water, or are hatched by the sun and moisture thus applied together; when in the mouth of the animal, they have the dreadful ordeal of the teeth and mastication to pass through; and on their arrival at the stomach, they may pass, mixed with the mass of food, into the intestines; and when full grown, on dropping from the anus to the ground, a high road or water may receive them; if on the common, they are in danger of being crushed to death, or of being picked up by birds, which so constantly for food attend the footsteps of the cattle. Such are the contingencies by which nature has prevented the too great increase of their numbers, and the total destruction of the animals they feed upon."

I have once seen the larvæ of this oestrus in the stomach of an ass. Indeed, there is little reason to doubt their existence in the stomachs of all this tribe of animals.

The perfect fly but ill sustains the changes of weather; and cold and moisture in any considerable degree would probably be fatal to it. These flies never pursue the horse into the water; this aversion, I imagine, arises from the chilliness of the atmosphere over that element, which is probably felt more exquisitely by them, than by other flies, from the high temperature they had been exposed to during their larva state. The heat of the stomach of the horse is much greater than that of the warmest climate; being about 102° of Fahrenheit; and in their fly state, they are only exposed to 60°, or from that to about 80°, in very warm weather. Such a change, if suddenly applied, would in all probability be fatal to them; but they are prepared for it, by suffering its first effects in the quiescent and less sensible state of a chrysalis. I have often seen this fly in cloudy weather, and during the night time, fold itself up with the head and tail nearly in contact, and lying apparently in a torpid state, though in the middle of the summer.

I never observed these bots hanging to the extremity of the rectum, previous to quitting it, as the hæmorrhoidales, or small horse-bots, are seen to do.

Whether these bots can at all exist in the stomach of a carnivorous animal, I am not assured. I gave upwards of a hundred eggs, proved by trials to be ripe, and containing a living caterpillar, to a cat in milk at various times; and on destroying her, at the end of two months after the first portion had been given, I could discover no traces of them in the stomach or intestines.

I gave six of the larvæ of the great horse-bot, recently taken from a dead horse's stomach, and perfectly alive, to another horse, in a ball made of meal, in the centre of which they were inclosed: their effects on the stomach were not noticeable by any external indications; 27 of them were the next day exhibited to a horse with the farcy, without their producing any sensible effect.

Of the *oestrus hæmorrhoidalis*, or small horse-bot. The larva, or grub, producing this insect, is in most respects like the former, occupying the same situation also in the stomach of the horse: it is easily distinguished by its smaller size, and being nearly or quite destitute of spines, on leaving the rectum; when full grown, it assumes a reddish green colour, and in about two days becomes a chrysalis.

None of the larvæ of this family of insects appear to change their skin, which at length becomes also the shell of the chrysalis: when squeezed, they forcibly contract themselves into a smaller space, and become very hard. It is probable they in this way resist the violent pressure they must occasionally sustain from the weight of the food, and the actions of the stomach, and in passing through the intestine, and the sphincter ani.

After remaining in the chrysalis state about two months, the fly appears. See the description at the conclusion, and the figure of it in the plate.

"It seems hitherto to have been universally believed among naturalists, that the female fly enters the anus of the horse, in a very extraordinary manner, to deposit its eggs. Reaumur received the idea of Vallisnieri, and Vallisnieri of a Dr. Gaspari, whose observations I should suspect originated from seeing the *hippobosca equina* teasing the horse, as is very commonly seen; and its getting within the rectum was merely, it is probable, supplied by his fancy and imagination. The objections to an idea of this sort are these, admitting there was any good foundation for such a supposition; that the anus is rather closed than opened by any irritation externally applied; that the fly would be crushed in attempting to pass the sphincter of a horse's rectum; and having no means of holding, while depositing its eggs, it would be quickly forced out with the dung; and it is evident, that the whole of the ova, to the amount of some hundreds, must all be deposited in one horse, as it is impossible, if the fly survived, it could undergo this punishment a second time; for the heat and moisture of the rectum would at least destroy its wings, and prevent its attaining a second time this situation.

"I mention these objections, not as they merely relate to this species, but that it may not be credited of the *nasalis*, or indeed of any of them, that they really enter the body of the animal, to obtain for their young a situation there.

"I have not seen any writer who has conjectured the real mode in which this fly deposits its ova; which having discovered by repeated opportunities of witnessing it, I can speak of with certainty.

"The part chosen by this insect for this purpose is the lips of the horse, which is very distressing to the animal from the excessive titillation it occasions: for he immediately after its touch rubs his mouth against the ground, his fore legs, or against a tree; or if two are standing together, they often rub themselves against each other.

"At the sight of this fly the horse appears much agitated, and moves his head backwards and forwards in the air, to baulk its touch, and prevent its darting on the lips; but the fly, watching for a favourable opportunity, deposits its eggs from the point of the abdomen, and he continues to repeat his attacks on the lip, till the enraged animal endeavours to avoid it, by galloping away to a distant part of the field. If it then continues to follow, or tease him, his last resource is in the water, where the oestrus is never observed to pursue him.

"The teasing of other flies may sometimes occasion a motion of the head similar to this; but it should not be mistaken for it, as it is never in any degree so violent as during the attack of the oestrus.

"At other times I have seen this fly get between the legs of the horse whilst he is grazing, and then make his attack on the lower lip. The titillation occasions the horse to stamp violently with his fore-foot against the ground, and he often strikes with his foot as though aiming a blow at the fly. They also sometimes hide themselves in the grass; and as the horse stoops to graze, they dart on the mouth or lips, and are always observed to poize themselves during a few seconds in the air, while the egg is preparing on the point of the abdomen.

"When several of these flies are confined in a close place, they have a particularly strong fusty smell, such as we feel when animals are confined in a close place; and I have observed both sheep and horses, when teased by them, to look into the grass, and smell to it very anxiously; and if

by these means they discover the fly, they immediately turn aside, and hasten to a distant part of the field.

"The eggs of this species appear of a darker colour than the former, and are provided with a *petiolus*, or foot-stalk from the small end, the opposite being obtuse, and provided with an *operculum*: it is also ribbed in a transverse direction, unlike the eggs of the preceding species.

"Our ancestors imagined that poverty or bad food engendered these animals, or that they were the offspring of putrefaction. In Shakspeare's *Henry the Fourth*, part 1st, the ostler at Rochester says, "peas and beans are as dank here as a dog, and that is the next way to give poor jades the bots;" and the miserable nag of *Petruchio* is said to be so "begnawn with the bots." When the animal is kept from food, the bots are also; and, it is natural to suppose, are then the most troublesome: whence arose the idea, that poverty or bad food could engender them.

"Of the *oestrus veterinus*. This insect was known to Linnæus, who gave it the name of *nasalis*, from an idea of its entering the nostrils of the horse, and depositing its eggs in the fauces: "Habitat in equorum fauce per nares intrans." Linn. *Syst. Nat.* 2. p. 969. which as it could not well do without destroying its own wings, is probably as much a fable as the "miræ per anum intrans," of the preceding species. We have seen four *chrysalides* of this fly, which were uniformly found under the dung of horses, which leads to a suspicion that they also inhabit the stomach of this animal. The larva is at present unknown; but if it inhabited the fauces of the horse, it would produce such troublesome symptoms as could not easily escape the notice of those whose business it is to attend to the diseases of cattle. Such a disease has, however, never been described; nor after an extensive opportunity, both in the dead and living subject, have I ever seen a bot in the fauces of the horse. Perhaps the bots of the stomach, having crawled to the fauces in search of food, after the death of the animal, might have given rise to this idea: they may have even accidentally bred there; for there is little room to doubt, that these animals can live in any part whatever of the alimentary canal, or the passages leading to it. For a figure of this fly, see also the plate of the *oestrus*.

"Of the *oestrus ovis*. About the middle of June I procured some full-grown larvæ of the *oestrus ovis*, from the inside of the cavities of the bone, which supports the horns of the sheep. They are nearly as large as those of the large horse-bot, of a delicate white colour, flat on the under side, and convex on the upper, having no spines at the divisions of the segments, though provided with two curved hooks at the small end. The other extremity is truncated, with a small prominent ring or margin, which seems to serve the same purpose, though in an inferior degree, as the lips of the *oe. equi* and *hæmorrhoidales*, by occasionally closing over, and cleaning the horny plate of respiration. When this margin opens, after closing over the plates, a slight snap is sometimes heard, from the sudden admission of air.

"When young, these larvæ are perfectly white and transparent; except the two horny plates, which are black: as they increase in size, the segments of the upper side become marked with two brown transverse lines; and some spots are observable on the sides.

"They move with considerable quickness, holding with the *tentacula* as a fixed point, and drawing up the body towards them. On the underside of the *larva* is placed a broad line of dots, which, on examination with glasses, appear to be rough points, serving, perhaps, the double purpose of assisting their passage over the smooth and lubricated surfaces

faces of these membranes, and of exciting also a degree of inflammation in them where they rest, so as to cause a secretion of lymph or pus for their food.

"I have mostly found these animals in the horns and frontal sinuses; though I have remarked that the membranes lining these cavities were hardly at all inflamed, while those of the maxillary sinuses were highly so. From this I am led to suspect they inhabit the maxillary sinuses, and crawl, on the death of the animal, into these situations in the horns and frontal sinuses.

"The breeds of these, like the *oc. bovis*, do not appear confined to any particular season; for quite young and full-grown larvae may be found in the sinuses at the same time.

"When full grown, they fall through the nostrils to the ground, and change to the *pupa* state, lying on the earth, or adhering by the side to a blade of grass. The fly bursts the shell of the pupa in about two months. The figure is given in the plate; and its description at the conclusion.

"The manner in which this species deposits its *ova*, which we have often seen, has not, we believe, ever been described; nor is it easy to see, though standing close to the animal at the time, exactly in what way this is accomplished, owing to the obscure colour and rapid motions of the fly, and the extreme agitation of the sheep; but from the motions of the sheep afterwards, and the mode of defence it takes to avoid it, there is little doubt that the egg is deposited in the inner margin of the nostril.

"The moment the fly touches this part of the sheep, they shake their heads violently, and beat the ground with their feet, holding their noses, at the same time, close to the earth, and running away, earnestly looking on every side, to see if the fly pursues: they also may sometimes be seen snuffing to the grass as they go, lest one should be lying in wait for them; which if they observe, they gallop back, or take some other direction, as they cannot, like horses, take refuge in the water: to defend themselves against its attacks, they have recourse to a rut, or dry dusty road, or gravel-pits, where they crowd together during the heat of the day, with their noses held close to the ground; which renders it difficult for the fly, who makes his attacks on the wing, to get at the nostril.

"I imagine the nostril, from repeated attacks of the fly, and the consequent rubbing against the ground, becomes highly irritated and sore; which occasions their touch to be so much dreaded by the sheep.

From the difficult and very precarious mode these flies pursue, and also the *hemorrhoidalis*, in depositing their eggs, they cannot succeed in depositing but a few in each sheep; whereas, on the contrary, if they actually entered those cavities of the face to effect it, they must deposit them all, and in one subject, the impossibility of which is already stated.

"General observations on the *ostris*. Having traced these separately through their various changes, and mode of propagation, it may not be improper to consider their good or ill effects on the animals that are subject to them.

"Though the attention of naturalists is at present occupied with the formation of a nomenclature, and descriptions, to every object of natural history, yet this pursuit, though difficult, and highly important, is not so much the ultimate aim of this science, as a knowledge of their economy and properties; as it is from those we are taught the most effectual means of avoiding the consequences of the injuries, and of protecting such as can be usefully applied to the purposes of mankind. If after mature inquiry, the existence of the *ostris* should be proved, in a greater degree,

injurious, than beneficial, by any service they can afford, their numbers might be considerably reduced, and a total extirpation of some of the species would not, I am disposed to believe, be altogether impracticable in our insular situation.

"The injury derived from their depredations is principally felt by the tanners, whose hides are often so perforated by these animals, as to be considerably damaged; and sometimes the loss of a horse or sheep may be occasioned by the existence of the other species.

"If it were desirable to lessen their numbers, the following, I apprehend, would be the most successful means. The larvae of the *oc. bovis*, or ox bot, which breeds in the backs of the horned cattle, is so conspicuous, that it is more easily destroyed than the others: the injection of any very corrosive liquor into the sinus would kill it; or by puncturing the larva with a hot needle, through the aperture in the skin, or even by simple pressure, they may be destroyed, afterwards extracting them, or leaving them to slough away, which I have often observed they do, when crushed by a blow from the horn of the beast, or by any other accident, without the least injury to the animal. A man employed for this purpose might, in half a day, destroy every bot on a large common, the beasts being suffered to pass by him one by one.

"In respect to the great and small horse-bot, those who have horses which have been much out to grass the preceding year, in countries where these flies are prevalent, might considerably diminish their numbers, by examining the horses occasionally for the bots, during the summer months; when they will be found hanging to the extremity of the rectum, where they remain, especially the *hemorrhoidalis*, for some days before they fall to the ground.

"The destruction of a single one, at this season of the year, is not only the death of an individual, and its effects, but the almost certain destruction of a numerous family.

"I am induced the more particularly to recommend attention to this circumstance on another account, which is from the necessity there is of preventing the irritation which this animal occasions to the anus of the horse, which at times is highly troublesome. If the horse is used on the road, while the bots are adhering to this part, the irritation becomes particularly distressing, and causes him to move very awkwardly and sluggish, as though tired; and, if severely beaten, he soon relapses again into the same awkward way of going; and as this generally happens during warm weather, it is attributed to mere laziness, and severe correction follows, but to no purpose, of which we have two or three times been an eye witness; but, on the removal of the bot, the cure is instantaneous.

"There is no medicine at present known that will detach them from the stomach, or intestines, though there are not wanting abundance of infallible nostrums for this purpose among the very numerous professors of horse medicine. An easy and effectual mode for the *oc. equi*, is to destroy the eggs which are deposited on the hairs, and are readily seen and removed by a pair of scissors, or a brush and warm water.

"In the sheep, it would be much more difficult to prevent or destroy them by any of these means, particularly if they are situated in the maxillary sinuses; as, in this case, even trepanning them would be insufficient, as they would probably lie concealed in the convolutions of the turbinated bones.

"Perhaps the removal of the sheep to a distant pasture, during the months of June and July, whilst the greatest part of the bots are yet on the ground, in a chrysalis state, and not bringing them on such ground again, till the setting in
of

of winter, would be the means of destroying them most effectually; and this process, repeated for two or three years successively, in places where they are particularly troublesome, might prove eventually useful to the farmer: the Laplanders, we learn from Linnæus, migrate annually with their rein-deer, on account of the bot which infests them.

On the other hand, notwithstanding the apparently unnecessary existence and cruel effects of the *oestræ*, they are probably not altogether without an use, or were designed by Providence to add, without a recompence, to the numerous sufferings of these laborious and inoffensive animals.

"A physiological view of their effects will perhaps best justify their existence, and save them from such an imputation.

"The larvæ of the *oestræ*, when applied under proper restrictions, and only to a certain extent, may be of greater utility than from our present very limited knowledge of them we are able to discover; but we may venture to remark, that their effect in keeping up a considerable degree of irritation in the membranes, on which they are situated, may perhaps not inaptly be compared to that of a perpetual issue, or blister. Nor is there wanting abundant proof of the utility of local irritations, in preventing the access, as well as in effecting the cure of disorders. We often see a formidable disease quickly removed by blistering the skin, or by irritating the mucous membranes of the stomach, or intestines, by a vomit or purge: The appearance of exanthematous eruptions on the skin, and the formation of local abscesses, from the same cause of partial irritation, often relieve a general disorder of the system.

"The mucous membranes, and the skin, possess this power, when irritated, in a more eminent degree than all the other parts of the body, and it is to these the larvæ of the *oestræ* are applied. Irritating the membranes of the stomach, by such means, in other animals, would excite nausea and vomiting; but the horse, not possessing this power, his stomach is peculiarly fitted for the stimulus of such inhabitants.

"How far the access of those dreadful disorders, which sometimes arise of themselves in cattle and horses, and afterwards become contagious, as the murrain, glanders, farcy, &c. may be prevented by these peculiar irritations, it will not be easy to discover, nor whether that singular tendency or disposition in the horse to inflammatory complaints, as the inflammation of the eyes, termed moon-blindness, inflammations of the lungs, and of the bones, &c. may be in any degree subdued by these local stimuli."

"In confirmation of this suggestion, I may remark, (although I am aware other reasons may also be assigned for it,) that those horses which are not exposed to the bots, more frequently are infected with the glanders, farcy, &c. as those of the army, post coaches, post waggons, and dray horses, these being rarely spared, from the nature of their work, to graze on the commons, and thus be exposed to receive them."

If, on a more minute search into their effects on the system, the utility of these native stimuli of animals should be established, and, like the leech, or the cantharides, they should be called in aid of veterinary medicine, it would be very practicable to administer them artificially, in any quantity, either by the eggs, or the larvæ themselves.

If the stimulus is considered as of too gentle a nature, it is, in some measure, atoned for by its permanency, and the unlimited power of increasing their numbers; at least by the administration of them, in this way, we might accurately ascertain their real effects, and whether they are so fatal as has been imagined.

There seems also to be a principle existing in nature of

leaving no space unoccupied that can possibly afford a situation for the convenient increase of animal existence: hence, perhaps, springs one of the causes for the extraordinary occupation of these parts by these animals.

The characters which appear to be general in the structure of this family are, that the *antennæ* have three articulations, the last almost globular, having a bristle or hair in front; and these antennæ are each lodged in a deep excavation of the face. The mouth, a simple aperture, not at all projecting from the head. The *palpi*, or feelers, are two, of two joints, their extremity globose, sunk in a depression on each side the mouth.

All the species of this extraordinary family at present known are,

Oestrus bovis, great ox bot fly. Brownish unspotted wings; abdomen with a black band in the middle, and its extremity with orange-yellow hairs.

Oe. equi, or great horse bot. Wings white, with a stripe of black, and two small black spots.

Oe. hæmorrhoidalis, or lesser horse bot. Wings dark, unspotted, abdomen black, base white, and point orange.

Oe. veterinus, or *nasalis* of Linnæus, the red bot fly. Wings unspotted, sides of the thorax, and base of the abdomen, with white hairs.

Oe. ovis. The sheep bot fly. Wings transparent, with small spots at the base; abdomen chequered with black and white.

Oe. tarandi. The rein-deer bot fly. Wings immaculate, thorax with a black band, abdomen orange, posteriorly yellow.

Larva, &c. In the backs of the rein-deer of Lapland.

Oe. cuniculi. The American rabbit bot. Black wings, brown thorax, black beyond the middle, posteriorly, on the sides of the thorax, and the base of the abdomen, with yellow hairs. Larva. In the backs of the hares and rabbits of Georgia. The immense size of this *oestrus*, which is more than twice as large as the ox bot of this country, would lead us to doubt, whether it might not have been the inhabitant, originally, of some of those immense animals of that continent, which are now lost. See Lin. Society Trans. vol. iii. p. 299.

Oe. buccatus. Carolina bot fly. Red-brown, face white, with black spots.

Found in Carolina and Georgia.

Oe. pecorum. Wings brown, thorax grey, hairy, abdomen black, base with white hairs. In the intestines of the sheep, says Fabricius, whose species are to be adopted with great caution; perhaps it is only a dark-coloured female, of the *oe. nasalis*. The whole genus has been greatly confused by Fabricius, and not less by his successor, Prof. Gmelin, where three additional species, *antelopeæ*, *fasciculosus*, and *hominis*, are probably all spurious. The first of these agrees, in all respects, with the female of *oe. equi*, the habitat being false. The second is a variety of the *oe. nasalis*, and the third is, perhaps, merely an accidental deposit of *oe. bovis*, in the human body, of which there are numerous instances.

Oe. Georgianus. Body and wings black, sides of the thorax white, with two black spots.

It is found in American Georgia; the animal it infests is not yet known. From the cabinet of Mr. Francillon: It is twice as large as the *oe. bovis*, and very distinct from any thing yet described.

For the figures of these animals, see the plate of the genus *Oestrus*.

BOTWAR, in *Geography*, a town of Germany, in the circle of Suabia, and duchy of Wurtemberg, seated on a small river of the same name, which runs into the Neckar; 10 miles S. of Heilbronn, and 13 N.N.E. of Stutgard.

BOTZEN;

BOTZEN. See **BOLTANO**.

BOTZENBURG. See **BOITZENBURG**.

BOVA, a town of Italy, in the kingdom of Naples, and province of Calabria Ultra, the see of a bishop, suffragan of Reggio, situate on the brow of a hill, at the foot of the Apennines, near the sea; 20 miles S.E. of Reggio. Being out of the way of trade and thoroughfare, this place can boast neither of wealth nor agriculture. The villages in its vicinity carry corn, cheese, and cattle to Reggio; but that being a poor mart, has but small demands, and a little circulation of money. Most of the inhabitants are of Greek origin and rife; and emigrated from Albania a few centuries ago. Their common language is Albanese, which is a dialect quite different from the modern Greek and Slavonian languages; and though known in Europe for more than a thousand years, and spoken by all the nations round Albania, still remains without an alphabet, and many of its sounds are not to be accurately expressed either by Latin or Greek letters. Hence it may be inferred, that it is a mixture of the dialects of those Tartarian hordes that over-ran Macedonia and Greece in the 8th century; to which medley the intercourse with Germans, Italians, and crusaders, has added a variety of foreign terms. The men can speak Calabrese; but the women, who neither buy nor sell, understand no tongue but their own, which they pronounce with great sweetness of accent. Swinburne's Travels in the two Sicilies, vol. ii. p. 241, &c.

BOUAGE, a town of France, in the department of the Lower Loire, and chief place of a canton in the district of Nantes; 8 miles S.W. of Nantes.

BOUALI, a town of Africa, the capital of Loango, so called by the French.

BOVATA terra, in *Ancient Law Writers*, signifies an oxgate of land, or so much as may be ploughed in a year with one ox; by some reckoned at fifteen acres, by others at eighteen, by others at twenty, and by others at thirteen or twenty shillings yearly rent.

This is otherwise called *bovatus*, and *bovariata terra*.

BOUATI, in *Botany*. Rumphius Amb. 2. tab. 41. Bosc in Nouveau Dictionnaire d'Histoire Naturelle. Clafs, *hexandria digynia*.

Gen. Char. *Cal.* perianth small, tripartite, pubescent, caducous. *Cor.* petals three, oblong, pointed, concave, longer than the calyx. *Stam.* six. *Pist.* germ superior, oval, compressed, villose, dimpled at its summit; stigmas two, sessile, obtuse. *Per.* a capsule nearly heart-shaped, compressed, smooth, sharp edged, dimpled at its summit, and divided into two cells, each of which contains a single oval seed.

It is a small tree which grows in the East Indies, is extremely bitter in all its parts, and is given with success in fevers. It is also used as a restorative, and an antidote to poisons.

BOUBI, in *Ornithology*, the name given by the French navigators to the booby of the English. See **BOOBY**.

BOUBIL, the name by which the Chinese at Canton denominate the crying-thrush, *turdus canorus*. In other parts of China, the same bird passes under the title of *wa-mew*. Sonnerat tells us, this is the only singing bird that is known to inhabit the vast empire of China, where it is occasionally kept in cages, for the sake of amusement, by the fair sex. It subsists on rice, worms, insects, &c. The same bird is also called *laniahlou*. See **CANORUS**.

BOUBIL, *Boubil de la Chine*, the name given by Sonnerat to the *turdus bubil* of Gmelin, and *chanting-thrush* of Latham. See **BUBIL**.

BOUBOU. Le Vaillant, in his History of the Birds of

Africa, bestows this name on a species of **TURNUS**, the male of which has a remarkable peculiar note, resembling the word *boubou*, often repeated. This bird was previously described by Buffon, under the title of *Merle noir et blanc d'Afrique*; it is also the *turdus ethiopicus* of Gmelin.

BOUBOUT, one of the synonymous names of the hoopoe, or hoop, the *upupa epops* of Linnæus. See **EPOPS**.

BOUC, in *Zoology*, *Geysser bock*, Gesh. synonymous names of the goat, *capra hircus*. *Bouc d'Afrique*, is *capra depressa*; and *bouc de juda* (of Buffon) is *capra reversa* of Linnæus; the *rebildaw* goat of Pennant.

Bouc Damoiseau, the French name of the Linnæan *antelope grimmia*; called also by them *grimme*, and *Chèvre de grimme*.

Bouc-Essain, or *Bouc-stein*, the names of the wild goat (*capra ibex* of Linn.), in old French writers. The word is of German origin, being derived from *bock*, or *bouc*, and *stein*, a rock or stone; in French, *bouc de rocher*; or, as we should render it, the rock, or mountain goat. Thus also, *bouc des rochers*, *bouquetin*, *bouc sauvage*, &c.

BOUCCANE'GRE, in *Ichthyology*, one of the synonymous names of *sparus pagel*. See **PAGEL**.

BOUCARDE, or **BUCARDE**, in *Conchology*. See **CARDIUM**, the cockle.

BOUCHAIN, in *Geography*, a town of France, in the department of the North, and chief place of a canton in the district of Douay, seated on the Scheldt, and carrying on a considerable trade in corn and cattle. The place contains 1,128, and the canton 13,509, inhabitants; the territory comprehends 152½ kilometres and 20 communes. Bouchain is a strong town; it was taken by the duke of Marlborough in 1711, after a siege of 30 days, retaken in the following year by marshal Villars, and invested by the Austrians in 1793, but soon relieved; 3 leagues S.W. of Valenciennes, and 2½ N.N.E. of Cambray.

BOUCHARDON, **EDME**, in *Biography*, an eminent French sculptor, was born in 1698 at Chaumont in Bassigny, where his father was a sculptor and architect: and educated at Paris, in the school of Coustou the younger. At Rome, whither he removed as the king's pensioner, to which his merit advanced him, he cultivated, with assiduity and success, his talent for design, by copying the precious remains of antiquity, as well as the works of modern painters. He afterwards settled at Paris, and, notwithstanding his singular simplicity of character, became eminently distinguished, so that he was employed in several works of importance; the principal of which are the fountain in the rue de Grenelle, fauxbourg St. Germain; a statue of Love making a bow of the club of Hercules, with the arms of Mars; and the equestrian statue of Lewis XV. at Paris. In 1736, he was appointed designer to the Academy of Belles Lettres; and, in 1744, he was admitted into the Academy of Painting, of which he was made professor in 1746. Having acquired a decent fortune, by his industry and regularity, and attained high eminence in his art, he died in 1762. His compositions are formed in the style of simple antiquity, and more admired for correctness and good taste, than for force of expression or vigour of imagination. His drawings are highly esteemed; they have furnished various engravings; and a Treatise on Anatomy, for the use of artists, published by Huquieres in 1741, is illustrated with figures by his hand. The chief amusement of this artist was music, which he performed in a masterly style. D'Argenville's Vies de Sculpteurs. Gen. Biog.

BOUCHARI, or **POUCHARI**, also *Boucher*, *Boucherie*, &c. in *Ornithology*. These are the common names of the grey-

grey-backed shrike, *lanius excubitor*, in Burgundy. The words are derived from the English butcher-birds, an epithet applied with us, in a general manner, to all the species of the shrike, or *lanius* genus.

BOUCHE, MARTIN, in *Biography*, an engraver, who flourished in 1680. He was chiefly employed by book-sellers: and portraits were his principal performances. He worked altogether with the graver, in a neat but stiff style; but his portraits, several of which were those of Jesuits who suffered in England about his time, are not destitute of merit. Strutt.

BOUCHE of court, the privilege of having meat and drink at court scot-free.

The word is also written *bowge*, *bouge*, and *budge*; it is mere French, where it signifies *mouth*. The French still use the phrase, *Avoir bouche à la cour*; that is, *to have table or diet at court*.

This privilege is sometimes only extended to bread, beer, and wine: it was a custom anciently in use, as well in the houses of noblemen as in the king's court.

Thomas earl of Lancaster retained sir John de Ewre, to serve him with ten men at arms in time of war, allowing them *bouge of court*, with livery of hay and oats, horse-shoes, and nails. Sir Hugh Merrill had the same privilege for life, on condition of serving king Edward II. Kennet. Glois. ad Paroch. Ant. p. 378.

BOUCHE d'Argent, in *Conchology*, the trivial French name of a shell of the turbo genus, the mouth, or opening of which is silvery within. Linnæus calls it *turbo argyrostomus*; the English silver-mouth turbo, or silver mouth.

BOUCHE d'Or, as in the former, a trivial sort of expression among the French collectors for the Linnæan *turbo chryso-stomus*, the mouth of which is of a fine golden hue. This is the gold-mouth turbo of the English.

There are a number of other shells, distinguished in like manner, by the colour of the mouth, to each of which a characteristic epithet is given; but such names are always capricious, and liable to be misapplied, because they are the names in common use among the dealers in shells, and others, who have only a slight acquaintance with the subject of testaceology. It is always better, therefore, to retain the names ascribed to them by Linnæus, and other Latin authors.

BOUCHEMAINE, in *Geography*, a town of France, in the department of the Maine and Loire, and chief place of a canton in the district of Angers; 4 miles S. of Angers.

BOUCHENE, a town of Persia, in the province of Korasan; 20 miles N. of Herat.

BOUCHER, FRANCIS, in *Biography*, a modern French painter of celebrity, was born at Paris in 1706, first educated under Le Moine, and finished his studies at Rome. Upon his return to Paris, where he settled, he obtained, by the style of his painting, the appellation of the "painter of the graces," and the "French Albani." He was advanced to the post of first painter to the king, and that of director of the Academy of Painting, after Vanloo; but he was carried off by a premature old age in 1770. His character was social and frank, without envy or avarice; he was always ready to bestow his works on those who admired them, and liberal in his encouragement of young artists. Of his singular modesty we have an instance, in his refusal to retouch a picture of one of the first Italian masters, alleging, "Such works are holy vessels to me." His works were held in high estimation. He possessed great fertility of invention; but, says Mr. Strutt, he was defective in correctness and grandeur of design. He executed some slight etchings from his own compositions, and those of other masters. Strutt. Nouv. Dict. Hist.

BOUCHER, JOHN, a furious fanatic, was born in Paris, where he became professor of philosophy and theology, and afterwards rector, in 1580. He was also prior and doctor of the Sorbonne, and was made rector of St. Benedict. As a preacher and a writer, he was a leading and active promoter of the league against king Henry III.: the rebels first assembled in his apartments in 1585; and he ordered the alarm-bell to be rung in his church, which contributed to excite the popular insurrection of 1587, the consequences of which were so disgraceful and detrimental to the king. Soon after he published a discourse, entitled, "De justa Henrici III. abdicatione Francorum regno," Par. 1589; which contained several very infamous charges against the king. Boucher has been charged with instigating James Clement, a Dominican monk, to the assassination of Henry; however this be, he applauded the act after it had been committed. He was a violent opposer to the succession of Henry IV. against whom he declaimed from the pulpit and from the press. Nor did his opposition cease with the king's abjuration; for pretending that he was a feigned convert, and that the pope's absolution was invalid, he published "Nine Sermons" on the subject, which he had preached at Paris in 1593. When the Parisians received Henry into the capital, these sermons were publicly burnt, and Boucher, perishing in the party of the leaguers, fled with the Spanish garrison, in 1594, into the Low Countries. At Tournay he obtained a canonry; and, after a residence of 50 years, he died dean of that chapter, in 1644. Under a feigned name he is supposed to have written an apology for John Chatel, who made an attempt on the life of Henry IV. and also for the Jesuits, who, in consequence of it, were banished from France. So atrocious was his virulence as a partisan, that he justified the conduct of those wretches who had hanged the first president Brisson, and dignified them with the title of martyrs of Jesus Christ, after they had been executed by the duke de Mayenne for that murder. It is said, however, that, towards the close of his life, he regretted living among the enemies of his country, and manifested some signs of repentance for the atrocities of which he had been guilty. Gen. Dict.

BOUCHER, JOHN-JOSEPH, born at Lisle, the 25th of March 1715, was made, in succession, physician to his native city, corresponding member of the Academy of Sciences, and foreign associate of the Royal College of Surgery at Paris. He published in 1751, "Méthode abrégée pour traiter la dysenterie régnante à Lisle en 1750," 4to. He also furnished the Journal de Médecine with "Meteorological Observations" made at Lisle, and with other philosophical papers. Eloy. Dict. Hist.

BOUCHER, in *Geography*, a town of Persia, in the province of Farsistan, on the north coast of the Persian gulf; 160 miles S.W. of Schiras.

BOUCHOUX, a town of France in the department of Jura, and chief place of a canton in the district of St. Claude. The place contains 1,890, and the canton 6,094, inhabitants; the extent of the territory comprehends 127½ kilometres and 13 communes.

BOUCLANS, a town of France, in the department of the Doubs, and chief place of a canton, in the district of Befançon; 8 miles E. of Befançon.

BOUCLIER, in *Ichthyology*, synonymous with cyclopère, the French name of the *CYCLOPTERUS* genus of fishes.

BOUCLIER d'écaille de tortue, in *Conchology*, the name given by the French collectors to those shells of the limpet genus whose colours, and general form, bear some resemblance to the scale of a tortoise. The most remarkable species of this kind is *patella testudinaria* of Linnæus.

BOUCLIER

BOUCLIER, in *Entomology*, a genus of coleopterous insects in Olivier's arrangement, included in his first section.

The boucliers are distinguished by having two transparent wings under the elytra; body a little depressed; thorax large, dilated, scarcely less than the elytra, and concealing the head of the insect. The antennæ clubbed, perfoliated, somewhat compressed, nearly the length of the thorax, with eleven joints, the first of which is large, elongated, and clubbed, and the last almost oval. The mouth is furnished with horny, simple mandibles; acutely pointed jaws; and four unequal filiform feelers; and lastly, the tarsi are filiform, and composed of five joints.

Insects of this tribe were formerly confounded with those of *castida*, *elephorus*, *sphæridium*, *nicrophorus*, *opairum*, and *nitidula*, from all of which they are to be discriminated by the foregoing character of bouclier.

There is another very analogous genus to this, namely, *peltis* of Fabricius. *Peltis* was a name given many years ago by Geoffroy to the insects afterwards called *silpha* by Linnaeus. It was again taken up by Illiger, who bestowed it on a new genus of *coleoptera* established by him, in which the Linnaean species of *silpha*, *grossa*, *ferruginea*, *oblonga*, and *limbata*, were comprised. The genus *peltis* is adopted from Illiger by Fabricius, in his last work on coleoptera, *Systema Eleutheratorum*. It will be therefore proper to point out exactly in what particulars those two genera differ. The *peltis* has the lower lip truncated and ciliated, while in the boucliers that part is dilated and bifid; there is some dissimilitude in the external character of the two genera, and their habits of life are distinct. See *PELTIS*.

The boucliers exhale a most fetid odour. Commonly they are found feeding upon cadaverous carcases, the dung of animals, or other such filth. There can be no doubt that the stench of these insects affects even the animal matter which they crawl upon, and on which they subsist. When taken in the hand, these beetles spurt from the mouth, as well as from the anus, a drop of liquor of a dark or black colour; the consistency of which is thick, and the stench disgusting. This liquor is not produced by violence or compression; it is voluntarily discharged by the creature, and is, beyond dispute, a secretion prepared by nature to promote the putrefaction of the flesh it may chance to meet with, as it is only in that state that the boucliers feed upon it.

Olivier describes only a few species of this family; namely, *le thoracique*, which is black, oval, and depressed; thorax fawn colour; and wing-cases with elevated lines. *Le littoral* is black, long, with three elevated lines on the wing-cases, and a transverse protuberance. *Le raboteux* is black; the wing-cases rugged, with three elevated lines; the thorax rugged likewise, and sinuous behind. *L'atre* is very black, with an entire thorax; the wing-cases dotted, with three smooth, elevated lines. *L'obscur* is black, slightly convex, with the wing-cases dotted, and three elevated lines obscurely marked. *Le quadripointé* is oval, depressed, and black; the wing-cases of a pale yellow, with two black dots on each. These are all the boucliers mentioned.

BOUCNASCH, in *Geography*, a town of Germany, in the duchy of Holstein; 5 miles E. N. E. of Rendburg.

BOUCOIRAN, a town of France, in the department of the Gard, and chief place of a canton, in the district of Uzès; 1½ leagues W. of Uzès.

BOUCQVILLE, a town of France, in the department of the Meuse, and chief place of a canton, in the district of St. Mihiel; 2 leagues E. of St. Mihiel.

BOUDOUA, in *Indian Mythology*. See **BOODU**.

BOUDOUIN DE MER, in *Zoology*, the name given by Van A.

Diequemare in the *Journal de Physique*, October, 1778, to a sort of marine worm with a sheath, which, it is believed, must appertain to the *nercis* genus; but of which the description is so very incomplete as to render this a matter of uncertainty. The animal inhabits a membranaceous sheath about four inches long.

BOUDOIR, LE, in *Geography*, a small island in the Southern Pacific ocean, discovered by Quiros, in 1606, by whom it was called "La Dezana;" in 1767, by Wallis, who named it "Ofnaburg;" and in the following year by Bougainville, who gave it the name of "Le Boudoir," or "Pic de la Boudeuse." The natives call it "Maitea," according to the report of captain Cook, who visited it in 1769. See **MAITEA**.

BOUDRI, or **BOUNRY**, a town and chatelain of Switzerland, in the county of Neuchâtel, 6 miles S. S. W. of Neuchâtel, near the river Reuse, which runs into the lake of Neuchâtel. N. lat. 46° 59'. E. long. 6° 38'.

BOUDROU, or **BOUDROUN**, the modern name of the ancient "Halicarnassus," (which see), situate at the entrance of the Ceramic gulf, now called the gulf of Stancho, on the coast of Caria. The fortress, which is at the entrance of the present harbour of Boudroun, is the work of the knights of St. John of Jerusalem, who made themselves masters of this place, when, after the first crusades, they had established themselves at Rhodes. They constructed this citadel on the foundations of the magnificent palace of the consort of Artemisa, and named it "Castel San Pietro," or, in Spanish, "San Pedro." Of this the Turks made "Bedro," then "Boudroun," changing the P into B, according to their manner of pronunciation. Coats of arms, sculptured in some compartments of the walls, still shew, as at Rhodes, in whose hands Boudroun was, before it passed into those of the Turks. Its present possessors have, with their customary negligence, suffered the harbour to be choked up, so that there is no longer water enough for large ships; the harbour, however, is safe and commodious, leaving to the wind and sea only a very narrow entrance. N. lat. 36° 59'. E. long. 27° 15'.

BOUDS, in *Entomology*, the epithet under which the *weevil* is distinguished in some countries.

BOVEE, in *Geography*, a town of France, in the department of the Meuse, and chief place of a canton, in the district of Commercy; 5 leagues S. E. of Bar-le-Duc.

BOVELLES, a town of France, in the department of the Somme, and chief place of a canton, in the district of Amiens; 2 leagues W. S. W. of Amiens.

BOVENA, the most easterly of the Hieres islands to the east of Toulon, in the Mediterranean, on the coast of France. See **HIRES**.

BOVENDEN, a town of Germany, in the circle of the Upper Rhine, and principality of Hesse-Rhinfels; 4 miles N. of Gottingen.

BOVES, a town of France, in the department of the Somme, and chief place of a canton, in the district of Amiens; 1½ league S. E. of Amiens.

BOUEXIERE, LA, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the district of Vitré; 10 miles N. E. of Rennes.

BOUFFE, in *Zoology*, a race of dogs with fine, long, frizzled hair; a cross breed between the barbet and great spaniel.

BOUFFLERS, LOUIS-FRANCIS, in *Biography*, duke, peer, and marshal of France, and a celebrated general, was the son of Francis count of Boufflers, and born in 1644. In 1669, he became colonel of dragoons, and served in the conquest of Lorraine under marshal Crecqui; and in the war

against Holland he distinguished himself, under Turenne, in several battles and sieges. He afterwards served in Germany, on the frontiers of Spain, and in Flanders; and at length was made general of the army on the Moselle, in 1690. After several services of importance at Mons, Liege, Luxemburg, and Namur, &c. he was advanced in 1693 to the rank of marshal of France; and, in the following year, he was made governor of French Flanders and the town of Lisle. In 1695, having held out 63 days against the united forces of the allies under king William at Namur; when the place capitulated, he was arrested prisoner of war; and upon his remonstrance that the whole garrison, which had not been surrendered by the French, according to the articles of war, should have been retained rather than himself, he was answered, by the compliment, "Sir, you are estimated at 10,000 men." He afterwards conducted the conference which terminated in the peace of Ryswick. In 1708, he acquired great glory by an obstinate defence of Lisle for four months, when it was threatened with a siege by Marlborough and Eugene. On this occasion he displayed his magnanimity, by his noble declaration to a person who represented to him the facility of killing prince Eugene; "Take him prisoner," says he, "and your fortune is made; but expect the most severe punishment, if you undertake any thing against his life." At the battle of Malplaquet, he conducted the retreat, so as to lose neither cannon nor prisoners. Having established the character of a true patriot, as well as that of a great commander, he died at Fontainebleau, in 1711, at the age of 68. "His heart," said madame de Maintenon, "was the last part that died." *Nouv. Dict. Hist. Gen. Biog.*

BOUFFLERS, in *Geography*, a town of France, formerly called "Cagni," in the department of the Oise; 7 miles W. of Beauvais.

BOUFRAMONT, a town of France, in the department of the Vosges, and chief place of a canton, in the district of Neufchâteau; 2 leagues S. of Neufchâteau.

BOUGAINVILLE, JOHN PETER DE, in *Biography*, was born at Paris in 1722, and educated at the college of Beauvais. The first exhibition of his literary character was in a prose translation of "Anti-Lucretius," with a preliminary discourse. Amongst the friends and patrons, procured for him by his distinguished literary talents and amiable qualities, was M. Freret, secretary of the Academy of Inscriptions and Belles Letters, by whom he was introduced into that society, and whom he succeeded in his office. Of the various papers, which he wrote for the Memoirs of the Academy, two of the most considerable are those on the voyages of Pytheas of Marseilles, and of Hanno the Carthaginian. In 1754, he was admitted into the French academy; and appointed censor-royal, and keeper of the antiquities in the Louvre. He also published "a parallel between Alexander and Thamas Kuli Khan;" and edited Freret's Chronology. He died of an asthma, to which he had been subject from his youth, at the castle of Loches, in 1763. *Nouv. Dict. Hist.*

BOUGAINVILLE, M. D. F. a native of France, and the first person of that country who circumnavigated the globe. His nautical discoveries were very numerous, and he occupies a high rank among those who have extended our acquaintance with distant seas and islands. He was killed by the mob in a tumult at Paris, May 10, 1792.

BOUGAINVILLE bay, in *Geography*, lies in the straits of Magellan, on the north side.

BOUGAINVILLE island, an island of the South Pacific ocean, adjoining a group of other islands, with which it forms a bay not less than 15,000 toises in extent, seen by M.

Bougainville in 1768, and separated by the straits, called after his name, from the island of Bouka, which see. The high mountains of this island are covered with trees, and appeared to the voyagers in search of La Pérouse to be at least 1200 toises in perpendicular height, and to be distant from the shore above 20,000 toises. It terminates in very low lands, having fine plantations of cocoa-nut trees, and seemed to be very populous. The most southerly point of this island is in S. lat. $7^{\circ} 4' 50''$. E. long. $155^{\circ} 38' 34''$. The northern point, called point Laverdy, is in S. lat. $5^{\circ} 34'$. E. long. $154^{\circ} 51'$. See *ARSACIDES* and *SOLOMON islands*.

BOUGAINVILLE's straits, lie in the South Pacific ocean, at the N. W. end of the islands of Solomon; which see.

BOUGEANT, WILLIAM-HYACINTH, in *Biography*, a French Jesuit, was born at Quimper, in 1690, and having been educated among the Jesuits, he taught the languages and rhetoric in their seminaries at Caen and Nevers. He afterwards resided in the college of Lewis le Grand at Paris, and devoted himself wholly to literature. Besides the part which he took in the Journal de Trevoux, he was the author of several works; the principal of which are "History of the Wars and Negotiations which preceded the Treaty of Westphalia, in the reign of Lewis XII.;" 2 vols. 12mo. a work of high estimation for its curious facts and elegant style; "Expositions of the Christian doctrine by questions and answers, divided into three catechisms;" 4 vols. 12mo.; "Voyage Merveilleux du prince Fan-Feredin dans la Romanie;" 12mo. a performance of fancy for which some orthodox zealots occasioned his temporary exile to La Fleche; "Three Comedies," in prose. He also wrote some controversial pieces on the eucharist, and some critical papers in the Memoirs de Trevoux. After his death, was printed his "History of the Treaty of Westphalia;" 2 vols. 4to. a work that is ranked among the best historical productions of France. Bougeant was of an amiable, social disposition; and is thought to have felt much uneasiness from the attacks that were made upon him, which shortened his days. He died at Paris in 1743. *Nouv. Dict. Hist.*

BOUGH, in *Antiquity*. Green boughs made part of the decorations of altars and temples, especially on festival occasions. Oaken boughs were offered to Jupiter; those of laurel to Apollo; of olive to Minerva; myrtle to Venus; ivy to Bacchus; pine to Pan; and cypress to Pluto.

BOUGIE, in *Surgery*, is a French term, originally denoting a wax taper, but now generally applied to several instruments which are used by surgeons in diseases of the urinary passage, &c. See the articles *CARUNCLE*, *STRICTURE*, *URETHRA*, and *ŒSOPHAGUS*, where an account is given of the disorders in which bougies are principally employed, the subject of the present article being chiefly on the composition of these chirurgical instruments.

Contrivances for dilating the urethra, in cases of obstruction to the flow of urine, were employed even so early as the time of Albucasis, and the Arabistical surgeons; but these were not brought to any tolerable degree of perfection until about the middle of the sixteenth century, when the frequent occurrence of strictures in the urethra introduced them into more general use. The first efforts of surgeons, in this particular department of their art, may be perused in the writings of Andreas Lacuna, Amatus Lusitanus, Alphonsus Ferrus, Ambrose Paré, Franc. Arcæus, Theodore Mayerne, John de Vigo, and Fabricius ab Aquapendente.

It is not easy to determine who invented wax candles, or rather

rather who applied them, for these purposes; but, as the name *bougie* is of French origin, it may be the invention of a French surgeon, and perhaps of Guido de Cauliaco, (who flourished before the existence of Syphilis in Europe); for this surgeon, in his chapter "De ulceribus ancharum," &c. Chir. Mag. Tract. IV. Doctr. II. cap. 7. recommends the "Turunda ex cera," to be passed up the urethra.

The materials commonly had recourse to, in the fabrication of bougies, catheters, and sounds, during the sixteenth century, were gold, silver, and lead; but as these metallic rods were not sufficiently pliable and soft for introduction into a diseased urethra, surgeons afterwards used bougies formed of slips of linen or cloth, dipped in melted wax, &c. and rolled into the size of a goose-quill, of sufficient length to pass as far as the neck of the urinary bladder. This kind of bougie was greatly improved by Mr. Daran, of Paris, who, nevertheless, made use of some very ridiculous and useless ingredients in the composition of them; such as sheep's dung, pulverized shoe-leather, port wine, and live pigeons; not to mention various other ingredients, equally needless, though not quite so absurd and preposterous.

As it is now generally admitted by surgeons that bougies act mechanically only, and not medicinally, in curing diseases of the urinary canal, we shall proceed to describe the properties and composition of waxen or plaster bougies; after which we shall notice the elastic bougies, and shall offer a few hints on an invention by Mr. Smyth, of London, who has lately contributed to the revival of metallic instruments, which had almost been wholly laid aside, on account of their wanting due flexibility, &c.

The properties required in a bougie for dilating a contracted urinary canal are, 1. Sufficient firmness to overcome the resistance of the stricture; 2. A degree of flexibility, which shall yield and accommodate itself to the windings or tortuosities of the morbid canal; 3. So much strength, cohesion, or tenacity, as not to be in danger of breaking; 4. Perfect smoothness of surface, that it shall occasion no uneasiness or difficulty in passing; 5. A mildness in its composition, which may ensure its remaining for a sufficient time in the urethra, without exciting pain or inflammation.

That it is possible to communicate a medicinal quality to bougies cannot be denied; and it having been an old opinion that strictures were usually attended with ulcers or abrasions in the urethra, which required healing, surgeons have frequently employed medicines in the composition of bougies, supposed to possess a power of cicatrizing these ulcers; but of late, both the remedy and the disease have been exploded; we do not any longer suspect venereal ulcers as a concomitant symptom of stricture, and therefore have discontinued what were called cicatrizing applications. Still, however, the idea of employing mercury in this way is not wholly given up; and there are medical practitioners who prefer bougies containing a large proportion of the specific, believing that it tends to eradicate any venereal taint in the system; but the major part of the profession consider mercury as entirely useless in these cases; because, if there happens to be any venereal taint in the constitution, this mode of administering mercury would not be the most eligible for the cure; and because the addition of such an incongruous article to the other ingredients has the effect of diminishing the tenacity of the bougies. A prescription formerly in vogue, and which therefore had been received into the last edition of Chambers's Cyclopædia, consisted of Burgundy pitch, two ounces; quicksilver, one ounce; and crude antimony in powder, half an ounce.

The objection against antimony, and such like brittle ma-

terials, will undoubtedly be urged with at least as much force as that we have already made against mercury; and on this account we recommend that no mineral substance shall be employed in such quantity as to lessen the tenacity or cohesive nature of the plaster composition.

The best formed plaster bougies may, without any injury, be varied in the proportion of their ingredients, or in the colouring matter they contain, according to the temperature of the weather, or the intention of the surgeon. They may be coloured red, with a little cinnabar; white, with cerusse; black, with æthiops, &c.; and in warm weather, or a tropical climate, they should be made of a firmer consistence than in a cold country. The basis of all plaster bougies should be wax and oil: the wax may be either yellow or white; the oil, either vegetable or animal; to which may be added, a small proportion of resinous matter, &c. to afford the degree of consistence and tenacity we require. The ingredients should be well boiled and incorporated together, especially when there is the addition (usually made) of litharge or minium in considerable quantity.

The following are among the most simple and approved compositions for plaster bougies:

N^o I. R. Gum lac, one pound;

Litharge plaster, three pounds:

Dissolve the gum lac in the plaster by slow boiling, and add of yellow wax two pounds. After about three hours more boiling, the whole may be set aside for use.

N^o II. R. Olive oil, three pounds;

Yellow wax, one pound;

Minium, one pound and a half.

These articles are to be boiled slowly for six hours, or even longer in the winter. If the mass be not of a sufficiently firm consistence, add three or four ounces more of the wax.

N^o IV. R. Litharge plaster three parts, and

White wax two parts; to which add as much olive oil or hog's lard as will give the consistence required. Boil them as before.

N^o V. R. Yellow wax, one pound;

Spermæci, half an ounce;

Acetated cerusse, from two to eight drams, according to the degree of solidity desired. Small bougies are to be made of a thicker mass than larger, especially for a hot climate.

N^o VI. R. Yellow wax, four parts;

Oil of olives, three parts;

Spermæci, one part.

Boil them gently together for two hours, or until they are properly incorporated.

As prescriptions of this sort may be varied at pleasure, it is unnecessary to increase the number of our formulæ: the above compositions are to be used in a melted state, but not very hot. Slips of soft linen or calico, of a fine texture, and not less than eleven inches in length, are to be dipped into the warm mass, or spread over with some of it by means of a broad spatula; and care should be taken to make the surface of this cerecloth as smooth and uniform as possible. Some persons advise that the slips of fine rag shall be of different lengths, from eight to eleven inches, and about three in breadth; these slips are then to be rolled up loosely, and taking hold of one extremity with the left hand, let it fall upon the surface of the plaster, and then draw it out gently. As it is drawn out it will unroll, and take up a quantity of plaster on the surface, equal to the thickness of a wafer or a sixpence; though, to facilitate the unrolling of the rag, it will be proper to assist its motion with the end of the spatula,

tula, or some other instrument. The plaster, however, must be warm enough to soak through, and discolour the rag, otherwise it will not make so good a bougie.

If the cloth be exactly three inches broad, it will make six bougies of a moderate size; but their size may be suited to the occasion. It is generally advisable that the bougie should be smaller at the end which is introduced through the strictures, than at that which is left out at the penis. For this purpose many cut off a part of the oblong square before mentioned, in such a manner as to reduce it almost into the shape of a long right-angled triangle; but as this way of cutting it weakens the bougie exceedingly, and as it is not at all necessary that the bougie should be taper from one extremity to the other, it is much better to cut off a little slope of about an inch and a half long from the end that is to be passed into the urethra, which will lessen it where it is necessary to be small, and leave it strong in the other part, where the diminution is not necessary.

The plaster taken up by the cloth, when dipped, will have little bubbles upon its surface, and not be so smooth as if it had been spread: therefore an iron spatula, a little warmed, may be passed over the plaster before it be cut into bougies, which will render it more compact and even. It is a much more exact and speedy method to cut the bougies off with a knife and ruler than with scissors. When they are rolled up, it must be with that side outward which is covered with plaster; and they must first be rolled by hand as close as possible, before they are rolled upon a board or marble; for upon this circumstance the neatness of the bougie depends.

It seldom happens that a bougie is required to be more than a quarter of an inch in diameter, or three quarters in circumference; but the generality of practitioners are apt to err in using them of too small a size to produce any permanent advantage in overcoming the stricture. There is undoubtedly a great difference in the calibre of the urethra of different persons, and we have known the plaster composition to have been forced off the linen by a patient having used the bougie too large, so as to collect the plaster in a mass within the urinary canal; but we still lay down as a general rule to employ the instrument as large as can be conveniently introduced, and again withdrawn from the urethra, although by no means so large as to hazard the accident here alluded to.

Some surgeons have very highly extolled the utility of bougies made of catgut, because of the property they possess of becoming dilated by the moisture of the urethra, and thus enlarging the contracted part of the canal. We have, however, been much disappointed in our expectations from catgut bougies; as they did not dilate with sufficient force upon the exact spot in which the disease existed, and therefore swelled generally without advantage: nay, it even happens that the catgut, if it be large, will not come away without difficulty and pain, since it dilates equally beyond the stricture itself, as well as on the contracted part; and if it be not sufficiently large, its softness renders it of no utility whatever. As there is no possible mode in which the catgut can do any good, but by mechanically extending the stricture, and as this can only happen for a few moments while the instrument remains firm, it must be obvious to every reflecting person that this kind of bougie is likely to be even less useful than those made of plaster or cerecloth; and this is precisely what we have observed as the result of our own experience.

Practitioners, being in some respects dissatisfied with the bougies commonly used, have introduced pieces of smooth whalebone, or long slips of leather, for the same purpose:

but we think, upon the whole, they are liable, at least, to as strong objections as any we have already mentioned; and the trials made with them, by several surgeons, have not at all produced a conviction of their superiority. At present, indeed, they seem to be entirely laid aside.

Another species of bougie, which deserves much more attention, is composed of catgut internally, and covered by a thin layer of dissolved elastic gum, or caoutchouc. The manufacture of this elastic vegetable substance is confined to a very few hands. We believe it was first applied in a state of solution to the purposes of surgery, either by Mr. Theden, a Prussian surgeon, or by M. Bernard, of Paris; but bougies of this kind are also made in other countries, especially in Sweden and Germany, and lately by Mr. Walsh, of London. The mode of dissolving and drying the caoutchouc is kept as a secret. It is said, however, to be soluble in æther and in linseed oil: it may likewise be rendered fluid by cutting the substance into slips, and burning them; but the great difficulty is in restoring it to a state of solidity and dryness, so as to render the bougies useful after they are fabricated and covered with caoutchouc. These bougies, when properly made, are not only very flexible and smooth, but may remain a considerable time in the urethra without being greatly injured. When they crack or become rough on their surface by repeated use, they are unfit for our purpose, and should be exchanged for new ones. See the articles CATHETER and CAOUTCHOUC.

It has formerly been the practice of some surgeons, in using any of the several kinds of bougies already described, to daub their surface over with different stimulating unguents, &c. And it has been imagined that the puriform discharge thus produced from the urethra, had a tendency to dissolve the callosity of the stricture or caruncle, which they supposed to be the occasion of the obstructed urine. Now this is an entire fallacy, founded on a false theory; for neither is there any proof of the existence of such caruncles and callosities in the urethra, nor (if they really did exist) could the suppuration produced by such means afford material advantage. Any stimulating substance introduced into the urethra, for example a common plaster bougie, may produce a discharge of matter, especially in very irritable patients; but this discharge arises from the whole internal surface of the canal to which the bougie has been applied, and not exclusively, or perhaps, not at all, from the obstructed part where the stricture exists: and this suppuration is no more than the common result of the application of a mechanical stimulus, or foreign body, to a delicate secreting membrane. If that portion of the bougie which came into contact with the diseased part be more covered with mucus or pus than any other, this circumstance is probably owing to a greater irritation or increase of action in the secreting arteries of that part, in consequence of its preternatural irritability; but, by introducing a bougie composed of active ingredients, or smearing its surface over with acrid materials, we excite an unhealthy action not only in the morbid part of the urinary passage, but also along the whole extent of the sound surface. The reasoning here employed against so absurd a practice, will apply likewise against the use of what have been called "Medicated bougies," which have been ignorantly supposed to possess some healing or medicinal quality.

The only remaining bougies we intend to notice in the present article, are those which Mr. Smyth, an apothecary of London, has recently fabricated, of a flexible metallic composition. Although he has not published his invention, (if indeed it be a *new compound* of the metals,) we think the

the instruments of Mr. Smyth deserving our consideration. Experience, in a great number of cases, warrants the use of them, and particularly those of a large size; on account of the extreme smoothness of their surface, the yielding or flexible property they have, without breaking, and the length of time which patients may wear the bougies (where it is necessary to retain them in the bladder) with ease to themselves, and without eroding the metal.

We cannot, however, divest ourselves of an objection, which has too much foundation in truth, against the small-sized metallic bougies, viz. that there is great danger of tearing or penetrating the urethra in passing them; so that they can hardly be trusted with safety in the hands of inexperienced persons, or even of young surgeons who may not be experienced in this line of practice. Mr. Smyth has certainly obtained very respectable testimonies in favour of his instruments; but, we think, on perusing his late publication, that the comparative advantages and disadvantages of these bougies are not always detailed with sufficient precision. Some of the objections, which were formerly made by one of the surgeons of the Lock Hospital, in the fourth volume of the London Medical Review, do not apply to the larger sized metallic bougies; and we are assured that, since the period alluded to, the inventor has improved the form of his instruments so much as to have obviated the little difficulties then suggested by Mr. Blair. It was our duty to say this, in justice to the inventor; and we doubt not, that by further trials and observation, it will be found that Mr. Smyth's bougies and catheters are entitled to the patronage of surgeons in general. We do not mean to affirm, that they will exclude the use of all other kinds of bougies and catheters; but only that they are highly serviceable, (and even to be preferred to any others) in some particular circumstances of diseased urethra, or retention of urine, &c.

We reserve the observations we have to make on *caustic bougies* for a future article on the subject of STRICTURE, where the history and treatment of this morbid affection will properly come under consideration. In the interim, we refer our readers to the several publications of Mr. Home and Mr. Whateley: and to a paper, in the 18th number of the London Medical Review, p. 209, vol. iv. entitled "Reflections on the use of caustic substances and metallic bougies in strictures of the urethra, by Mr. Blair, surgeon of the Lock Hospital, &c."

BOUGIE, inlet, in *Geography*, lies on the coast of North Carolina, between Core Sound and Little Inlet.

BOUGINESE, or **BONIANS**, a denomination distinguishing one of the various nations who inhabit the island of Celebes. These and the Macassers are the most known. The Bouginese are at present the most powerful people in this island, though, about a century ago, they were not comparable with the Macassers. They are of a middle stature, strong, and muscular, and of a light brown complexion. Some of them, especially the women, are nearly as fair as Europeans; and they have pleasing countenances, except that their noses are somewhat flattish. The females are ardently addicted to sensual pleasures, and ingenious in every refinement of amorous gratification; and on this account, the Bouginese girls are preferred, throughout the east, for concubines, both by Europeans and by Indians. The Bouginese are generally called by the English *Buggellies*. See **BONI**.

BOUGLON, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the district of Marmande; 4 miles N. of Castel Jaloux. The place contains 681, and the canton 5,547 inhabitants. The

territorial extent comprehends 162½ kilometres, and 12 communes.

BOUGUER, PETER, in *Biography*, a celebrated mathematician, was born at Croisic in Lower Brittany, Feb. 10, 1698. He was the son of John Bouguer, royal professor of hydrography, and author of a complete treatise on Navigation, first printed in 1698, 4to. and re-printed in 1706. In this comprehensive and excellent work, the author correctly delineated the state of navigation at that period. Bouguer, the son, was initiated by his father in the mathematics, at a very early age; and such was his proficiency, that at the age of 11 years, he instructed his regent in the Jesuits' college at Vannes; and at the age of 13, he detected the error of a professor of mathematics, who, mortified at being thus exposed, quitted the country. Although he lost his father at the age of 15, and before he had finished his studies, he was thought competent to be his successor in the office of hydrographer; and he discharged the duties of it with great reputation, even at this early age. In 1727 he obtained the prize, propounded by the royal academy of sciences, for the best method of masting ships; in 1729, that, for the best method of observing the height of the stars at sea; and in 1731, that, for the most advantageous means of observing the variation of the compass. In his piece concerning the best method of observing the height of the stars at sea, he assumes the honour of having been the first person who undertook to give a legitimate solution of the "Solar;" for so he calls the curve, traced by a ray of the sun, in its descent through the atmosphere. But though he did not seem to have known it, Mr. Taylor, in his "Methodus incrementorum directa et inversa," had obtained, by an elegant analysis, a fluxional equation, which gave all the points of the curve. However, Bouguer's method was the first that was applied to use for astronomical purposes. Bouguer, in his "Optical essay on the gradation of light," published in 1729, examined the intensity of light, and determined its various degrees of diminution, in passing through different pellucid substances, and particularly that of the sun in traversing through the atmosphere. An extract of this first essay was given by M. Mairan in the Journal des sçavans, for 1730. Dr. Priestley, in his "History of light and colours," p. 541, &c. has given a particular account of Bouguer's observations on this subject. At Havre, whither he removed in 1730, he became intimately connected with several members of the academy of sciences; in the following year, he was chosen to succeed Maupertuis as associate-geometer; and in 1735 he was promoted to the office of pensioner-astronomer. On the 16th of May in this year, Bouguer left France, on a commission, in which he was joined with Godin and La Condamine, for measuring a degree of the meridian in South America; and he returned to his own country from this expedition in June 1744. Of his various operations, he gave an account to the French academy in November following; and this account was printed in the "Memoirs" for 1744, and afterwards in his treatise "De la figure de la terre." The principal scene of this laborious undertaking, was the Cordilleras mountains; and in the execution of it, Bouguer and his associates made many other important and useful observations, besides those that related to the immediate object of their commission. To Bouguer in particular, we are indebted for many curious remarks on the expansion and contraction of metals, and other substances, by the sudden change of heat and cold, among those lofty mountains; on the refraction of the atmosphere from their summits, and on the singular phenomenon of a sudden increase

crease of refraction, when the star can be observed below the line of the level; on the laws of the different densities of the air at different heights; on the effect of the attraction of the mountains upon a plummet; on the method of estimating the errors of navigators in computing their course and distance; on the new construction of a log for measuring the ship's way; and on a variety of other particulars; which, with those already recited, will be duly noticed in the course of this work. Of his heliometer for determining the diameters of the large planets in a telescope with two object glasses, his experiments on the reciprocation of the pendulum, and his method of measuring the force of light, &c. &c., we shall introduce an account in their proper places.

The principal works of M. Bouguer, that have been separately published, are "The figure of the earth, determined by the observations in South America," 1749, 4to.; "Treatise on navigation and pilotage," Paris, 1752, 4to., abridged by La Caille in one volume, 8vo. 1758. "Treatise on ships, their construction and motions," 1756, 4to.; and "Optical treatise on the gradation of light," first published in 1729, and afterwards in 1760, 4to. The following detail of his chief communications to the royal academy, and of the volumes of the "Memoires," in which they may be found, will probably gratify the curiosity, and direct the researches of our mathematical and philosophical readers. Accordingly, we have in the "Memoires" for 1726, a comparison of the force of the solar and lunar light, with that of candles; for 1731, observations on the curvilinear motion of bodies in mediums; for 1732, upon the new curves called the "lines of pursuit;" for 1733, to determine the species of conoid, to be constructed upon a given base, which is exposed to the shock of a fluid, so that the impulse may be the least possible; and a determination of the orbit of comets; for 1734, comparison of the two laws which the earth and other planets must observe in the figure, which gravity causes them to take; on the curve lines proper to form the arches in domes; for 1735, observations on the equinox; on the length of the pendulum; for 1736, on the length of the pendulum in the torrid zone; on the manner of determining the figure of the earth, by the measures of the degrees of latitude and longitude; for 1739, on the astronomical refractions in the torrid zone; observations on the lunar eclipse of September 8th 1737, made at Quito; for 1744, short account of the voyage to Peru by the members of the royal academy of sciences, to measure the degrees of the meridian near the equator, and from thence, to determine the figure of the earth, a communication, no less elegantly, than accurately written; for 1745, experiments made at Quito, and divers other places in the torrid zone, on the expansion and contraction of metals by heat and cold; on the problem of the masting of ships; for 1746, treatise on ships, their structure and motions, (see METACENTRE and SHIP); on the impulse of fluids upon the fore parts of pyramidoids, having their base a trapezium; continuation of the short account, given in 1744, of the voyage to Peru for measuring the earth; for 1747, on a new construction of the log and other instruments for measuring the run of a ship; for 1748, of the diameters of the larger planets; the new instrument called a heliometer, proper for determining them, with observations of the sun; observation of the eclipse of the moon, Aug. 8th, 1748; for 1749, second memoir on astronomical refractions, observed in the torrid zone, with remarks on the manner of constructing the tables of them; figure of the earth, determined by Messrs. Bouguer and Condamine, with an abridg-

ment of the expedition to Peru; for 1750, observations of the lunar eclipse, Dec. 13th, 1750; for 1751, on the form of bodies, most proper to turn about themselves, when they are pushed by one of their extremities, or any other point; on the moon's parallax, with the estimation of the changes, caused in the parallaxes by the figure of the earth; observation of the lunar eclipse, Dec. 2d, 1751; for 1752, on the operations made by seamen, called "Corrections;" for 1753, observations on the passage of Mercury over the sun, May 6th, 1753; on the dilatations of the air in the atmosphere; new treatise of navigation, containing the theory and practice of pilotage, or working of ships; for 1754, operations, &c. for distinguishing, among the different determinations of the degree of the meridian near Paris, that which ought to be preferred; on the direction which the string of a plummet takes; solution of the chief problems in the working of ships; for 1755, on the apparent magnitude of objects; second memoir on the chief problems in the working of ships; for 1757, account of the treatise on the working of ships; on the means of measuring the light. In the volumes of the prizes, given by the academy, are the following pieces by Bouguer; in vol. i. on the masting of ships; in vol. ii. on the method of exactly observing at sea, the height of the stars, and the variation of the compass; also on the cause of the inclination of the planets' orbits. M. Bouguer was also for 3 years a writer in the *Journal des Sçavans*, to which he communicated several useful papers.

In his earlier years, Mr. Bouguer had lived in a state of seclusion from general intercourse with the world, and he had thus acquired a cast of temper, which marked his character in more advanced life. Although he was universally acknowledged to possess superior talents, and to be distinguished by an assiduity and zeal, no less successful than indefatigable, in various departments of useful science; he indulged a degree of suspicion and jealousy, with regard to his reputation, which disgusted some of those with whom he was under a necessity of associating, and which disquieted his own mind. Fully sensible of the importance and utility of his own performances, he was apt to consider others, who were engaged in similar pursuits, as competitors with himself, and to grudge them the reputation which they justly acquired, from an apprehension that his own credit would be thus diminished. Hence arose his disputes with La Condamine, one of the companions of his voyage, and associate in his labours in America; and the mortification he experienced from the public suffrage that seemed to have been bestowed on that academician. It is much to be lamented, that mean jealousies of this kind should subsist among persons distinguished by their literature and science; because they are not only disreputable to themselves, but injurious to the advancement of useful knowledge. M. Bouguer, after a course of incessant application, which undermined his health, closed his life on the 15th of August, 1758, at the age of 60 years. *Mem. of the French Academy*, 1758. *Nouv. Dict. Hist. Montucla*, "Hist. des Mathematiques," by De La Lande, tom. iv. *Gen. Biog.*

BOUHIER, JOHN, a person of eminent literary character, was born at Dijon in 1673, and first educated at a Jesuit seminary, where his extraordinary talents for languages were carefully cultivated. The peculiar studies of his profession were prosecuted at Paris and Orleans, whence he returned to Dijon, and began the exercise of it in 1673. Here he distinguished himself by his professional practice, and was admitted into the parliament, succeeding his father in the office of president à mortier. As he devoted his leisure

leisure hours to literary inquiries, he was well known to the learned, and in 1727, was unanimously elected a member of the French academy. But afflicted with the gout, he was under the necessity of resigning his office of president à mortier; and, in 1746, this disorder, seizing his stomach, terminated his life. He was much respected on account both of his private and public character; and his literary performances, published separately and in the memoirs of different societies, are very numerous. Some of the principal are, "A translation, in verse, of Petronius on the civil war, and of some passages in Virgil and Ovid," with very learned notes; "A translation of Cicero's Tusculan Questions," in connection with the abbé d'Olivet; the 2d and 5th are by Bouhier; and he also annexed learned notes and dissertations to the translations of others of Cicero's works; "Letters on the sect of Therapeutæ;" and "Dissertations on Herodotus." In his own profession his principal work is "The custom of Burgundy," 2 vols. fol. 1746; and a "Treatise on dissolution of marriage on occasion of impotence," esteemed by the curious. *Nouv. Dict. Hist. Gen. Biog.*

BOUHOURS, DOMINIC, a learned Jesuit and critic in the French language, was born at Paris in 1628; and having taught for some time in the colleges of the Jesuits, became preceptor to the young prince of Longueville, and to the marquis de Seignelai, son of the famous Colbert. He died in the place of his nativity, in 1702. His first work, which was an agreeable miscellany on subjects of taste, entitled "Les entretiens d'Ariste et d'Eugene," appeared in 1671, and was at first much read. His other principal works are, "Remarques et doutes sur la langue François," 3 vols. 12mo.; "Manieres de bien penser sur les ouvrages d'Esprit," 12mo. much commended by Voltaire; "Pensées ingénieuses des anciens et des modernes," 12mo.; also, "Lives of the grand-master d'Aubusson, of St. Ignatius, of St. Francis Xavier, of mad. de Bellefond," and translations of some books of devotion, in some of which he manifests his attachment to the Jesuits, though with less credulity than that of others. His manners were polite; but his criticisms, though he was a general apologist, involved him in some literary disputes. *Nouv. Dict. Hist.*

BOVI-CERVUS of French authors, in *Zoology*, their *Bubale* and *antilope bubalis* of Linnæus.

BOVIANUM, in *Ancient Geography*, Boiano, a town of Italy in Samnium, situate among the mountains. It was taken several times by the Romans; became a Roman colony, and possessed the advantages granted by the Julian law. See *BOIANO*.

BOUJEAH, in *Geography*. See *BUGIA*.

BOUILLAC, a town of France, in the department of the Upper Garonne; 3 leagues N. W. of Grenade.

BOVILLÆ, in *Ancient Geography*, Marino, a town of Italy in Latium, situate at the 10th mile in the Appian way, and built after the destruction of Alba, by the Albani. It became a considerable place, as is indicated by its ruins, among which is a temple dedicated to Augustus. Near this city Claudius was slain by order of Milo; and here they celebrated games in honour of the Julian family.

BOUILLE, LA, in *Geography*, a town of France, in the department of the Lower Seine; 3 leagues S. S. W. of Rouen.

BOUILLE, Menard, a town of France, in the department of the Mayne and Loire, and chief place of a canton, in the district of Segré; 2 leagues N. W. of Segré.

BOUILLEROT, or *Boullereau*, in *Ichthyology*, common names of several fishes in France, but more especially of *Gobius niger*; the *Cyprinus gobio* and *Blennius pholis* bear the same names.

BOUILLET, JOHN, in *Biography*, born at Servian, in the diocese of Beziers, the 14th of May 1690, and created doctor in medicine, at Montpellier, in 1717, enjoyed, during the course of a long life, spent in the study and practice of medicine, at Beziers, a considerable portion of reputation. He was, in succession, made professor in mathematics, and secretary to the academy at Beziers; member of the royal society at Montpellier, and corresponding member of the academy of sciences at Paris. He was also author of several ingenious dissertations. "On the properties of Rhubarb," published at Beziers 1717, 4to. probably his "Inaugural Thesis." "Sur la cause de la peste," 1720, 12mo. which obtained for him a prize from the academy at Bourdeaux; "Avis et remèdes, contre la peste," Beziers, 1721, 8vo. "On asthma and on the gout," in which complaints he recommends the Venice soap as a powerful auxiliary; "Sur la maniere de traiter la petite verole," Beziers, 1736, 4to. and some years after, "On the best method of preserving the district of Beziers from that disease;" "Recueil des lettres, et autres pieces pour servir à l'histoire de l'academie de Beziers," 1736, 4to. with several other publications; for the titles, see *Eloy Dict. Hist.* He died in 1770.

BOUILLET, HENRY NICHOLAS, his son, was born December 6th, 1729. Treading in the steps of his father, he was made doctor in medicine at Montpellier, and member of the academy of Beziers. He published, in 1759, in 4to. "Observations sur l'anasarque, le hydropesies de poitrine, des pericarde," &c. *Haller. Bib. Botan.*

BOUILLEUR DE CANARI, in *Ornithology*, the provincial name by which the Ani bird is known among the creoles and negroes in Guiana.

BOUILLON, among *Farriers*, a lump of excrescence of flesh, growing either on or just by a horse's frush, and making him halt.

BOUILLON, in *Geography*, a town of France, in the department of the Ardennes, and chief place of a canton, in the district of Sedan; the place contains 1,973, and the canton 4,340 inhabitants. The territory comprehends 167½ kilometres, and 17 communes.

BOUILLY, a town of France, in the department of the Aube, and chief place of a canton, in the district of Troyes; 7 miles S. of Troyes. The place contains 790, and the canton 9,310 inhabitants. Within the territory are 212½ kilometres, and 28 communes.

BOVIN, or *BOVING island*, an island of France on the coast of Lower Poitou, south of the river Loire. It is wholly covered with salt pans.

BOVINA AFFECTIO. See *AFFECTIO*.

BOVINA, in *Zoology*, a species of *TÆNIA*, found in the viscera and liver of cattle. This kind is simple, with the vesicle large: body short, with imbricated scales. *Barthol. Hist. Anat. Cent. Goeze, &c.*

BOVINO, in *Geography*, a city of Naples, in the province of Capitanata, and see of a bishop, suffragan of Benevento. It stands very high, on the south side of the river Cervaro. It is a duchy belonging to the Guevaras, one of the Spanish families that followed the fortunes of Alphonfus the magnanimous.

BOVIS, in *Entomology*, a species of *PEDICULUS*, with which cattle are infested. Linnæus distinguishes it by the eight transverse ferruginous lines on the abdomen. *Linn. Fn. Succ.*

BOVIS, a species of *OESTRUS*, with brown, unspotted wings; abdomen black, white at the base, and at the tip fulvous. *Fabr. &c.* See *BOTTS, GADJLY*, and *OESTRUS*.

BOUISSE, in *Geography*, a town of France, in the department

partment of the Aude, and chief place of a canton, in the district of la Grasse; 3 leagues S. W. of la Grasse.

BOVISTA, in *Botany*. See LYCOPERDON.

BOVIUM, in *Ancient Geography*, a place in the second route of Antonine's itinerary, placed by some antiquaries at Bangor-Monachorum; by others at Boverton, and by Mr. Horley somewhere near Stretton, at the distance of about 10 miles from Chester. But its true situation is unknown.

BOVIUS, THOMAS, in *Biography*, an empiric of a noble family in Italy, lived in the middle and at the end of the 16th century. He called himself Zephirelem, the name he gave to a tutelar spirit, who, he pretended, watched over and assisted him. He was well stored with general learning, but applied particularly to the study of the law, of medicine, and of chemistry. He wrote against the regular physicians, and boasts of the success of his practice. He contrived an elaborate and concentrated preparation of mercury and gold, first dissolved in a kind of aqua regia, which he called his Hercules. With this he professed to cure malignant and pestilential fevers, the plague, and the lues venerea. He condemned the method used in making the decoction of the woods, by which their volatile parts, in which he contends their virtue reside, were dissipated. He cured epilepsies with a preparation of antimony, and suppressed menfes with hellebore. He expelled a tape worm from one of his patients, measuring, he says, fifty yards in length. He condemns bleeding, except in certain aspects of the heavens. He prepared "aurum potable," with which he pretended to have performed great cures. He laughs at Capivaccius, who had dismissed a patient as incurable, whom he afterwards restored to health. He was addicted to alchemy, and acknowledges he was indebted for much of his knowledge to Arnold de Villanova. He pretends to have cured upwards of 7000 patients. But notwithstanding his boasting, Claudius Gellus, who undertook to refute him, in a small tract, since joined to Bovius's works, shews he was no physician, and that he was very little consulted. The titles of his works are, "Flagello contro de medici communi detti rationali," 4to. Venet. 1583; "Fulmine contro de medici putatitii rationali," 4to. Verona, 1592; "Melampygo, ovvero confusione de medici falsi e del Claudio Gelli," Verona, 1595, 4to. He discovered that a disease, affecting the inmates of a monastery, was occasioned by their cooking their food in copper vessels, not well tinned. His works, which separately passed through several editions, were collected and printed at Venice, in 1626, 12mo. Haller. Bib. Med. Practica.

BOUKA, in *Geography*, an island of the Pacific ocean, so called by Bougainville, from the frequent use of this term among the natives, separated by a narrow channel from Bougainville island. It is sometimes called lord Anson's island. The vast plantations of cocoa-nut trees which adorn its shores indicate a numerous population. The natives are dextrous in the use of their canoes: they seem to be acquainted with the method of barter; and from the value which they affix to nails and other articles of hardware, they indicate a knowledge of the use of iron. They are addicted to gaiety, and passionately fond of music, especially of the most brisk and noisy tunes. The colour of their skin is blackish; they are of a middling stature; and their muscles, distinctly seen as they are naked, indicate great strength. Their figure, though not very agreeable, is very expressive. Their heads are very large, their foreheads broad, like the other parts of their faces, which are very flat; their chins large and prominent, their cheeks full, their noses flat, their mouths very wide, and their lips thin; their ears are loaded with large rings made of shells, by which they are very

much extended. Some have red and white streaks traced upon their bodies; and some have bracelets formed of the fibres of the cocoa-nut husk. Their hair is curled, thick, and bulky; and they pluck the hair from every other part of the body. They handle the bow with much address; and their industry seems to be particularly directed to the fabrication of their arms. Their canoes are formed of several planks, ingeniously constructed, and adapted for a quick motion. The north point of Bouka is in S. lat. $5^{\circ} 5' 36''$, and $154^{\circ} 29'$ E. long. Labillardiere's Voyage in search of La Péroule, vol. i. p. 375, &c.

BOULAC, BOULAK, or BULAK, a large, irregular, and pleasant town, about 2 miles long, but not very wide, built on the east side of the harbour of Grand Cairo, and about half a league distant from it. The road leading to it appears to be one of its streets; and the crowd and bustle of the place indicate the entrance of a populous and commercial city. Boulac is the port of Lower Egypt, as well as of Cairo, as Misr-el-Attike is of Upper Egypt; and here all the merchandize is landed which comes from Damietta and Alexandria. It contains magnificent public baths, and large "Okals," which are square buildings round a great court with a portico, that supports a winding gallery. The ground floor is composed of spacious warehouses; and the next floor contains apartments without furniture and without ornament. These okals are inhabited by strangers, who there deposit their merchandize. One single gate, like that of the citadel, secures them from insult at the time of the revolts. These khans are the only inns to be met with in Egypt. The traveller is obliged to furnish them, and dress his victuals there; for in this country a dinner is not to be had for money. The okal built by Ali Bey the great, and called the Alexandrian okal, is equally extensive and convenient, and chiefly used for goods brought from that city. From all the houses at Boulac thousands of boats may be seen at anchor, of every shape and of every size. Some of them are strong and solid, and have two masts, and are employed in transporting merchandize. These have usually a large chamber for the passengers. Others, lighter and without deck, only serve to convey the people from one shore to the other. Those which are used in voyages of pleasure are adorned with painting and sculpture, and have handsome apartments covered with carpeting, and sheltered from the sun. In these the rich amuse themselves by breathing that cool air, which is incessantly supplied by the Nile. With a favourable wind, and when the sail is spread, these light vessels seem to fly upon the water; but when the wind is contrary, a number of robust men row them with great rapidity. Cleopatra, who knew the charms of these water-parties, and the variety of landscapes which diversify the verdant banks of the Nile, engaged Cæsar in one of them, and carried him even into Upper Egypt. Gardens, occupying the fertile grounds between the houses of Boulac, and between this port and Cairo, afford an ample supply of fruits and vegetables. In the middle of the river, nearly over-against Boulac, is an island, where Murad Bey has a kind of prospect house, or place of retirement, and here are also several gardens. Opposite Boulac, upon the west bank of the Nile, is the small village of "Embabe," or "Embabil," composed of wretched round huts of earth under the sycamore trees, by which they are propped. Some few houses of brick hardened in the sun, and a small mosque, lose themselves at a distance, among the foliage of date and tamarind trees. This village is famous for the excellent quality of its butter, with which it supplies the inhabitants of Cairo; and, indeed, it is the only place in Egypt where butter can be eaten fresh; every where else, in that country,

it is good for nothing. The fertile plains adjacent to Embabe, on the western side, are enriched with several kinds of culture; and in particular they produce a sort of lupins, of the seeds of which there is a great consumption in Egypt. These are boiled with salt and water, and eaten, after being stripped of the thick and hard skin with which they are covered. They are sold ready dressed in the streets and markets. By the Christians in the east, lupins, called "Embabens," from the place of their growth, are eaten as a stimulant for drinking brandy. Flour is also made of them, which is adapted to clean the hands and soften the skin. The stalk, reduced to ashes, is preferred to other charcoal in the composition of gun-powder.

Half a league to the north-east of Boulac is the old castle of "Hellé," so called, probably, from "Heliopolis," not far distant; it is now falling into ruins. Here the Beys, attended with brilliant retinues, receive the new pacha, to conduct him in pomp to the prison, whence they have just expelled his predecessor. In the environs of Hellé are spacious inclosures, where orange, lemon, and pomegranate trees grow luxuriantly, and form, with sycamores and palms, bowers and groves of delicious fragrance and refreshing coolness. Savary. Sonnini. Brown.

BOULAI, CÉSAR-EGASSE DU, in *Biography*, register, historiographer, and rector of the university of Paris, was a native of St. Ellier, in Maine, and became, for many years, professor of rhetoric in the college of Navarre. His treatise of rhetoric, entitled "Speculum eloquentiæ," was much esteemed; and he also published, in French, a "Thesaurus of Roman Antiquities," fol. Paris, 1650; but he acquired his highest reputation from a "History of the university of Paris," in 6 vols. fol. containing, indeed, many fabulous relations with regard to the early periods of the university, but much curious information concerning the lives and writings of the literati of France, and of other countries. Boulai wrote Latin verses with tolerable ease and purity. He died in 1678. Gen. Dict.

BOULAINVILLIERS, HENRY DE, count de St. Saire, &c. was born at St. Saire in 1658, and educated in a seminary of the fathers of the oratory. His first profession was that of arms, which he quitted on the death of his father, and on account of the deranged state of his domestic affairs. From this time he ardently pursued his favourite studies of history and genealogy, both for his own amusement, and the instruction of his children. Voltaire, qualifying his commendation by ascribing to him that attachment to system, which perverted his narrations, says of him, that he was the most learned gentleman in the kingdom, with respect to history, and the best qualified to write that of France. But Montesquieu, as well as the president Henault, have entirely rejected his assertions concerning the commencement of the French monarchy; and the former characterizes him as "possessing more wit than understanding, and more understanding than knowledge." Such was his respect for nobility, that he entitles the feudal system, "the master-piece of human art." Inclined as he was, in some respects, to free-thinking, he had his systematic prejudices, and avowed his faith in judicial astrology. In all his writings, however, his intentions seem to have been those of a good citizen. His works are, "A History of France, to the reign of Charles VIII." 3 vols. 12mo.; "Historical Memoirs on the ancient government of France, to the time of Hugh Capet;" "History of the Peerage of France;" "Dissertations on the Noblesse of France;" "State of France," 6 vols. 12mo.; "Memoir on the Administration of the Finances," 2 vols. 12mo.; "History of the Arabians and of Mahomet," left unfinished, but published after his death, both at London

Vol. V.

and Amsterdam; in which work, it seems to have been his aim to represent Mahomet as a hero, and an accomplished statesman; but in doing this, he has deviated much from true history. This work subjected him to the suspicion of indifference with regard to Christianity; but the Catholics have endeavoured to adduce attestations to his piety, at the time of his death, which happened in 1722. All his works on French history have been collected in 3 vols. folio. Nouv. Dict. Hist.

BOULAN, in *Geography*. See BULAM.

BOULANCHAIR, a town of Asiatic Turkey, in the province of Aladulia; 20 miles S. W. of Malatia.

BOULANGER, NICHOLAS-ANTHONY, in *Biography*, was born at Paris in 1722, and devoting himself to the study of mathematics and architecture, he accompanied the baron de Thiers to the army, as engineer. On his return, he was employed in the construction of bridges and causeways, and executed various public works in Champagne, Burgundy, and Lorraine. From contemplating, in the exercise of his profession, the changes which have taken place in the surface of the earth, he was led to extend his views and researches to the changes of manners, government, and religion; and, in order to acquaint himself more accurately and extensively with these subjects, he applied to the revival, or improvement of his knowledge of Greek and Latin, and to the study of the oriental languages, both ancient and modern; and if his life had been prolonged, he would have become one of the most learned men in Europe. His speculations, however, inclined him to free-thinking; and of this he gave evidence in various publications. Such were, "A Treatise on Oriental Despotism," "Antiquity Unveiled," published after his death; "Christianity Unveiled," not ascertained to have been written by him; "A Dissertation on Elias and Enoch." He also contributed to the Encyclopædia the articles "Deluge," "Corvée," and "Society." He died in 1759. Nouv. Dict. Hist.

BOULANGER, JOHN, an engraver, who flourished about the year 1657, was a native of France. His first manner of engraving was partly copied from that of Francis de Poilly; but he afterwards adopted a manner of his own, which, though not original, he greatly improved; and, accordingly, he finished the faces, hands, and all the naked parts of his figures very neatly with dots, instead of strokes, or strokes and dots. This style of engraving has been of late carried to a high degree of perfection, particularly in England. Notwithstanding several defects in the naked parts of his figures, and in his draperies, his best prints are deservedly much esteemed. Such are "A Holy Family," from Fran. Corlebet; "Virgin and Child," from Simon Vouet; "The Pompous Cavalcade," upon Louis the XIV. coming of age, from Chauveau; "The Virgin with the infant Christ," holding some pinks, and therefore called "The Virgin of the Pinks," from Raphael; "The Virgin de Passau," from Salario; "Christ carrying his Cross," from Nicolas Mignard; "A dead Christ, supported by Joseph of Arimathea." He also engraved many portraits, and, among others, that of Charles II. of England. He likewise engraved from Leonardo de Vinci, Guido, Champagne, Stella, Coypel, and other great masters, as well as from his own designs. Strutt.

BOULAR, in *Ornithology*. Cotgrave has the long-tailed titmouse, *FARUS CAUDATUS*, under this name.

BOULAY, in *Geography*, a town of France, in the department of the Moselle, and chief place of a canton, in the district of Metz; 4½ leagues N.E. from Metz. The place contains 2,669, and the canton 12,813 inhabitants: its territorial extent comprehends 227½ kilometres, and 37 communes.

BOULCOLACA, among the *Modern Greeks*, denotes the spectre of some wicked person who died excommunicated by the patriarch, re-animated by the devil, and causing great disturbance among the people; of which many strange stories are told. The word is Greek, and is sometimes written βουκολακος, *broukolakos*; and supposed to be derived from βουκος, or βουκα, *mud*, and λακος, a *ditch*, on account of the filthiness of the sight.

BOULDER walls, in *Building*, a kind of walls, built of round flints or pebbles, laid in a strong mortar; used where the sea has a beach cast up, or where there is plenty of flints.

BOULDOC, **SIMON**, in *Biography*, an eminent apothecary and chemist of Paris, and for many years demonstrator in Chemistry, and associate in the Royal Academy of Sciences, furnished the memoirs of that society with numerous dissertations, containing analyses of the most popular and valuable vegetable productions used in medicine, which are still valued for their neatness and accuracy. The principal are, the analysis of ipecacuanha and of colocynthis, published in the memoirs of the academy for the year 1701; of jalap, hellebore, and focotrine aloes, in 1708; of catechu, (*terra japonica*) 1709; shewing this substance to be a vegetable production, and not an earth, as it had been esteemed; of rhubarb and opium, published in 1712; of the cucumis agrestis, in 1719. He made an extract from the wild cucumber, which was a powerful hydragogue, and which might be given in doses of 24 grains, with perfect safety; also an elaterium, the dose of which was six grains. He died, far advanced in years, in 1729. His son,

BOULDOC, **GILES FRANCIS**, born at Paris, February 20th, 1675, succeeded to his honours and appointments, and continued the same line of research. His essays, containing analyses of several purging salts, and of some mineral waters, were also published in the memoirs of the Royal Academy of Sciences. He died at Versailles the 17th of January, 1742, much regretted by the king and queen, to whom he had been many years apothecary. Haller Bib. Bot. Eloy Dict. Hist.

BOULEAU LAKE, in *Geography*, a lake of North America, in the vicinity of Bear Lake, with which it communicates by rivers and small lakes. This lake might, with greater propriety, be called a canal, as it is not more than a mile in breadth. Its course is rather to the east of north for 12 miles, to Portage de L'Isle. The Bouleau Portage is in N. lat. 54° 50'.

BOULENE, a town of France, in the department of the Gard, five miles E. of Pont St. Esprit.

BOULETERANES, a town of France, in the department of the Eastern Pyrenées; 12 miles W. of Perpignan.

BOULEY BAY, called also Trinity Bay, lies on the N.E. point of the island of Jersey, and E. from Bonnhaven.

BOULIMY, in *Medicine*. See **BULIMY**.

BOULINIS, or **BOULIGNIS**, in *Commerce*, a copper coin struck at Bologna, in Italy, equivalent to the **BAIOCCO**.

BOULKI, in *Geography*, a town of Poland, in the palatinate of Lemberg; 16 miles S.E. of Lemberg.

BOULLOIRE, a town of France, in the department of the Sarthe, and chief place of a canton, in the district of St. Calais; the place contains 1490 and the canton 9,011 inhabitants; its territory includes 160 kilometres, and nine communes; five leagues E. of Le Mans.

BOULLONGNE, **LOUIS DE**, the *elder*, in *Biography*, a painter, was born at Paris in 1609; and though he was principally distinguished for his ability in copying the works of the most famous ancient painters, and in preserving a

very striking resemblance, he painted historical subjects of his own invention and design; of these there are three in the church of Notre Dame, in Paris, viz. "St. Paul at Ephesus," "The Martyrdom of St. Paul," and "The Presentation of Christ in the Temple." He was painter to the king, and professor in the academy. He died at Paris in 1674.

BOULLONGNE, **BON DE**, son of the former, was born at Paris in 1649, and acquired the principles of painting from his father, whom he resembled in his talent of imitating the works of the greatest masters, and this he did to such a degree as to deceive the best judges. On his return from Italy, where he continued five years, he was admitted into the academy, of which he became a professor, and employed by Louis XIV. at Versailles and Trianon. He excelled in history and portrait; his designs were accurate, and his colouring good. Industrious in his profession, though lively in his temper; he promoted industry among his pupils, in whose improvement and success he warmly interested himself. Besides his paintings in fresco, in two of the chapels of the Invalids, he painted several pieces for the churches and public buildings of Paris, several of which have been engraved. We have also three etchings done by him, from his own compositions, viz. a species of "Almanack;" "St. John in the Desert;" and "St. Bruno in a Landscape;" its companion. He died at Paris in 1717.

BOULLONGNE, **LOUIS DE**, the *younger*, brother of the former, was born at Paris in 1654, and educated under his father, by whose instruction he made such improvement, that he obtained the prize of the academy at 18. His studies were completed at Rome, where he particularly studied the works of Raphael, and from his copies which were sent home, the Gobelins tapestries were executed. After his return he was received into the academy in 1680; and his works in the churches of Notre Dame and the Invalids, and particularly his frescos in the chapel of St. Augustin, were so much esteemed, that Louis XIV. honoured him with his special patronage; allowing him a considerable pension; conferring upon him the order of St. Michael; choosing him designer of medals to the Academy of Inscriptions, after the death of Anthony Coypel; appointing him his principal painter, and ennobling him and all his descendants. The Academy of Painting also chose him first for its rector, and afterwards director, which place he occupied till his death. He chiefly excelled in historical and allegorical subjects. From his performances it appeared, that he had carefully studied the most eminent masters; his colouring was strong, his composition was in a good style, the airs of his heads had expression and character, and his figures were correctly designed. Two of his historical paintings in the church of Notre Dame are particularly distinguished, viz. "Christ and the Centurion," and the "Good Samaritan." His etchings, of which there are a few, are spirited and free, but incorrectly drawn. Among these are the "Scourging of St. Andrew," from Paolo Veronese; the "Martyrdom of St. Peter," and the "Martyrdom of St. Paul," its companion, from his own composition. His regular attendance at the academy, and his advice to the students, commanded respect: and the general mildness and affability of his disposition engaged esteem among those who knew him. He raised a considerable fortune by his profession, and died in 1734. Two sisters of this family, "Genevieve" and "Magdalen," painted well, and were members of the Royal Academy in 1669. D'Argenville. Pilkington. Strutt.

BOULLONOIS, in *Geography*, a country of France, so called before the revolution, in the northern part of Picardy, of which the capital was Boulogne.

BOULOGNE,

BOULOGNE, or **BOULOGNE-SUR-MER**, a city and sea-port of France, lying in a bay of the same name, in the English channel, and chief place of a district, in the department of the Straits of Calais. The city is computed to contain 10,558, and the canton 16,199 inhabitants; the territory comprehends 70 kilometres, and 8 communes. Boulogne is divided into the upper and lower town; the upper, and smaller, is seated on the declivity of the Chalk mountain, and surrounded with walls; the lower town lies nearer to the sea, has no walls, is larger, and contains a greater number of inhabitants than the other. By its connection with the harbour, formed by the river Liane, it monopolizes almost the whole of the trade. Before the revolution it was the see of a bishop, suffragan of Rheims, the seat of a governor, a commandant, a king's lieutenant, &c. The entrance into the harbour is difficult, and defended by a small fort; but ships of war can proceed no farther than the road of St. John, and trading ships can only enter it with the tide. In the road there is good anchorage, sheltered from easterly winds, in five to fifteen fathoms, and a clean hard sand; but to the northward of the village it is foul and stony ground; and there are also some small rocks along the coast, so that ships must not approach too near the southward of the road. The English channel, from about Romney in Kent to the bottom of the bay of Boulogne, is about 30 miles wide; and this short distance was formerly favourable to the smugglers of English wool. Boulogne is the "Gesoriacum" of the ancients, and it was denominated "Bononia" under Constantine. The famous pharos, or light-house, at this place, was erected of an octagonal form, about 200 feet in circumference, and 66 feet in diameter, by Caligula, and it was repaired by Charlemagne in 810. In 1545, when the English took this city, they surrounded the ancient structure with towers; and it was thus preserved till the 29th of July 1644, when the whole of it fell, and nothing now remains but rubbish. Mr. Lyon, in his "Observations on the ancient *Portus Iticius*," where Julius Cæsar embarked for Great Britain, contends (see *Archæologia*, vol. x.), that this could not have been Calais, nor any place to the eastward of it, but that it was to the westward, and at Boulogne. From a piece or two, which he procured, of the materials of the ancient structure above-mentioned, he infers that the pharos was constructed at Boulogne of a petrification called by fossilists tophus; and that it is of the same kind with that used in the construction of the other light-house, built by the Romans on the hill at Dover, which still exists, though gradually sinking into decay. N. lat. 50° 43' 33". E. long. 1° 36' 33". High-water 10' 30'.

BOULOGNE, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the district of St. Gaudens; 4 leagues N. of St. Gaudens. The place contains 1,476, and the canton 10,692 inhabitants; the territory comprehends 247½ kilometres, and 25 communes.

BOULON, LE, a town of France, in the department of the Eastern Pyrenees, taken by the Spaniards in 1793, and re-taken in 1794; 4 leagues south of Perpignan.

BOULTER, HUGH, in *Biography*, a prelate eminently distinguished by his charity and public spirit, was born in or near London, in 1671, and from Merchant-Taylor's school removed to Christ-church college in Oxford, whence he was elected, together with Addison, a demy of Magdalen college, of which he afterwards became fellow. By the influence of lord Sunderland, he obtained his first ecclesiastical promotion to the parsonage of St. Olave in Southwark, and the archdeaconry of Surry. In this situation he remained, assiduously discharging his pastoral duties, for several years;

but in consequence of having ingratiated himself with king George I., when he accompanied him to Hanover, in 1719, as his chaplain, he obtained, by royal favour, in that year, the bishopric of Bristol, and deanery of Christ church, vacated by the death of Dr. Smallbridge. In 1724, he was urged by the king's absolute commands to accept the archbishopric of Armagh, and primacy of Ireland; in which trying station he manifested that wisdom and firmness, which were peculiarly suited to the distracted condition of the country. Intent upon promoting the true interests of that country, he pursued every measure which prudence or benevolence could suggest for this purpose. In 1728, and again in 1740, he diverted the horrors of famine, and liberally supplied the necessities of the poor from his own fortune. He also exerted himself in teaching and converting the poor natives, and, with this view, in promoting the establishment of the protestant charter schools. His popularity, indeed, for some time declined, in consequence of a plan, which ultimately proved beneficial, for remedying the scarcity of silver, by diminishing the value of gold coin; but it was not long before he regained the public favour, inasmuch that he left behind him a character highly respected and beloved. Nevertheless, he always inclined to the English interest, in opposition to the Irish, and recommended to the English government a steady adherence to it in all their favours and promotions. As Dr. Swift was attached to the contrary interest, he thought unfavourably of him, and represented him to the ministers in England as a dangerous and mischievous person. However, though the opinions of these great men were discordant, they both probably aimed at the same object, or the good of Ireland. The primate was on no occasion actuated by a party-spirit, but wished by the aid of any connections to do all the good in his power. His whole life was devoted to business; and when he was, for the 13th time, one of the lord's justices of Ireland, he had occasion to visit England, and died here in 1742. He was interred in Westminster abbey, and a splendid monument has been erected to his memory. A collection of his letters to ministers of state, and others, was published at Oxford in 1769, in 2 vols. 8vo. containing much information with regard to Irish politics during his primacy. Biog. Brit.

BOULTINE, or **BOLTEL**, in *Architecture*, the workman's term for a convex moulding, whose periphery is just $\frac{1}{2}$ of a circle placed next below the plinth, in the Tuscan and Doric capitals.

BOULTON, RICHARD, in *Biography*, a practitioner in medicine and surgery of the city of Chester, published "A Treatise on the Causes of muscular Motion," 1697, 12mo. He attributes the action of the muscles to a sort of fermentation, arising from the commixture of the blood and the serous fluid, in certain glands, which he supposed to exist in the fleshy part of the muscles; a doctrine nearly similar to that held by Borelli. "A System of rational and practical surgery," 1713, 8vo. This is taken principally from the works of Wheman, of which it is little more than an abridgement. "A Physico-mechanical Account of the Gout, King's Evil, &c." 1715, 8vo. London; and an "Essay on external remedies," published about the same time. Haller Bib. Anat. Med. et Chir.

BOULUKE, in the *Military Orders of the Turks*, a body of the janizaries, with an officer in the place of a colonel at their head, sent upon some particular enterprize; they are selected out of the body for this, and, as soon as the business is over, are received again into their former companies.

BOUNCE, in *Ichthyology*, a name given by the people of the western parts of England to a species of the shark tribe;

tribe; the *squalus canicula* of Linnæus; *catullus major vulgaris* of Ray and Willughby; *greater dog-fish* of English writers. See CANICULA.

BOUND, in *Dancing*, a spring from one foot to the other, by which it differs from a hop, where the spring is from one foot to the same. It also differs from a half *coupée*, as, in the latter, the body always bears on the floor, either on one foot or the other; whereas, in the bound it is thrown quite from the floor.

BOUND-masonry. See MASONRY.

BOUND, hide. See HIDE-bound.

BOUND, hoof. See HOOF-bound.

BOUND-bailiffs. See BAILIFF.

BOUNDS of an Eclipse. See ECLIPSE.

BOUNDS of lands. See ABUTTALS.

BOUNDARY COLUMN. See COLUMN.

BOUNTY, in *Commerce*, denotes a premium paid by the government to the exporters of certain commodities, on their taking oath, or, in some cases, giving bond, not to re-land the same in England.

Bounties, as they respect the fisheries, are either *perpetual* or *temporary*. The former are payable on the export of pilchards, or shads, cod-fish, ling, or hake, whether wet or dried, salmon, white herrings, red herrings, and dried red sprats, being of British fishery and curing. Stats. 5 Geo. I. c. 18. § 6. 26 Geo. III. c. 81. § 16. The latter are payable on the tonnage of ships carrying on the British and Greenland fisheries; on the quantity of fish taken in the British and Newfoundland fisheries; on the quantity of oil, head-matter, blubber, and whale-fins, taken in the southern whale-fishery, and on the export of pilchards. See FISH-ERY, and NAVIGATION *Ad*. The bounty on cordage manufactured in Great Britain, not less than three tons, is 2s. 4 $\frac{1}{2}$ d. per cwt. 6 Geo. III. c. 45. 26 Geo. III. c. 85. 31 Geo. III. c. 63.

Bounties have been granted by several statutes on the exportation of corn, when it does not exceed stipulated prices at the port of exportation.

Bounties upon exportation, considered in a more general view of them, are, in Great Britain, frequently petitioned for, and sometimes granted to the produce of particular branches of industry. By means of these our merchants and manufacturers are supposed to be able to sell their goods as cheap or cheaper than their rivals in the foreign market; and a greater quantity, it is said, will thus be exported, and the balance of trade consequently turned more in favour of our own country. They serve, as those who favour them maintain, the purpose of a kind of premium, inducing foreigners to buy our goods, and in this manner to enrich the whole country, and put money into all our pockets by means of the balance of trade. Bounties, it is allowed, says Dr. Smith (*Inquiry into the Nature and Causes of the Wealth of Nations*, vol. ii. p. 261, &c. ed. 6.), ought to be given to those branches of trade only, which cannot be carried on without them. But every branch of trade, in which the merchant can sell his goods for a price which replaces to him, with the ordinary profits of stock, the whole capital employed in preparing and sending them to market, can be carried on without a bounty. Those trades only require bounties, in which the merchant is obliged to sell his goods for less than it really costs him to send them to market; and the bounty is given in order to compensate this loss, and to encourage him to continue, or perhaps to commence, a trade, of which the expence is supposed to be greater than the returns, so that every operation consumes a part of the capital employed in it.

An ingenious author, in his "Tracts upon the Corn-

Trade," has clearly shewn, that since the bounty upon the exportation of corn was first established, the price of the corn exported, valued moderately enough, has exceeded that of the corn imported, valued very high, by a much greater sum than the amount of the whole bounties which have been paid during that period. Hence, he infers, that, upon the true principles of the mercantile system, this forced corn-trade is beneficial to the nation; the value of the exportation exceeding that of the importation by a much greater sum than the whole extraordinary expence which has been incurred by the public in its exportation. But Dr. Smith argues, that this extraordinary expence, or the bounty, is the smallest part of the expence which the exportation of corn really costs the society. The capital employed by the farmer should also be taken into the account; and unless the price of the corn, when sold in the foreign markets, replaces, not only the bounty, but this capital, together with the ordinary profits of stock, the society is a loser by the difference, or the national stock is so much diminished. But the very reason for which it has been thought necessary to grant a bounty, is the supposed insufficiency of the price to do this. It has been said, that the average price of corn has fallen considerably since the establishment of the bounty. But, allowing this to be the case, it must have happened, says Dr. Smith, in spite of the bounty, and cannot possibly have happened in consequence of it; and he traces this gradual fall in the average price of corn to that gradual and insensible rise in the real value of silver, which he supposes to have taken place in the general market of Europe, during the course of the last century. In his opinion it seems to be altogether impossible, that the bounty could ever contribute to lower the price of grain. In years of plenty, the bounty, by occasioning an extraordinary exportation, necessarily keeps up the price of corn in the home market above what it would naturally fall to; and this was the avowed purpose of the institution. In years of scarcity, though the bounty is frequently suspended, yet the great exportation which it occasions in years of plenty must frequently hinder, more or less, the plenty of one year from relieving the scarcity of another. In both, therefore, the bounty necessarily tends to raise the money price of corn somewhat higher than it otherwise would be in the home market. It has been thought, however, by many persons, that the bounty tends to encourage tillage; partly, by opening a more extensive foreign market to the corn of the farmer who produces it, and partly, by securing to him a better price than he could otherwise expect in the actual state of tillage. This double encouragement, it is conceived, must, in a long period of years, occasion such an increase in the production of corn, as may lower its price in the home market, much more than the bounty can raise it, in the actual state of the tillage, whatever it may be, at the end of that period. To this reasoning Dr. Smith replies, that whatever extension of the foreign market can be occasioned by the bounty, must, in every particular year, be altogether at the expence of the home market; as every bushel of corn, which is exported by means of the bounty, and which would not have been exported without it, would have remained in the home market to increase the consumption, and to lower the price of that commodity. The corn bounty, as well as every other bounty upon exportation, imposes upon the people two different taxes; viz. the tax, which they are obliged to contribute towards paying the bounty, and that which arises from the advanced price of the commodity in the home market, and which, as the whole body of the people are purchasers of corn, must, with regard to this particular commodity, be paid by the whole body of the people.

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This second tax is by much the heaviest of the two; amounting, for every five shillings per quarter of wheat contributed towards the payment of the first tax, to 6l. 4s. towards the payment of the second. This heavy tax, resting upon the first necessary of life, must either reduce the subsistence of the labouring poor, or it must occasion some augmentation in their pecuniary wages, proportionable to that in the pecuniary price of their subsistence. In the one way, it must tend to restrain the population of the country, as it reduces the ability of the labouring poor to bring up their children; and in the other, it must tend to restrain the industry of the country, as it reduces the ability of the employers of the poor to employ so great a number as they otherwise might do, in proportion to the degree of its operation in both respects. "The extraordinary exportation of corn, therefore, occasioned by the bounty, not only in every particular year, diminishes the home, just as much as it extends the foreign market and consumption, but by restraining the population and industry of the country, its final tendency is to stunt and restrain the gradual extension of the home market; and thereby, in the long run, rather to diminish, than to augment, the whole market and consumption of corn."

It has been thought, however, that the enhancement of the money price of corn must necessarily encourage its production, by rendering that commodity more profitable to the farmer. To this plea Dr. Smith replies, "that this might be the case if the effect of the bounty was to raise the real price of corn, or to enable the farmer, with an equal quantity of it, to maintain a greater number of labourers in the same manner, whether liberal, moderate, or scanty, than other labourers are commonly maintained in his neighbourhood. But neither the bounty, nor any other human institution, can have any such effect. It is not the real, but the nominal price of corn, which can in any considerable degree be affected by the bounty. And though the tax, which that institution imposes upon the whole body of the people, may be very burdensome to those who pay it, it is of very little advantage to those who receive it. The real effect of the bounty is not so much to raise the real value of corn, as to degrade the real value of silver, or to make an equal quantity of it exchange for a smaller quantity, not only of corn, but of all other home-made commodities; for the money price of corn regulates that of all other home-made commodities." The money price of corn regulates the money price of labour, and of all the other parts of the rude produce of land, which, in every period of improvement, must bear a certain proportion to that of corn, though the proportion in different periods may be different. In this latter way, it also regulates the money price of the materials of almost all manufactures, and that of manufacturing art and industry. Though in consequence of the bounty, the farmer should be enabled to sell his corn at an advanced price, and to pay his landlord a proportionable advanced rent; yet if, in consequence of this rise of the price of corn, the money thus obtained will purchase no more home-made goods of any other kind, than the lower price would have done before, neither the circumstances of the farmer, nor those of the landlord, will be much mended by this change. The farmer will not be able to cultivate much better: the landlord will not be able to live much better. In the purchase of foreign commodities, this enhancement in the price of corn might give them some little advantage; but in that of home-made commodities, which constitute the whole expence of the farmer, and the far greater part even of that of the landlord, it can give them none at all.

the real, as the nominal price of our corn; as it augments, not the quantity of labour which a certain quantity of corn can maintain and employ, but only the quantity of silver which it will exchange for; discourages our manufactures, without rendering any considerable service to our farmers or country-gentlemen. Although it puts a little more money into the pockets of both, yet if their money sinks in its value, as to the quantity of labour, provisions, and home-made commodities of all different kinds, which it is capable of purchasing, as much as it rises in its quantity, the benefit accruing from it will be little more than nominal and imaginary. There is, indeed, one class of men, to whom the bounty may be essentially serviceable; and this consists of the corn-merchants, the exporters and importers of corn, who are most anxious for the continuance or renewal of the bounty.

Bounties upon the exportation of any home-made commodity are liable to the general objection, that may be made to all the different expedients of the mercantile system, which is that of forcing some part of the industry of the country into a channel less advantageous than that into which it would run of its own accord, and also to the particular objection of forcing it into one that is actually disadvantageous; the trade which cannot be carried on otherwise than by means of a bounty, being necessarily a losing trade. The bounty upon the exportation of corn is liable to this farther objection, that it can in no respect promote the raising of that particular commodity, of which it was meant to encourage the production. With a view of encouraging the production of any commodity, a bounty upon production would operate more directly than one upon exportation; and it would have the advantage of imposing only one tax upon the people, or that which they must contribute in order to pay the bounty. Bounties upon production, however, have been very rarely granted. The prejudices established by the commercial system have taught us to believe, that national wealth arises more immediately from exportation than from production; and accordingly, it has been more favoured, as the more immediate means of bringing money into the country. It has been also said, that bounties upon production have been found more liable to frauds than those upon exportation. The latter, however, have not been altogether exempt from this charge. A bounty upon exportation has sometimes enabled the merchant and manufacturer to send abroad the surplus goods of an overstocked market, and to keep up the price of what remains in the home-market: and, therefore instances have occurred, in which the undertakers of particular works have privately agreed to give a bounty out of their own pockets upon the exportation of a certain portion of the goods, in which they have dealt; and this expedient has answered the purpose, by doubling the price of their goods in the home market, notwithstanding a very considerable increase in the produce.

Something like a bounty upon production, however, has been granted upon some particular occasions. Of this nature are the tonnage bounties given to the white-herring and whale-fisheries. These, it may be supposed, have a direct tendency to render the goods cheaper in the home-market than they otherwise would be. In other respects, their effects are the same as those of bounties upon exportation. By means of them a part of the capital of the country is employed in bringing goods to market, of which the price does not repay the cost, together with the ordinary profits of stock. But though the tonnage bounties on the fisheries do not contribute to the opulence of the nation, yet they may be thought to contribute to its defence, by augmenting the number of

its sailors and shipping. Dr. Smith suggests, however, that this may sometimes be done by means of such bounties, at a much smaller expence than by keeping up a great standing navy (if such an expression may be used), in the same way as a standing army; and the ingenious author inclines to believe, that in granting at least one of these bounties, the legislature has been grossly imposed upon. On this subject he makes the following observations. First, the herring-bus bounty is too large. Secondly, the bounty to the white herring fishery is a tonnage bounty, and proportioned to the burden of the ship, not to her diligence or success in the fishery; whence it has been too common for vessels to fit out for the sole purpose of catching, not the fish, but the bounty. Thirdly, the mode of fishing, for which this tonnage bounty in the white-herring fishery has been given (by buffes or decked vessels from 20 to 80 tons burden), seems not so well adapted to the situation of Scotland as that of Holland, from which country it seems to have been borrowed. The bounty granted to the bus fishery is necessarily a discouragement to the boat-fishery, which seems best adapted to the peculiar situation of Scotland, intersected by arms of the sea running up a long way into the land, and called sea-lochs, and which, by the operation of the bus bounty, is gone almost entirely to decay. Fourthly, in many parts of Scotland, during certain seasons of the year, herrings supply a great part of the food of the common people; and, therefore, a bounty, which tended to lower their price in the home market, might contribute to very general relief. But the herring-bus bounty contributes to no such good purpose. It has ruined the boat-fishery which is best adapted for the supply of the home market, and the greater part of its produce is sent abroad. Another ingenious writer, Dr. Anderson (*ubi infra*), has pointed out similar defects attending the fisheries of Scotland; and he proposes, for remedying them, that a reasonable bounty should be allowed on every barrel of herrings properly cured; and that the bounty upon buffes per ton should be lowered, and these vessels be prohibited from fishing within a limited distance of the coast. This would allow the natives to fish in their creeks with freedom; and it would likewise allure merchants to come and purchase the fish when fresh caught, and cure them for themselves. But as the most important improvement, he proposes that the herring and Greenland whale-fisheries should be made to go hand in hand, and mutually assist one another. The whale-fishery, he observes, has been greatly retarded by the large size of the vessels which have been usually employed in it, and the mismanagement that always attends public companies in matters of trade. To prevent this, in some degree, for the future, Dr. Anderson proposes, that the bounty should be granted to vessels of a smaller size; and that all restrictions, with regard to the number of hands, provisions, tackle, &c. should be entirely abolished; in lieu of which the vessels should be only obliged to pursue the fishing for a certain limited time (if not sooner loaded), without following any other employment. As these small vessels would be equally proper for the herring fishery as for that in the Greenland seas; and as in both fisheries the necessary number of hands is nearly the same, it would be easy for these adventurers, on their return from the Greenland seas, to put ashore their loading, with the fishing apparatus, and take on board the tackle, &c. necessary for the herring-fishery, and to proceed immediately to the proper stations in search of that kind of fish. It is further proposed, that instead of fixing the rendezvous for the herring-fishery precisely to the 22d of June and 1st of October, as at present, ships might be entitled to receive the bounty, if they began fishing on any day between the two periods above-mentioned; the ships being obliged to continue three months

from the time of their entry, or to the end of the fishing season following, if they have not sooner completed their lading. By such regulations, the loss of time would be prevented; and adventurers would be induced to fit out small vessels at a time when trade was dead; and they would conduct the business at a less expence, and with greater profit, than large trading companies. See FISHERY.

In particular manufactures that are deemed necessary for the defence of society, and for the supply of which it would not always be prudent to depend upon our neighbours, and that could not otherwise be supported at home, it would not be unreasonable to tax all other branches of industry for their support. Upon this principle the bounties upon the exportation of British made sail-cloth, and British made gunpowder, may both be vindicated. But it can seldom be reasonable to tax the industry of the great body of the people, in order to support that of some particular class of manufacturers. However, in a season of great prosperity, when the public enjoys a greater revenue than it knows well what to do with, it may, perhaps, be as natural to give such bounties to favourite manufacturers, as to incur any other idle expence. "In public, as well as in private expences, great wealth may, perhaps, frequently be admitted as an apology for great folly. But there must surely be something more than ordinary absurdity in continuing such profusion in times of general difficulty and distress."

When a bounty may be considered as a drawback, it is not liable to the same objections with that which is properly a bounty. Thus, the bounty upon refined sugar exported is a kind of drawback of the duties upon the brown and muscovado sugars from which it is made. That species of refined sugar upon which the bounty is granted is denominated, in the statute-book, "sugar in the loaf and whole, being nett." Upon the export of this sort of sugar the bounty was raised by 5 Geo. III. c. 45. to 14s. 6d.; and a further bounty of 11s. 6d. was granted by 21 Geo. III. c. 16., in consequence of an additional duty of 6s. per cwt. laid in 1781 on raw sugar imported. The whole bounty amounts to 26s. per cwt. When parliament, in 1791, by 31 Geo. III. c. 15. laid a further duty of 2s. 8d. per cwt. on raw sugar imported from the British plantations, making the import duty 15s. per cwt. in the whole, no addition was made to the bounty on the export of refined loaf. But an addition was made of 3s. 4d. to the drawback, on what the statute calls "ballards, and ground or powdered sugar," and also on "refined loaf broken into pieces," and all sugar called "candy." It was proposed in 1791, when the additional duty of 2s. 8d. was moved, to augment the bounty in the usual proportion; but the sugar refiners remonstrated against the measure, as being, according to their statement, beneficial only to the planters. By a subsequent law it is enacted, that, after the year 1792, whenever the average of the prices of brown or muscovado sugar (taken weekly upon oath before the lord mayor of London, and published in the Gazette) shall exceed, in the six weeks respectively preceding the middle of February, June, and October, the amount of 50s. per cwt. (exclusive of the duty), the drawback on raw sugar exported is immediately to cease for four months, and the bounty on refined is to cease during a like term, but commencing after an interval of one month. From a statement made by Mr. Bryan Edwards (*Hist. of the West Indies*, vol. ii. p. 462.) it appears, that the apparent loss to the revenue, arising from the bounty, is no more than one shilling the cwt. But as every hoghead of sugar loses considerably in weight, after the duty is paid, and before it is either exported or worked up, and the duty is often paid for more than the casks really contain, by the strict regulations respecting

respecting tare, every hoghead, by a moderate calculation (averaging the good and bad sugar), loses 50 lbs. which, at 15s. per cwt. the import duty, makes 7s. 6d. per hoghead loss to the planter, and a clear and certain gain to the revenue, however the sugar may be disposed of. "Thus government is reimbursed for a considerable part of what it appears to lose by the bounty, and the interest which it gains by a deposit of the whole duties on importation makes up the remainder. "The average annual import of raw sugar is about 160,000 hogheads of 12 cwt. nett; now supposing every ounce of this was to be exported, and receive the drawback of 15s. per cwt. yet, from the difference of weight alone in the same sugar, occasioned by an unavoidable waste, government would have received in duties, from this single article, between 50 and 60,000l. per annum more than it refunds in drawbacks and bounties on the same commodity." See DRAWBACK, and SUGAR.

The bounty upon wrought silk exported is also a drawback of the duties upon raw and thrown silk imported. See SILK.

The bounty upon gun-powder exported is a drawback of the duties upon brimstone and salt-petre imported. In the language of the customs, those allowances are called drawbacks, which are given upon goods exported in the same form in which they are imported. When that form has been so altered by manufacture of any kind, as to come under a new denomination, they are called bounties. Bounties are sometimes called premiums, as drawbacks are sometimes called bounties.

Having given a compendious abstract of Dr. Smith's reasoning against the system of bounties, particularly as it is applicable to the exportation of corn, we shall now advert to the arguments alleged by the advocates of this system in its favour. Among these advocates we may reckon Dr. James Anderson, in his letters, entitled "Observations on the means of exciting a spirit of national industry, &c." 4to. 1777; and his "Calm Investigation of the circumstances that have led to the present scarcity of grain in Britain," 8vo. 1801; Mr. Dirom, in "An Inquiry into the corn laws and corn trade of Great Britain, &c." 4to. 1796; Mr. Mackie, in a "Supplement" to the last-mentioned work; and Mr. Malthus, in his "Essay on the principle of population, &c." 4to. 1803. Some of the earliest topics, from which arguments were deduced in favour of the bounty, were its great encouragement of British shipping, and the gold it brought home for paying the balance of exported corn. But exclusively of these arguments, the advocates for the bounty urge that, by forcing a production of corn, greater than the annual consumption of the home market, the bounty provides a reserve against years of deficient crop;—that it secures an adequate profit to the farmer;—that it reduces the prices of corn, which are usually very fluctuating, to a greater uniformity and steadiness;—and that it makes this uniform price rather lower than it otherwise would be. From such considerations, Dr. Anderson, and others on the same side of the disputed question with himself, have inferred, that setting aside the innumerable beneficial effects of a well regulated and efficient bounty on the exportation, added by a duty on the importation of corn, with regard to the population, industry, manufactures, commerce, national wealth, public tranquillity, and augmentation of revenue, it is a measure fraught with multiplied advantages; and "that it could not be abandoned," such is the strong language of Dr. Anderson, "without endangering the welfare of the people, and the very existence of this kingdom, as an independent nation." Upon the four preceding propositions it has been observed by an anonymous writer, seemingly well acquainted with the

subject (Edinburgh Review, N° IX.), that the promised steadiness in the price of corn must be derived from that surplus of produce which is to be reserved in years of a bad crop; this surplus of the average produce above the annual consumption, must be the result of an enlarged encouragement of tillage; and this encouragement, operating by an augmentation of the profits of the farmer, must ultimately consist in an increase of the price of his commodity. The argument, therefore, so far as it depends upon the first three of the above alleged advantages, resolves itself into this single proposition, viz. that the bounty gives the farmer a real advance upon the price of his corn. When it is stated, as a fourth consideration, that it has likewise the effect of lowering the price of corn to the consumers, it is the money price only that can here be consistently understood; a diminution of which is without doubt compatible with an advance of the real price. Consequently, in an investigation of the effects produced by a bounty upon the commerce and growth of corn, the precise subject of inquiry is the effect of that bounty upon the real price, and upon the money price of corn. Dr. Smith, accordingly, who has decidedly pronounced a very different opinion from that above stated, maintains it, by propositions directly the reverse, already detailed, of which the following is a summary:—that it can have no effect in equalizing prices, because there is no surplus to be reserved in years of scarcity;—that there can be no such surplus, because the bounty gives no additional encouragement to agriculture;—that it can give no such encouragement because it occasions no advance of the real price of corn;—and lastly, that its effect is to raise, not to lower, the average money price of that commodity. The anonymous writer above cited, after having illustrated, in a very clear and satisfactory manner, the effect of a bounty, first on the *production* and then upon the *exportation* of bread-corn, in conformity to the principles and reasoning of Dr. Smith, supplies some defects, and corrects some errors that escaped the notice of this very ingenious and accurate author, in his general argument upon the bounty. By separating the extension of the foreign market, from the enhancement of price to the farmer, and treating them as quite distinct, Dr. Smith seems to have overlooked the necessary connection that subsists between them. In both cases, he appears to have too hastily assumed, that a bounty on exportation would *immediately* occasion a rise of the money-price in the home market; and this assumption betrays itself explicitly, when he speaks of it as "a very moderate supposition, that a bounty of 5s. per quarter upon exportation, may raise the price 4s. in the home market." From this assumption, he deduces a separate answer to the alleged enhancement of price; but his remarks on this head, which, as far as they extend, are unexceptionable, are not sufficient to warrant his inference, that the bounty can have no effect in raising the real price of corn; because he has overlooked that *interval* which elapses between the enhancement of the money-price of corn, and its communication to the money-price of labour and other commodities. In his separate answer to the alleged extension of foreign demand, he does not expressly deny the fact, but affirms, that, in every particular year, this is at the expense of the home market; and endeavours to shew, that the bounty also restrains the gradual extension of the home market, by its enhancement of the price. But in affirming, that the quantity exported in every particular year, were it not for the bounty, would remain in the home market, he evidently takes it for granted, that this quantity, though there had been no bounty, would still have been grown; now, this is the very question, upon which he undertakes to prove. his particular

B O U N T Y.

ticular opinion. In endeavouring to shew, that the enhancement of price, occasioned in the home market by the bounty, must restrain the population or the industry of the country, he proceeds upon the above-mentioned assumption, that the bounty occasions an immediate rise of the money-price of corn; and must, therefore, either reduce the subsistence of the labourers, or, if wages rise, the ability of their employers to give them work. If that rise of money-price, however, is consequent, as the anonymous writer argues, to an extension of demand in the foreign market, it will at first increase the ability of those employers; and though it will likewise reduce at first the subsistence of the labourers, their wages must soon rise to their true rate; and this rise in the money-price of labour, will only reduce the ability of the employers to its former level.

The anonymous writer, after these criticisms on the reasoning of Dr. Smith, proceeds to specify some of the errors into which the advocates for the bounty have fallen, which are of a more palpable kind, and which proceed from an imperfect acquaintance with the principles of political economy. In the *first* place, they have misunderstood Dr. Smith's important doctrine, that the variations of the money-price of corn are communicated ultimately to that of labour, and other commodities. Whilst they insist, that the price of commodities and labour is liable to be affected by many other circumstances, besides the price of corn, they advance a truth, in itself unquestionable, and not incompatible with Dr. Smith's proposition, which merely asserts, that every change which the bounty may occasion in the money-price of corn, will communicate itself, first to the money-wages of labour, and, through them, to the money-price of all other articles; and thus the real price of corn will be maintained the same, notwithstanding a nominal variation. In the *second* place, they seem very imperfectly aware of the manner in which the principle of competition operates upon profits, and upon exchangeable value: and, on this account, many of their remarks are inconsistent as well as unfounded. They have supposed, with Dr. Smith, that the sum of the bounty is immediately added to the former money-price even in the home-market, and, at the same time, contend, that the average-price in that market will be lowered. It is also their opinion, that the real price of corn will, upon the whole, be rendered cheaper to the consumers, and that the same real price of corn will be maintained permanently higher to the farmer; though these two positions are, in direct terms, contradictory to each other. Mr. Malthus observes, that the bounty greatly lowers the price of corn, by producing a growth considerably above the wants of the actual population; whilst he forgets, that a greater growth can only be occasioned by a greater demand, to which it will be always adjusted; and, keeping the supply and the demand always in the same ratio, will in other words keep the price always at the same rate. But the advocates for the bounty have betrayed a much less pardonable inattention to the necessary action of the principle of competition, when they conceive, as some of very high authority have done (see Reports of the committee of the house of commons respecting the corn trade, ordered to be printed May 14th and June 14th 1804), that the average price of grain in the home market may be so low as not to yield a fair and reasonable profit to the grower. Besides, Dr. Smith and his opponents have pronounced, that, in years of extraordinary abundance, the bounty will prevent the money-price of corn in the home market from falling quite so low, as it would fall if there were no bounty. Dr. Smith, indeed, is consistent with himself, because he uniformly maintains that the bounty can have no effect in rendering the annual

produce larger than it otherwise would be. But those who assert this position, and assume that the bounty increases the produce, and occasions a surplus growth above the annual consumption, evidently incur the charge of inconsistency. For this surplus will, in a year of extraordinary abundance, partake of the extraordinary increase; so that over and above the usual home supply, there will, in such a year, be reaped not only the extraordinary increase upon that supply, together with the usual surplus for exportation, but likewise the extraordinary increase upon that surplus. Of these four portions of the crop, therefore, not only the second, but the fourth also, will be thrown as an excess upon the home-market; and the price in that market will consequently be lowered much more by the whole of this excess, than it would have been by the former part of it alone.

The ingenious writer, to whom we are indebted for these remarks, suggests, that a bounty upon export may, in a particular manner, afford some temporary encouragement to tillage; and thus, to a certain degree, force the production of a surplus, which may be reserved for the home-market in deficient years. By preventing, in such years, the temporary price from rising so high as it otherwise would, it may be considered as restraining a little on one side the occasional fluctuations of the price of corn; but, by overstocking the home-market in plentiful years still more than it would otherwise be overstocked, it must be considered as giving a still greater range to the fluctuation of the temporary price on the other side. Whilst the bounty has this influence upon the temporary changes of real price, its effects upon the nominal price of corn will be to raise and keep it higher than it otherwise would be. If the encouragement to tillage, derived from a bounty, should be deemed a sufficient benefit to induce a great nation to establish it; it should be remembered, that though it may indirectly secure a more certain supply of corn, it necessarily retards, upon the whole, the growth of national opulence and industry. It forces a part of the national capital into a branch of trade, which is unavoidably a losing one, and which does not return the whole of the capital that is employed in it; for the whole sum granted in bounties, together with the expences of collecting the tax for defraying them, is a part of the national capital thrown into that trade without any return.

After estimating to its full amount the possible benefit to be derived from such an artificial contrivance as the bounty, we should not only weigh against that, both the immediate sacrifice and all the subsequent disadvantages, but we ought also to consider whether the very benefit proposed, at least, in one point of view, might not be better obtained in another way; as by the removal of any existing impediments to cultivation, to the free commerce of land, the free employment of capital, or the free transference of labour. Besides the sacrifice of capital that is incurred by bounties, there is a disadvantage arising from that constant diminution of the real wages of labour, which is occasioned by the progressive rise of the price of corn in the home-market; other disadvantages are incurred from the constant enhancement of the money-price of labour and all other commodities, both in the depreciation of fixed pecuniary returns, and in the injury to domestic manufactures, with regard to their competition against foreign industry. Moreover, another disadvantage, perhaps still greater, consists in the uncertainty and derangement to which interferences of law subject the capital that is vested in the trade of grain, and the obstacle opposed by them to the free enlargement and consolidation of this most important system of commerce. On the other hand, it should be considered, that the encouragement,

BOUNTY.

agement which any assigued bounty will give to husbandry, must expire after a short interval, or as soon as the money price of corn, in the home market, has risen, which it will inevitably do, so high as to cover the whole advantage, which the bounty had originally given to the exporter in his sales abroad:—and the whole encouragement which, in the mean time, the bounty can give to agriculture, will be found to be very slight, when it is considered in what way it is formed, and that it consists, not in the addition of the whole bounty to the farmer's price, but in that small addition to his price which is occasioned from time to time by the gradual extension of foreign demands. In reference to the present circumstances of this country, it ought also to be recollected, that, when the average price of corn at home is greater than that of the foreign market, the interval of encouragement to tillage, under the same bounty, will be shorter than in the other two cases, and the whole disadvantage of high money prices will be sooner brought to its greatest height. Adverting to the present state of the agricultural produce of our own country, and what has caused an alarm to some of our legislators as well as political writers, we are happy in adopting the opinion of those who think it unnecessary. If, besides being dependent in years of scarcity on very large importations from abroad, we are even in ordinary years dependent upon importation for a certain portion of our necessary supply, it seems, admitting the fact, to be only a temporary and slight inconvenience. It is doubted, whether, in this case, a bounty upon exportation, and the prohibition of importation, furnish the most suitable and effectual remedy: and it is not unreasonably suggested, that an entire freedom of importation, continued with a bounty upon production, augmented from time to time, might have appeared at least a more plausible proposal. Nothing can be more unfounded than the fear, which some advocates for the bounty have expressed, that England may cease to be an agricultural nation; except the lamentations, which others have indulged over the actual decline of its husbandry, since that which has been called the fatal statute of the year 1773. It should be recollected that, from year to year of this period, the husbandmen of Britain have extended their capital, their skill, and their produce, though the commerce and manufactures of the island have in some measure concealed its agricultural grandeur. The bounty seems to have recommended itself to some of its admirers, as a simple expedient for securing, by paying a few shillings at the custom house, such a surplus of annual produce as will equalize the variation of value, and establish even a remedy against the natural inconstancy of the seasons. In this view of it, the bounty is to accumulate, by a kind of mechanical operation, a surplus of produce, for supplying an occasional deficiency; and it is to act as a regulator of the price, against the circumstances that tend to enhance or to depress it. If it is capable of doing so much, it may also do more; and serve to repress, as Mr. Malthus has inferred, the principle of population a little in years of plenty, and to encourage it comparatively in years of scarcity; regulating, in this manner, the population more equally, according to that quantity of subsistence which can permanently be supplied. It is well observed, that a measure can rarely be wisdom for one great state, which may not be permanently followed by all. All cannot, by adopting the bounty, secure to each an export of grain; and the single nation that stoops from the plain high maxims of policy to such an artifice, will ultimately be convinced that the advantage gained by it, if any, must be very inconsiderable. The balance of this trade cannot long be very great to any nation; and it will be naturally possessed by that one, whose capital and skill are in

a condition to furnish the additional supplies most advantageously to all. In this condition, if the exportation is free, it will hold the balance, without requiring the aid of a bounty; nor can a bounty give it the balance, if it be not in that condition.

Having stated, as briefly as possible, the principal arguments on both sides, for and against a bounty, we shall close this article with a short abstract of the history of this commercial institution. The prices of corn had been so variable during the 17th century, and in general so high, the average price of wheat for fifty years before 1650 having been 6l. 8s. 10d. and from 1650 to 1700 3l. 0s. 11d. per quarter, that the attention of the legislature had frequently been directed to this object; and various attempts had been made to revive agriculture, with a view of redressing this evil, by encouraging the exportation, and checking the importation of corn; but none of them had proved effectual. Towards the end of the century, however, the prices had been so uniformly high, and on some occasions so oppressive, as to induce the truly patriotic and judicious administration under William and Mary, immediately after the revolution in 1688, to investigate some method of remedying this evil, and of preventing its future recurrence. With this view, a resolution was adopted of granting a certain bounty upon the exportation of corn, when the crops were so abundant as to reduce the price below the rate which they conceived to be necessary for indemnifying the farmer for his expence and trouble, so as just to enable him to find for it a foreign market; and with a view also of preventing a competition of foreigners in our home market, when the crop happened to be uncommonly abundant, and of guarding against the machinations of corn-dealers, who might, for their own lucrative purposes, occasionally introduce much foreign corn into the home market, so as to lower the price of a moderate crop in Britain below its intrinsic value, they imposed certain duties on corn imported, which rose or fell in proportion to the selling price at the time in our own market, as protecting duties. The aim of the legislature, in these regulations, was to preserve, as much as possible, an equality and moderation of price at all times in the home market. Such were the principles of the corn law, first enacted in the year 1688 by 1 W. and M. and finally completed in 1700 by 11 and 12 W. and M. c. 20. By the law of 1688, a bounty of 5s. was granted for every quarter of wheat exported, when the price was at or under 48s. per quarter; and by the same law, there was payable on importation a duty of 1l. 4s. per quarter, when the price did not exceed 3l. 19s. 3d.; when the price was above that, and not exceeding 6l.; the duty payable was 12s. per quarter; and when the price was above 6l., the duty was only 8s. This commercial regulation was much celebrated by the best writers and statesmen of England, throughout the first part of the last century; they always mentioned it with admiration, as an institution that had been wisely planned, and that had completely succeeded; and it was ranked with the art of navigation, the laws for the woollen staple, or queen Elizabeth's provision for the poor, as an inseparable part of that peculiar system, to which England was indebted for her superiority over all other nations. The diminution of the average price, and the progressive increase of exports, within the period at the beginning of which the bounty had been instituted, presented a flattering coincidence; and at a time when the analysis of national wealth was unknown, it was natural enough to believe, that the cause of these curious facts could be no other but that remarkable law which just preceded their appearance. As a prospective regulation, Dr. Anderson considers it as one of the highest exertions of

BOUNTY.

human wisdom; for the beneficial tendencies that have resulted from it in practice, and to which we can now refer as facts to inform our judgment, could be only contemplated by the devisers of that law as plausible probabilities. By the operation of this law, the prices in the home market were reduced, in the course of 50 years, to the consumers in the home market, from 3*l.* to 1*l.* 12*s.* 6*d.* per quarter; and we were enabled by it to export corn till our excess of exports rose by degrees to the amount of more than one million and a half quarters in one year, which brought into the country a sum not much under three millions sterling; being paid for the price of our own best manufactures, and for encouraging the most useful kind of industry that can ever be promoted in any nation. Similar sentiments with regard to king William's corn law were adopted by our admirers upon the continent. The bounty became a theme of panegyric in all their political treatises. Though a most artificial expedient, it was applauded even by the economists of France, in whose profound writings all devices were reprobated, that might check the spontaneous order of nature. Dr. Smith, however, maintained that the system of laws, which is connected with the establishment of the bounty, seems to deserve no part of the praise which has been bestowed upon it. The improvement and prosperity of Great Britain, which have been so often ascribed to those laws, may very easily be accounted for by other causes. That security which the laws in Great Britain give to every man, that he shall enjoy the fruits of his own labour, is alone sufficient to make any country flourish, notwithstanding these and twenty other absurd regulations of commerce; and this security was perfected by the revolution much about the same time that the bounty was established. The natural effort of every individual to better his own condition, when suffered to exert itself with freedom and security, is so powerful a principle, that it is alone, and without any assistance, not only capable of carrying on the society to wealth and prosperity, but of surmounting a hundred impertinent obstructions with which the folly of human laws too often incumbers its operations; though the effect of these obstructions is always more or less either to encroach upon its freedom, or to diminish its security. In Great Britain industry is perfectly secure; and though it is far from being perfectly free, it is as free, or more free, than in any other part of Europe. Upon the whole, though the period of the greatest prosperity and improvement of Great Britain has been posterior to that system of laws which is connected with the bounty, we must not on this account impute it to those laws. It has been posterior likewise to the national debt; but the national debt has most assuredly not been the cause of it. The sentiments of Dr. Smith were adopted by many philosophical inquirers; and at length they approved themselves to our legislators, and became a subject of parliamentary deliberation. Accordingly the act of 1773, (13 Geo. III. c. 43; see also stats. 31 Geo. III. c. 30. 32 Geo. III. c. 50. 33 Geo. III. c. 3, 65.) which was conducted through the house of commons by Mr. Burke, effected a virtual repeal of the bounty, though it retained the language, and seemed even to confirm the purposes of the former law, in compliance with those prejudices which it was more easy to betray than to conquer. By this statute, the high duties upon importation for home consumption are taken off, as soon as the price of middling wheat rises to 48*s.* per quarter; that of middling rye, pease or beans, to 32*s.*; that of barley to 24*s.*; and that of oats to 16*s.*; and instead of them a small duty is imposed of only 6*d.* upon the quarter of wheat, and upon that of other grain in proportion. With regard to all these different sorts of grain, but particularly with regard to

wheat, the home market is thus opened to foreign supplies, at prices considerably lower than before. By the same statute, the old bounty of 5*s.* upon the exportation of wheat ceases so soon as the price rises to 44*s.* per quarter, instead of 48*s.*, the price at which it ceased before; that of 2*s.* 6*d.* upon the exportation of barley ceases as soon as the price rises to 22*s.* instead of 24*s.*; the price at which it ceased before; that of 2*s.* 6*d.* upon the exportation of oatmeal ceases as soon as the price rises to 14*s.* instead of 15*s.*, the price at which it ceased before. The bounty upon rye is reduced from 3*s.* 6*d.* to 3*s.*; and it ceases so soon as the price rises to 28*s.* instead of 32*s.*, the price at which it ceased before. So far, says Dr. Smith, this law seems to be an improvement upon the ancient system; but by this law, a bounty of 2*s.* per quarter is given for the exportation of oats, whenever the price does not exceed 14*s.* No bounty had ever before been given for the exportation of this grain, any more than for that of pease or beans. By the same law, the exportation of wheat is prohibited as soon as the price rises to 44*s.* per quarter; that of rye at 28*s.*; that of barley at 22*s.*; and that of oats at 14*s.* These several prices are, in Dr. Smith's opinion, much too low; and there seems to be an impropriety in prohibiting exportation altogether at those precise prices, at which that bounty, which was given in order to force it, is withdrawn. The bounty ought to have been withdrawn at a much lower price, or exportation ought to have been allowed at a much higher. In these respects the new law seems to be inferior to the ancient system. However, with all its imperfections, Dr. Smith applies to it what was said of the laws of Solon, that though not the best in itself, it was the best which the interests, prejudices, and tempers of the times would admit of; and he adds, that in due time it might prepare the way for a better. Since the passing of this act, and the repeal of the bounty, circumstances have occurred, in consequence of which the prices of corn have risen, and the balance of trade has been turned against us. The prices, according to the statement of Dr. Anderson, in 1801, have risen from 21*l.* 2*s.* 1*d.* to 51*l.* 10*s.* per quarter; and our imports have been advanced to three millions of quarters nearly, in value more than six millions sterling; and this, compared with the sum already stated arising from the exports under the former act, granting a bounty, makes a total balance of trade against us, in this single article, of not less than nine millions sterling per annum. These facts seem to have made a great impression on several ingenious and well informed minds; the bounty has once more found advocates among some political writers of great merit, and among several statesmen; and a statute has been lately passed, which, it is expected, will produce all the beneficial effects that have been ascribed by its advocates to the old bounty. The committee of the house of commons, in their second report, ordered to be printed June 14th, 1804, deliver their opinion in these words: "It appears to the committee, that the price of corn from 1791 to the harvest of 1803 has been very irregular; but, upon an average, increased in a great degree by the years of scarcity, has in general yielded a fair profit to the grower. The usual high prices, however, have had the effect of stimulating industry, and bringing into cultivation large tracts of waste land; which, combined with the two last productive seasons, and other causes, have occasioned such a depression in the value of grain, as it is feared will greatly tend to the discouragement of agriculture, unless maintained by the support of parliament." Accordingly an act was passed July 30th, 1804, (44 Geo. III. c. 109.) to regulate the importation and exportation of corn, and the bounties and duties payable thereon. Without the aid of this new statute, it has been said, that

BOUNTY.

the farmer cannot be sure of obtaining, even in the home market, a fair and reasonable profit. By those who have disapproved this measure, and who, adopting the general principles of Dr. Smith, are adverse to a bounty, it has been alleged, that, like other sorts of trade, that of the farmer is liable occasionally to the spirit of overtrading, if profits for a time have happened to be greater than ordinary. The late years of dearth and most extraordinary price, they say, rendered the profits of farming, for the time, much greater than ordinary: and the consequence appears to have been a pretty free indulgence of the disposition to trade too much, and to enter into projects disproportioned to the capital that would immediately be invested. In many instances, where farmers came to make a new agreement about rent, they reckoned too confidently upon the continuance of prices, which they ought to have considered as unusual; and made the estimate of their future returns too much upon the recent rate of profit, and not upon an average sufficiently and reasonably large. Like other improvident speculators, they were, of course, to suffer for their want of foresight, as soon as prices and profit returned to their ordinary rate. Hence it has happened, that those farmers who had overtraded, and who found it difficult to make good their imprudent engagements, found it almost as easy to persuade other persons as themselves, that prices are much too low. Their landlords, in particular, are not the persons most likely to discover that prices are not too low, but rents a little too high; and they may honestly find it somewhat difficult to be convinced, that the embarrassment of their tenants is owing to that local cause, and not to something that affects the general condition of the country. To this purpose, it is said, in a pamphlet by a member of parliament, entitled, "Curfory Observations on the act for ascertaining the bounties, &c." 1804, that, "times, unfortunate in other respects, impressed on tillage a renovated vigour; a vigour which the principles of this act, and those alone, are able to sustain." By this statute it was enacted, that, from and after November the 15th, 1804, so much of the statute 31 Geo. III. c. 30. as regulates the prices at which British corn, grain, malt, meal, flour, and biscuit, may be exported, except to Ireland, and at which foreign corn, grain, meal, and flour, may be imported, except from Ireland, and as fixes the duties and bounties payable thereon, shall be repealed. By this statute it is farther enacted, that the importation and exportation of corn, into and from England and Wales, shall be regulated by the average price of the twelve maritime districts; and into or from Scotland, by the average price of the four districts in Scotland; and that the bounties and duties shall be regulated by schedules, annexed to this act; that whenever the average shall be under the prices at which corn may be importable into Great Britain and Ireland, on the low duties from foreign parts, exportation shall be allowed from Great Britain to Ireland, &c.; and that the importation and exportation of corn, into and from Ireland, shall be regulated by schedules, annexed to this act. The first schedule shews the prices to which the scale of bounty is to attach on the export of corn, &c. and the prices at which the exportation is prohibited. By this schedule, wheat may be exported, when at or under 48s. per quarter, with a bounty of 5s.; rye, at or under 32s. with a bounty of 3s.; pease and beans are exportable without a bounty, till at or under 35s.; barley, beer, or bigg, or malt made of barley, beer, or bigg, may be exported at or under 28s. with a bounty of 2s. 6d.; oats, at or under 16s. with a bounty of 2s.; wheat flour, biscuit, &c. with a bounty of 1s. 6d. per cwt.; wheat meal, with a bounty of 1s. 3d. per cwt.; barley, beer, or bigg meal, with a bounty of 10d. per cwt.; and oatmeal, with a

bounty of 1s. per cwt. But when the price of wheat exceeds 54s. that of rye 35s. that of pease and beans 35s. that of barley, beer, or bigg, or malt made of them, 31s. and that of oats 19s. no export is allowable. The second schedule shews the prices, according to which high or low duties are to take place on importation. When imported from the province of Quebec, or the other colonies or plantations in North America, wheat under 53s. per quarter is subject to the high duty of 24s. 3d. per quarter; at or above 53s. but under 56s. to the first low duty of 2s. 6d.; and at or above 56s. to the second low duty of 6d.; rye, pease, and beans, under 35s. per quarter, are subject to the high duty of 22s.; at or above 35s. but under 37s. to the first low duty of 1s. 6d.; and at or above 37s. to the second low duty of 3d.; barley, beer, or bigg, under 26s. are subject to the high duty of 22s.; at or above 26s. but under 28s. to the first low duty of 1s. 3d.; and at or above 28s. to the second low duty of 3d.; oats under 17s. pay the high duty of 6s. 7d.; at or above 17s. but under 18s. the first low duty of 1s.; and at or above 18s. the second low duty of 2d.; oatmeal, if under 16s. 6d. per boll of 140 lbs. avoirdupois, or 128 lbs. Scotch troy, is subject for every boll, to the high duty of 8s.; at or above 16s. 6d. per boll, but under 17s. 4d. to the first low duty of 1s.; and at or above 17s. 4d. per boll, to the second low duty of 2d. When imported from any other foreign country, wheat under 63s. per quarter, pays the high duty of 24s. 3d.; at or above 63s. but under 66s. the first low duty of 2s. 6d.; and at or above 66s. the second low duty of 6d.; rye, pease, and beans, under 42s. pay the high duty of 22s.; at or above 42s. but under 44s. the first low duty of 1s. 6d.; and at or above 44s. the second low duty of 3d.; barley, beer, or bigg, under 31s. 6d. pays the high duty of 22s.; at or above 31s. 6d. but under 33s. the first low duty of 1s. 3d.; and at or above 33s. the second low duty of 3d.; oats under 21s. pay the high duty of 6s. 7d.; at or above 21s. but under 22s. the first low duty of 1s.; and at or above 22s. the second low duty of 2d.; oatmeal under 20s. per boll pays the high duty of 8s.; at or above 20s. but under 21s. the first low duty of 1s.; and at or above 21s. the second low duty of 6d. The third schedule shews the prices to which the scale of bounty attaches on the export of corn, ground corn, flour or meal, malt, &c. from Ireland, and the prices at which the exportation is prohibited. When exported to any foreign country, wheat, at or under 29s. 5d. per barrel, British, is allowed a bounty of 3s.; rye, and also pease and beans, at or under 20s. 4d. a bounty of 1s. 10d.; barley, beer, or bigg, or malt made of these, at or under 16s. a bounty of 1s. 5d.; oats, at or under 10s. 2d. a bounty of 1s. 3d.; wheat, flour, biscuit, &c. a bounty of 1s. 6d. per cwt.; wheat meal, 1s. 3d. per ditto; rye meal or flour, 9d. per ditto; barley, beer, or bigg flour, 10d. per ditto; and oatmeal, 1s. per ditto. When the price of wheat exceeds 33s. 1d. per barrel, British; of rye, pease, and beans, 22s. 3d.; of barley, beer, bigg, or malt made of them, 17s. 8d.; and of oats, 12s. 3d.; no exportation is allowed. The fourth schedule shews the prices, according to which the high or low duties are to take place on importation into Ireland; for which, and other particulars, we refer to the act itself.

BOUNTY, Queen Anne's, for augmenting poor livings under 50l. per annum, consists of the produce of the first fruits and tenths, after the charges and pensions payable out of the same are defrayed. A corporation for management of the same was settled, &c. in 1704. See AUGMENTATION and FIRST FRUITS.

By stat. 44 Geo. III. c. 2. the sum of 8000l. was granted out of the consolidated fund to the governors of queen

Anne's bounty, for the relief of curates deprived of their cures on account of the residence of incumbents, in consequence of the act 43 Geo. III. c. 84. But no curate is entitled to receive any allowance under the act, who shall not produce to the said governors a proper recommendation from the bishop of the diocese in which the cure is situated, and no allowance shall exceed three-fourths of the income lost.

BOUPER, LE, in *Geography*, a town of France, in the department of the Lower Pyrenées; 10 miles S. W. of Mauleon.

BOUQUENON, a town of France, in the department of the Moselle, and chief place of a canton, in the district of Bitche on the Sarre; 5 leagues S. W. of Bitche.

BOUQUETIN, in *Zoology*, the wild goat. See **CAPRA IBEX**.

BOUR, in *Geography*, a town of Asiatic Turkey, in the province of Caramania; 4 miles S. E. of Akserai.

BOURAC, a town in the Arabian Irak; 70 miles S. S. E. of Bagdad.

BOURBACH, or *Grand-Bourbach*, a town and castle of Germany, in the circle of Westphalia, and principality of Nassau-Dillenburg, near which is a lead mine; 9 miles W. of Dillenburg.

BOURBON, NICHOLAS, in *Biography*, a famous Latin poet in the 16th century, was a native of Vandeure, near Langres; and appointed by Margaret de Valois preceptor to her daughter, Jane d'Albert of Navarre, the mother of king Henry IV. He died at Condé whither he had retired, and where he had a benefice, about the year 1550. He wrote eight books of "Epigrams," commended by Erasmus, and a poem on the forge entitled "Ferraria." He was distinguished for his knowledge of antiquity and of the Greek language.

BOURBON, NICHOLAS, a celebrated Latin and Greek poet, was nephew of the former, and son of a physician at Bar-sur-Aube, where he was born about the year 1574. He taught rhetoric in the colleges of Paris, and was nominated by cardinal Du-Perron, in 1611, professor-royal in Greek eloquence. He was canon of Orleans and of Langres, and a priest of the oratory, though he declined the title. In 1637, he was admitted by cardinal Richelieu, a member of the French academy, without soliciting the honour. He died at the house of the fathers of the oratory in 1644. As a Latin poet, he sustained the highest rank in France, and has been thought, if not superior, equal to any who lived in the two last centuries. In his verses he has combined a considerable portion of poetic fire with elevation of style and sentiment; and he has been charged with making Lucan and Claudian, rather than Virgil, his models; their manner being probably better adapted to the warmth of his conceptions. His master-piece is said to be an "Imprecation against the parricide of Henry IV." His poems were printed at Paris in 1651, 12mo. He also wrote Greek, as well as Latin verses, and in the latter language some pieces of prose. His taste was refined and accurate; and as he was much addicted to the use of wine, he expressed his contempt of the French poetry, by saying, "When I read French verse, I think I am drinking water." Although he was afraid of starving, 15,000 livres were found in his strong box at his death. Bourbon published an edition of St. Cyril's work against the emperor Julian, with a Latin translation. *Nouv. Dict. Hist.*

BOURBON, isle of, in *Geography*, lately called *Isle de la Reunion*, an island of the Indian ocean, about 370 miles distant from the coast of Madagascar to the east, and at the distance of about 90 miles to the west of the isle of France, was first discovered by the Portuguese, in 1545, who called it

Mascarenhas, after the name of the commander of their fleet; and this appellation was afterwards corrupted into *Mascaraigne*. In 1642, Pronis, the commandant at Madagascar, took possession of the island for the French government; and seven years after, says La Barthe, in his "Annales maritimes et coloniales," but, according to others, in 1654, the new commandant, M. de Flancourt, took possession of it again in the name of his sovereign, and gave it the name of *Bourbon*. He introduced into it domestic animals, which multiplied considerably; and, on account of its fertility, several Frenchmen formed in it settlements. In 1665, two ships of De la Haire's squadron arrived here, and left Renaud, an "officer d'administration," together with 20 labourers. The French, who, in 1671, escaped the massacre at Fort Dauphin, in Madagascar, fled to this island; and various sea-faring persons settled in it, and employed themselves in agriculture. From the isle of France to this island, the passage may be performed in a day, but the return often requires a month. It is about 40 miles in length, and 30 in breadth. The shores are exceedingly steep, and cannot be approached except by small vessels, without danger. On this account it has few ports; but round the island there are several good roads where ships may ride securely. The soil is more sandy than that of the isle of France; and at some distance from the shore it is mixed with those smooth stones, which cover the bottom of the sea. In those parts, however, which admit of cultivation, the ground is excellent, and well watered by various streams that are supplied in summer by the melting snow, which in winter covers the tops of the mountains. The soil, thus manured, though not deep, is very fertile, and produces Turkey corn and rice, twice a year, and of the latter a great abundance. The mountains are very high; and the three inaccessible peaks, called the "Salasses," are said to be 1600 toises. In the southern part of the island there is a tremendous volcano, the district round which, called "pays brulé," is entirely burnt up; and there are many gulleys, the declivities of which are so steep that they cannot be cultivated. The island is divided into four quarters. The first is that of St. Paul, which is the largest and most populous. Their houses are built at the foot of a steep mountain, on both sides of a fresh water lake. Their plantations are on the top of a mountain, which they ascend by a very steep and toilsome passage. On the summit, however, is a spacious plain, divided for the most part into plantations of rice, tobacco, corn, sugar canes, and fruit-trees. The sea at the port of St. Paul is calmer, and the anchoring ground more secure than at St. Dennis; nevertheless, mariners prefer the latter. The quarter of St. Dennis lies 15 miles from that of St. Paul towards the east; and here the governor resides. This district is more pleasant, though less populous, than the other. The chief port in the island is that of St. Dennis, where a draw-bridge, secured by iron chains, has been constructed for the purpose of enabling boats to land. This bridge extends more than 80 feet into the sea, and at the end of it is a ladder of ropes by which people who wish to go on shore must ascend; in all other parts of the island they must jump into the water. At two leagues from St. Dennis, proceeding along the sea-coast, is the quarter of St. Mary's, which is thinly peopled. The last and most fruitful district of the island is that of St. Susanne, four leagues from St. Dennis; the passage from one to the other having been with great labour cut through a wood; but the passage from St. Dennis to St. Paul is only by sea.

The sky in this island is serene, the atmosphere pure, and the water salubrious. Although the climate is hot, the breezes from the mountains are refreshing; and the hurricanes, which

which commonly occur once or twice every year, contribute to purify the air, and to preserve its salubrity. The island, which the French found at their settlement almost a desert, abounds in fruit, grass, and cattle of various kinds; the wild goats and wild hogs have retired to the woods and summits of the mountains; the land tortoises were formerly abundant, but are now found only in the western part, those of the other parts having been exterminated by the crews of ships that have touched upon the island. The rabbits, quails, partridges, and pintadoes, brought to the island, have none of them increased, except the last. It is said that no venomous animals are found in this island; nor any disagreeable to the sight, except spiders, of the size of a pigeon's egg, which weave very strong nets, capable, as some say, of being rendered as valuable as silk, and a kind of large bats, denominated "Poiseau bleu," which are skinned and eaten as a great delicacy. The rivers are well stocked with various sorts of fish. Among the vegetable productions we may reckon tobacco, sugar-canes, ebony, benzoin, aloes, white pepper, the cotton shrub, abundance of timber fit for ship-building; and several kinds of fruits, such as the guavas, bananas, citrons, tamarinds, lemons and oranges. On the shores are found ambergris, coral, and many beautiful shells.

In the year 1717, the number of inhabitants in this island was computed at 2000, viz. 900 free, and 1100 slaves; and with regard to their disposition, they are, generally speaking, gentle and quiet, very industrious, and submissive to just and mild authority; but when it is otherwise exercised, apt to associate and unite in rebellion. In 1763, the population amounted to 4627 white people, and 15,149 blacks; the cattle consisted of 8702 bees, 4084 sheep, 7405 goats, and 7619 hogs. Upon an extent of 125,909 acres of cultivated land, they gathered as much calava as would feed their slaves, 1,135,000 pounds weight of corn, 844,100 pounds of rice, 2,879,100 pounds of maize, and 2,535,100 pounds of coffee, which last the company bought up at about 3d. per pound. Labatthe says, this island produces annually 52,700 weight of corn, 54,300 of maize, and three millions of pounds of coffee. Ever since the French India company became established possessors of this island, they have directed their attention to the improvement of its cultivation; and with this view, they imported into it coffee-trees from Arabia, which have succeeded so well, as to produce an eighth, and according to some, a sixth part as much coffee as is raised in the Arabian kingdom of Yemen, and next to that in quality. The French have also erected forts and batteries, so as to render the island almost inaccessible. When admiral Boscawen appeared before this island with a British fleet in 1748, he found it so well fortified both by nature and art, that, after some ineffectual cannonading, he was obliged to pursue his voyage. S. lat. 20° 51' 43". E. long. 55° 30'; which is the longitude of the port of St. Dennis, according to the *Connoissance des Temps*, an. viii.

BOURBON, a small island of Africa, near the coast of Senegal. N. lat. 11°. W. long. 15°.

BOURBON, a county of America, laid out and organized in 1785, by the state of Georgia, in the S.W. corner of the state, on the Mississippi, including the Natchez country. Having continued under the jurisdiction of the Spaniards ever since their conquest of this part of the country in 1780, it was given up to the United States by the treaty of 1795.

BOURBON is also a county of Kentucky, between Licking and Kentucky rivers, containing 12,356 inhabitants, of whom 1994 are slaves. The land produces wheat, about thirty or thirty-five bushels per acre. The chief town is Paris.

BOURBON, a post town, and capital of the county last

named, stands on a point of land formed by two of the southern branches of Licking river; 22 miles N. E. of Lexington, 21 E. of Lebanon, and 749 W. S. W. of Philadelphia. It contains about 60 houses, a baptist church, a court-house, and gaol. In its neighbourhood are several valuable mills.

BOURBON, *Fort*, lies in the island of Martinico, in the West Indies.—Also, the name given by the French to a principal port in North America, situate on a small island which divides it from Mud-lake; which see.

BOURBON *Parchambaud*, a town of France, in the department of the Allier, which gave name to a country and to the house of Bourbon; celebrated for its hot medicinal waters and baths. It contains two hospitals and about 2000 inhabitants; 4 leagues W. of Moulins. N. lat. 46° 35' 22". E. long. 2° 57' 39".

BOURBON *Lancy*, a town of France, and principal place of a district, in the department of the Saone and Loire, celebrated for its mineral springs. It contains three parishes and two hospitals. Its large bath, encompassed with circular walls, and paved with marble, is a work of the Romans; 9½ leagues S. W. of Autun. N. lat. 46° 37'. E. long. 3° 45' 42".

BOURBONNE *les Bains*, a town of France, in the department of the Upper Marne, and chief place of a canton, in the district of Langres; the place contains 3136 inhabitants, and the canton 11,978; the territory comprehends 202½ kilometres, and 16 communes. It takes its name from its hot baths; 6 leagues E. N. E. of Langres.

BOURBONNOIS, a province of France before the revolution, now the department of Allier, bounded on the east by Burgundy, on the north and west by Nivernois and Berry, and on the south by Auvergne; its climate is very temperate, and it produces in great abundance corn, hemp, fruit, wine, pasture, and wood; it has also some mines of coal, and medicinal springs. Its capital is Moulins. This province was erected into a duchy of France by Philip de Valois in 1329, in favour of Louis, son of Robert, the youngest son of St. Louis. This duke had two sons, Peter and James; from the latter of whom descended the house of Bourbon, which was the reigning family in France.

BOURBOURG, a town of France, in the department of the North, and chief place of a canton, in the district of Bergues, seated on a navigable canal which communicates with Calais, St. Omer, Dunkirk, Gravelines, &c.; 3 leagues S. W. of Dunkirk, and 1 S. E. of Gravelines. The town contains 1966, and the canton 9456 inhabitants; the territory comprehends 160 kilometres and 13 communes.

BOURBRIAC, a town of France, in the department of the North coast, and chief place of a canton, in the district of Guingamp; 5 miles S. of Guingamp. The town contains 2977, and the canton 7646 inhabitants; the territory includes 180 kilometres and 7 communes.

BOURCHET, a town of the duchy of Luxembourg; 4 miles N. W. of Dierich.

BOURCHIER, BOWSCHYRE, or BOWCER, THOMAS, in *Biography*, archbishop of Canterbury in the successive reigns of Henry VI., Edward IV., Edward V., Richard III., and Henry VII., has no particular claim to notice, otherwise, than as he was the principal instrument in introducing the art of printing into England. By descent, he was related to the noblest families in England, being the son of William Bouchier earl of Eue in Normandy, and by his mother, the countess of Stafford, great grandson to Edward III. He was born at Hawfield in Essex, one of the family seats of the Bouchiers or Bourchiers, educated at Oxford, and held the office of chancellor of that university,

sity, from 1433 to 1437. After several inferior preferments in the church, he was elected bishop of Worcester, in the former of these years; invested by the king, with the temporalities of this see in 1435, and consecrated in 1436; his age not allowing of its being done sooner. In 1454, he was elected archbishop of Canterbury, and presided over the church during 32 years, in the most distracted period of the English government. He enjoyed the prelacy 51 years from the time of his first consecration; an honour of longer duration than any which occurs in the English history, if we except the case of bishop Hough, who was bishop for almost 53 years. He was promoted to the office of lord high chancellor of England in 1455, and resigned it, according to Rymer, in the following year, but according to Dugdale, in 1457. In 1464, he received the red hat from Rome, being created cardinal-priest of "St. Cyriacus in Thermis." Soon after his advancement to the see of Canterbury, he visited his diocese, and instituted several regulations for its government; and he likewise published a variety of constitutions for the reformation of the clergy and laity, and for restraining the excessive abuse of papal provisions. Among his benefactions, it is recorded, that he gave to the prior and convent of Christ-church in Canterbury, the alien priory of Cranfield in Essex, the grant of which he had obtained from the crown, in the time of Edward IV.; to the church of Canterbury, he gave a fine image of the Trinity, of solid gold, adorned with precious stones, and a complete set of sacerdotal vestments; to his successor, he left 2000*l.* in recompence for dilapidations; to the church of Worcester, he gave an image of the Virgin Mary, of gilt silver, estimated at the value of 69*l.*; to the church of Ely, 200 marks for repairing the steeple; and to each of the universities, he bequeathed about 125*l.*, which he ordered to be kept in chests, for the support of poor scholars. The chest at Cambridge, which was united with Billingford's, subsisted in 1601, when 100*l.* was borrowed out of it, for the use of the university; but this fund was afterwards embezzled, through the iniquity of the times. The archbishop also left legacies to several monasteries. Bouchier had the honour of performing the marriage ceremony between Henry VII. and the daughter of Edward IV. Thus, as Dr. Fuller observes, "his hand first held that sweet posse, wherein the white and red roses were tied together." He died at his palace of Knowle in 1486, and was buried on the north side of the choir, by the high altar, in a tomb of marble, round the verge of which is an inscription in old text characters. To the learning of this prelate, the testimonies are very equivocal; no record of it remaining, if we except some synodical decrees, an inquiry into heresies, and a few letters, instructions, and addresses to his clergy, which appear to have been merely official. The act that does the greatest honour to his memory, and indeed the only one that claims our particular notice, was his introduction of the art of printing into England. Having been informed, that the inventor, Tossan, *alias* John Guthenberg, had set up a press at Haerlem, he persuaded king Henry VI. to commission Robert Tournour, a gentleman of his wardrobe, to go over privately to Haerlem. This person was furnished with 1000 marks, of which the archbishop contributed 300, and accompanied by Caxton, a merchant of London, embarked for Holland. Concealing both his name and business, he went first to Amsterdam, then to Leyden, and at last settled at Haerlem. After spending much time and money, he at length persuaded Frederic Corielli, one of the compositors, to carry off a set of letters, and to embark with him in the night for London. Upon their arrival, Corielli was sent down to Ox-

ford, and secured from escaping, before the secret was thoroughly divulged, by setting a guard upon the press. Thus, it is said, the mystery of printing appeared ten years sooner in the university of Oxford, than at any other place in Europe, Haerlem and Mentz excepted. Not long after, presses were set up at Westminster, St. Alban's, Worcester, and other monasteries of note. If this account be just, printing was introduced into England, by the care of archbishop Bouchier, in 1464, the third year of king Edward IV. See PRINTING. Biog. Brit.

BOURDALOUE, LEWIS, a celebrated preacher and reformer of pulpit eloquence in France, was born at Bourges in 1632, and entered at an early age into the society of Jesuits. Having distinguished himself by his proficiency in the studies immediately connected with his profession, and more particularly by his talents for the pulpit, the society determined to assign him the office of a preacher. The reputation which he acquired in the country induced his superiors to send for him to Paris in 1669; where his fame increased, and recommended him to the court, so that he preached before Louis XIV., in the advent of 1670. He continued, for many years, the favourite preacher of the king, though he occasionally animadverted on his personal faults. Upon the revocation of the edict of Nantes, he was appointed by the court to preach the catholic doctrine to the new converts in Languedoc. His talents were peculiarly adapted to this mission, as he was serious and impressive, and, at the same time, mild and insinuating, and capable of accommodating his addresses to persons of every rank and condition. With respect to the style of his eloquence, M. d'Alembert, in his "Eloge de Massillon," represents it as solid and serious, and, above all, strictly logical. Compared with Massillon, he is said to have been the best reasoner, and the latter the most pathetic. It redounded much to the honour of Bourdaloue, that he had, in a great degree, the merit of an original; the pulpit, when he appeared, "rivalled the theatre in buffoonery, and the schools in dryness." Towards the close of his life, he devoted himself to the service of the hospitals, the prisons, and the poor, and to other offices of charity. His conduct, which was exempt from that laxity of morals that was charged on his fraternity, afforded the best refutation of the "Provincial Letters." He died in the midst of his pious and benevolent labours, in 1704. His discourses and other religious tracts have been published in two editions, one of 16 vols. 8vo. and the other of 18 vols. 12mo. The first is the most esteemed. *Nouv. Dict. Hist.*

BOURDEAUX, or BORDEAUX, in *Geography*, a city and sea-port of France, and capital of the department of the Gironde, including 6 cantons, which contain 112,844 inhabitants, and comprehending 92½ kilometres, and one commune. Bourdeaux is seated on the west bank of the river Garonne, about 40 miles from its mouth; and, before the revolution, it was the capital of the province of Guyenne, and one of the most prosperous and flourishing cities of France, but, in consequence of that event, its commerce has suffered much injury. The tide flows quite up to the city; its port is ample and commodious, and ships of considerable burden may load and unload at its quays. It was not unusual to see 400 or 500 vessels in the harbour at the same time. Its traffic with the West Indies consisted of sugar, cotton, indigo, and other merchandizes; its chief exports were wine and brandy, and particularly the vin de Bordeaux, which we denominate claret; together with vinegar, fruit, resin, paper, honey, cork, &c.; and its imports were woollen stuffs, tin, copper, coals, herrings, leather, salted beef, tallow, drugs, deals, masts for ships,

ships, hemp, pitch and tar. The whale and cod fishery, likewise, formed a considerable branch of the commerce of this city. It had 3 forts, the principal of which is that called "Trompette," fortified by M. de Vauban, and commanding the harbour. The figure of this city is a kind of half moon; and it consists of 3 fauxbourgs, viz. that of "Chapeaux-rouge," that of "St. Surin," and that of "Chartrons," which last is remarkable for its extent, and the beauty of its buildings. Its university was founded in 1441; its academy of sciences and belles lettres was established in 1712, to which belongs a large library; its cathedral is an immense Gothic structure; and its hospital, built without the walls, accommodates a variety of manufactures. The "Place royale," in the fauxbourg of "Chapeaux-rouge," is adorned with several magnificent buildings, and an equestrian statue of Louis XV. in bronze, erected in 1743. Its theatre is the most magnificent in France, and the actors used to receive extravagant salaries; and as much as London exceeds Paris, so much did Bourdeaux, before the revolution, transcend Liverpool. This city has many vestiges of Roman art and grandeur; such as the tower-gate, said to have been constructed in the time of Augustus; the amphitheatre, which formed an oval of 227 feet long and 140 feet wide; the palace of Gallienus, of which remain only some walls, and the 2 gates at the entrance; a temple consecrated to the tutelary deities, whose columns surpassed in elevation the finest buildings of the city, and which subsisted almost entire, till the year 1700, when Louis XIV. demolished it, in order to extend the esplanade of the Trompette castle; the fountain of Aubege, celebrated by Ausonius, and furnishing the city with water, &c. The temperature of Bourdeaux, upon a mean of 5 years, from 1777 to 1781, was 56.8°; and the standard temperature of this latitude is 57.6°. See Kirwan's estimate, &c. p. 87. N. lat. 44° 50' 18". W. long. 0° 34' 49".

BOURDEAUX, a town of France, in the department of the Drome, and chief place of a canton, in the district of Die; the town contains 1181, and the canton 3885 inhabitants. The territory comprehends 132½ kilometres, and 1 commune.

BOURDEILLE, a town of France, in the department of the Dordogne, 3½ leagues N. W. of Perigueux.

BOURDEILLES, PETER DE, in *Biography*, more generally known by the name of *Brantome*, of which he was abbot, was born of an ancient family of Guyenne, in 1527. From his early youth, he devoted himself to the servile offices of a courtier, without deriving any substantial advantage from the character he assumed, and the adventures in which he was engaged. Although he obtained the honorary distinctions of knight of the order of Malta, gentleman of the chamber to the kings, Charles IX. and Henry III., chamberlain to the duke of Alençon, and baron of Richemont in Perigord, he complains of indigence at the approach of old age. He died in 1614, at the age of 87. His memoirs, which have furnished anecdotes and biographical narrations, relative to the time in which he lived, were printed in 10 vols. 12mo.; and the last edition at the Hague in 1741, to which is annexed a supplement, is extended to 15 volumes. These memoirs abound with indecencies and contradictions; and though the anecdotes he has recorded throw considerable light on the biography and history of the times, his own opinions and observations are entitled to little deference. Brantome, however, is an amusing writer, and his memoirs have had many readers. *Nonv. Dict. Hist.*

BOURDEILLES, CLAUDE DE, the nephew of the preceding, and comte de Montresor, attached himself to Gas-

ton of Orleans, both whilst he was in favour, and when he lost it; but at length, being disgusted with the tumult and artifices of the court, he withdrew in order to enjoy the sweets of retirement. He died at Paris in 1663. His memoirs, under the name of Montresor, in 2 vols. 12mo. contain several curious particulars, relating to the history of his time. He divulges, without scruple, the projects he formed against the life of cardinal Richelieu.

BOURDELIN, CLAUDE, born at Villa-franca, near Lyons, in 1621, applied early to the study of pharmacy and chemistry, in which he acquired considerable reputation. When the royal academy of sciences was formed in 1666, under the auspices of Mons. Colbert, he was appointed to superintend the chemical department, and, in conjunction with Duclos, made analyses of the principal mineral waters in France. He also furnished the academy with the analyses of numerous other natural bodies, and contrived, or executed the greater part of the chemical experiments, made in the laboratory of the academy, for the space of 23 years. He died in 1699, and was succeeded in his appointment by Mons. Lemery. *Haller. Bib. Botan. Eloy. Dict. Hist.*

BOURDELOIS, in *Geography*, was, before the revolution, the name of a country of France in the province of Guyenne, in the environs of Bourdeaux; bounded on the east by Agenois and Perigord, on the south by Gascony, on the west by the sea, and on the north by Saintonge.

BOURDELOT, JOHN, in *Biography*, a learned French critic, lived towards the close of the 16th, and commencement of the 17th century. Having applied from his youth, to the study of the belles lettres and learned languages, he acquired the reputation, according to Baillet, of being a connoisseur in the oriental tongues, and in the knowledge of MSS. He was also well skilled in the law, and became an advocate to the parliament of Paris in 1627, and was appointed, on account of his merit, master of requests by Mary of Medicis. He died suddenly at Paris in 1638. His notes and emendations upon Lucian were published at Paris in 1615, fol.; his Heliodorus, with notes, in 1619, 8vo.; and his Petronius, also with notes, at Amsterdam in 1663, 12mo. He wrote also, according to Moreri, an "Universal history;" "Commentaries on Juvenal," and many other works which were never published. The abbé Bourdelot, his sister's son, who changed his name from Peter Michon, in compliment to his uncle, was a celebrated physician at Paris, who gained great reputation by a treatise upon the viper, and several other works. He died there in 1685, at the age of 76. *Biog. Dict.*

BOURDIN, in *Conchology*, the vulgar French name of a species of the HALIOTIS genus, found upon the rocks on the coast of France, and in the Mediterranean, the animal of which is eaten. The sort of Haliotis, generally called Bourdin, is the *H. tuberculata*; but the species *striata* also bears the same name. Bellonius gave the title of BOURDIN to the whole tribe of those shells called the sea ears, auris marina, &c. See HALIOTIS.

BOURDON, in *Entomology*, the trivial French name of the male insect of the common honey bee, *Apis mellifica*. But, among the naturalists of France, it is applied, in a more especial manner, as a generic title to that family of the bee tribe which Linnæus calls *Aper bombinutrices hirsutissima*. These are called also *Bourdons velus*, or hair-bees, in common. See APIS, BEE, BEE, wild, and HUMBLE-bee.

BOURDON, SEBASTIAN, in *Biography*, an eminent painter and engraver, was born at Montpellier in 1616, and received the first rudiments of his art from his father, who was

was a painter on glass. He afterwards studied at Paris, under an artist of no great note, and at the age of 18 years went to Italy, where he very successfully imitated the style of different masters, as Claude Lorraine, Andrea Sacchi, Correggio, and Bamboccio. After his return into his own country, he painted, at the age of 27, his most famous picture, "The crucifixion of St. Peter, in the church of Notre Dame at Paris." But being by religious profession a Calvinist, he was interrupted in the exercise of his profession by the civil wars; and therefore, in 1652, he removed to Sweden, where queen Christina made him her first painter. Here he had an opportunity of exhibiting a singular display of his disinterestedness. Gustavus Adolphus, the father of Christina, had brought some pictures from the pillage of Prague, which had never been unpacked. Christina employed Bourdon to examine these; and upon his making a favourable report of them, especially those of Correggio, the queen presented him with the whole collection. Bourdon declined accepting them, and informed the queen, that they were some of the finest pieces in Europe, and that she ought not to part with them; accordingly Christina, after her abdication, took them with her to Rome, and made them the basis of a collection, which afterwards came into the possession of the regent duke of Orleans.

After Christina's abdication, Bourdon returned to France, and pursued the exercise of his profession with uncommon assiduity; confining himself frequently to his garret, which was his painting-room, for a month together. He painted in a great variety of styles, and succeeded in all; history, portrait, landscape, pastoral, and grotesque. His chief faults, says Mr. Strutt, are want of force in the colouring, though others ascribe to it great force and effect, and of correctness in the outline; but these were amply overbalanced by the beauties of his composition, the lively fertility of his imagination, the animation of his expressions, and the variety and gracefulness of his attitudes. His virgins in particular are much esteemed; and the best of his pieces are those that are the least finished. Bourdon was one of the twelve persons who, in 1648, commenced the establishment of the Royal Academy, of which he became director. A violent fever terminated his life in 1671, much to the regret of all who highly respected his character as well as genius. Some of his daughters painted in miniature, and some of his scholars became eminent. His principal works are in the churches at Paris, in the gallery of the hôtel de Bretonville, at Versailles, Montpellier, and Toulouse. His etchings, which are numerous, are executed in a bold, masterly style; and convey a clear idea of his manner of painting. The lights are broad, the draperies are formed with great taste, and the folds well marked, though sometimes too dark and hard upon the lights; the heads are very expressive; the back-grounds are finely conceived, and executed in a grand style. This master's etchings are held in the highest estimation, of which some of the principal from his own compositions are the following; viz. the "Seven acts of mercy;" the "Flight into Egypt;" and the "Return from thence;" several subjects of the "Virgin and child;" in one of which is seen a woman washing linen, hence distinguished by the name of the washer-woman; the "Return of the ark," said to be very scarce; the "Baptism of the eunuch;" "Twelve large landscapes," very spirited and fine prints. D'Argenville. Pilkington. Strutt.

BOURDON, AMELOT, a physician of Cambray, published, towards the end of the 17th century, "Nouvelles tables anatomiques, ou sont représentées toutes les parties du corps humain," large folio, Paris, 1678. Some of the tables are by the author; more from Vesalius. The plates represent-

ing the nerves are from Willis. "Nouvelle description anatomique de toutes les parties du corps humain, et de leur usages," Paris, 1679 and 1683, 12mo. No memorials of the life of this writer are known. Hall. Bib. Med. Eloy. Dict. Hist.

BOURDONNAY, in *Geography*, a town of France, in the department of the Meurthe, and chief place of a canton, in the district of Chateau-Salins; 4 leagues N.E. of Lunéville.

BOURDONNE, in *Heraldry*, is understood of a cross, whose extremities are turned round like the ends of a pilgrim's staff; more frequently called *pommée*, *globatus*.

BOURDONNEUR, or L'OISEAU BOURDONNANT, in *Ornithology*, the same as *Oiseaux mouches* and *colibris*, among French naturalists. The birds are so named, because, when flying, they make a strange kind of noise with the rapid motion of their wings, the sound of which Marcgrave compares to that of a spinning-wheel.

BOURDOUR, in *Geography*, a town of Asiatic Turkey, in the province of Caramania; 98 miles S.W. of Cogni.

BOUREAU, in *Ichthyology*. The Linnæan *Trigla lyra*, is so named by the inhabitants in the neighbourhood of Bayonne.

BOURETOUTE, in *Geography*, a town of France, in the department of the Lower Seine; 8 leagues N.N.W. of Rouen.

BOURG, a town of the island of Cayenne, in South America.

BOURG, or *Bourg en Bresse*, a city of France, and capital of the department of Ain, seated on the Reffouze, in a country somewhat marshy, but fertile. The principal commerce consists of corn, horses, cattle, and white leather. The town contains 6984, and the canton 14,739 inhabitants; the territory includes 297½ kilometres, and 13 communes. Bourg is distant 93 leagues S.E. from Paris. N. lat. 46° 12' 3", E. long. 5° 8'.

BOURG, or *Bourg-sur-Gironde*, a town of France, in the department of the Gironde, and chief place of a canton, in the district of Blaye, seated on the Gironde; 4 leagues N. of Bourdeaux. It has a good harbour, about half a league from the confluence of the Dordogne with the Garonne, and carries on a considerable trade in wine. The town contains 2704, and the canton 13,286 inhabitants; the territory includes 132½ kilometres, and 19 communes. N. lat. 45° 4'. W. long. 0° 45'.

BOURG, *Le*, a town of France, in the department of the Lower Loire; 7 leagues W. of Nantes.—Also, a town of France, in the department of the Charente, situate on the south side of the Charente, opposite Jarnac, and 5 miles E. of Cognac.

BOURG, *Saint Andéol*, a town of France, in the department of the Ardèche, and chief place of a canton, in the district of Privas, and 7 leagues S.S.E. of it. The town contains 3964, and the canton 9492 inhabitants; the territory includes 282½ kilometres, and 9 communes.

BOURG-Argental, a town of France, in the department of the Loire, and chief place of a canton, in the district of St. Etienne, and 4 leagues S.E. from it. The town contains 1068, and the canton 6034 inhabitants; and the territory includes 150 kilometres, and 9 communes.

BOURG d'Ault, a town of France, on the sea-coast, in the department of the Somme; 1 league N. of Eure.

BOURG des Comtes, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the district of Redon; 3½ leagues S. of Rennes.

BOURG Dieu, a town of France, in the department of the

the Indre, and chief place of a canton, in the district of Chateauroux, and 1 mile N. of it.

BOURG Lafig, a town of France, in the department of Puy-de-Dôme, and chief place of a canton, in the district of Clermont, and 8 leagues W. S. W. of it. The town contains 2133, and the canton 5787 inhabitants; the extent of the territory comprehends 215 kilometres, and 10 communes.

BOURG de Lefra, a town of France, in the department of the Ardèche; 6 leagues N. N. W. of Privas.

BOURG-Maurice, a town of Savoy, in the department of Mont Blanc, and chief place of a canton, in the district of Moutiers; the town contains 2166, and the canton 11,578 inhabitants; and the territory includes 967½ kilometres, and 13 communes.

BOURG Neuf, a sea-port town of France, in the department of the Lower Loire, and chief place of a canton, in the district of Paimbœuf, seated on the English channel, at the mouth of the Loire, in a bay to which it gives name, between the isle of Noirmoutier and the continent. It has a safe bay and harbour; and trades chiefly in salt, made from the marthes in its vicinity; 6½ leagues S. W. of Nantes, and 2 W. N. W. of Machecoul. It contains 2033 inhabitants, and the population of the canton includes 5501; the territory comprehends 187½ kilometres and 6 communes.

BOURG d'Oisans, a town of France, in the department of the Isère, and chief place of a canton, in the district of Grenoble, and 5 leagues S. E. of it. The town contains 2079, and the canton 12,688 inhabitants; and the territory includes 910 kilometres, and 21 communes.

BOURG de Péage, or *de Valence*, a town of France, in the department of the Drôme, and chief place of a canton, in the district of Valence, 1 mile N. of it. The town contains 2339, and the canton 15,113 inhabitants; the territory includes 245 kilometres, and 14 communes.

BOURG le Reins, a town of France, and principal place of a district, in the department of Paris, and 4 miles S. of it.

BOURG le Roy, a town of France, in the department of the Sarthe, and chief place of a canton, in the district of Freteville; 2 leagues S. of Alençon.

BOURG-de-Viza, a town of France, in the department of the Lot, and chief place of a canton, in the district of Montauban, 8 miles W. of Lauzerte. The town contains 684, and the canton 7,470 inhabitants; the territory comprehends 130 kilometres, and 11 communes.

BOURGACHARD, a town of France, in the department of the Eure, and chief place of a canton, in the district of Pont Audemer, and 4 leagues E. of it.

BOURGANEUF, a town of France, and principal place of a district, in the department of the Creuse, 5½ leagues W. of Aubusson.

BOURG DUN, LE, a town of France, in the department of the Lower Seine, and chief place of a canton, in the district of Dieppe, and 3 leagues S. W. of it.

BOURGEOIS. *LOUISA*, also called *Bourfier*, in *Biography*, an experienced and intelligent midwife, in great repute, the latter part of the 16th and the beginning of the 17th centuries. Her husband was an army surgeon, as she informs us, and had been educated under Ambrose Paré; from him she received instruction in the more difficult parts of the art, so that she was enabled to deliver in some cases, where the assistance of the surgeon was usually thought necessary. In one case she extracted a stone from the urinary bladder, by means of the forceps. It is no wonder, therefore, that she attained to the height of her profession, and should be employed by the ladies of the highest rank, and at length by the queen of France, whom she delivered of six children. Her publications are, "Observations diverses sur la sterilité, perte de fruit, fécondité, accouchemens, et maladies des femmes," Paris, 1608, 8vo. This was followed by a second and a third part, containing together, a collection of useful facts and observations on every branch of midwifery. "Recueil des secrets," &c. 1635, 8vo. containing formulæ for the composition of a great variety of medicines, for the cure of diseases incident principally to women and children, in which she appears to have had great faith; also for preparing cosmetics, for improving the complexion. "Recit véritable de la naissance de messrs. et dames, les enfans de France," containing a register of the births of the children of the queen, with the circumstances attending the labours. It appears that the present made her on the birth of each of the royal infants was, 500 crowns for a male, and 300 for a female child. She had also a pension of 300 crowns per annum, which she was to enjoy during her life. "Instructions a ma fille," Paris, 1642, containing rules for her conduct in practice. These several treatises were collected together and published in 1652, Paris, 12mo. The volume is decorated with portraits of the queen of France, to whom it was dedicated, and of mad. Bourfier. It is also accompanied with copies of verses to the king's physicians, and to mad. B. Haller Bib. Chirurg. Med.

BOURGER MESTRES. See *BURGER Masters*.

BOURGES, in *Geography*, an ancient city of France, formerly called *Avaricum* and *Bituriges*, the capital of the department of the Cher, situate at the conflux of the Auron and Eure. Before the revolution it was the see of an archbishop; its university was founded, in 1466, by Lewis XI., who was born here, and invested the town with considerable privileges. The college of the Jesuits was a large and magnificent building. It contained 16 parish churches, and many public buildings. The cathedral church is considered as one of the most beautiful Gothic edifices in Europe. The principal manufactures of this place are linen cloth, woollen stuffs, and stockings, which are sold at its annual fairs; exclusively of these its commerce is small. The town contains 15,340, and the district the same number of inhabitants; the territory includes 90 kilometres, and 1 commune. N. lat. 47° 5' 4". E. long. 2° 23' 26".

BOURGET, a small town of Savoy, seated on a lake of the same name, about 10 miles long, and from 2 to 3 wide, 6 miles N. of Chamberry. This lake has a fish unknown in other countries, called "Lavarette," which weighs four or five pounds, and which is much valued at Chamberry. Near this lake is an irregular reciprocating spring, which issues from a rock, and is called "La Fontaine de Merveille."

BOURGET, *Le*, a town of France, in the department of Paris; 2 leagues N. of it.

BOURNEUF DE LA FOREST, LE, a town of France, in the department of the Mayenne; 3 leagues N. W. of Laval.

BOURGOGNE, a town of France, in the department of the Marne, and chief place of a canton, in the district of Reims, and 6 miles N. of it. The town contains 633, and the canton 11,989 inhabitants; the territory includes 275 kilometres, and 25 communes.

BOURGOING, a town of France, in the department of the Isère, and chief place of a canton, in the district of la Tour-du-Pin, and 2 leagues W. of it. The population of the town includes 3595 persons, and that of the canton 15,021; the territory comprehends 175 kilometres, and 11 communes.

BOURG THEROUDE, a town of France, in the department of the Eure, and chief place of a canton, in the district

district of Pont-Audemer, and 5 leagues E. of it. The town contains 860, and the canton 11,257 inhabitants; the territory includes 107½ kilometres, and 24 communes.

BOURGUEBUS, a town of France, in the department of Calvados, and chief place of a canton, in the district of Caen; containing 405 inhabitants; the population of the canton is 9,391; and the extent of the territory comprehends 147½ kilometres, and 30 communes.

BOURGUEIL, a town of France, in the department of the Indre and Loire, and chief place of a canton, in the district of Chinon; 7½ leagues W. of Tours. The town contains 2810, and the canton 14,969 inhabitants; the territory includes 142½ kilometres, and 7 communes.

BOURGUET, **LEWIS**, in *Biography*, was born at Nîmes in 1678, and removing with his family, who were protestants, to Switzerland, on the revocation of the edict of Nantes, he pursued his studies at Zurich. Here he distinguished himself by his application to theology, the languages, mathematics, law, antiquities, medals, and more particularly natural history. His attention was more especially directed to geology, for the cultivation of which his situation among the Swiss mountains was peculiarly favourable. He afterwards settled at Neuchâtel, and here became professor of philosophy and mathematics. In 1729 he printed, in French, "Philosophical letters on the formation of salts and crystals, and on the generation and organic mechanism of plants and animals," &c. 12mo. In the preceding year he had undertaken, with the assistance of learned colleagues, a periodical work, entitled "Bibliothèque Italique," printed at Geneva, and extended to 16 vols. 8vo. which was esteemed a judicious and useful performance. Bourget had many literary connections, and was a member of several learned societies. Many of his papers were published in the "Journal Helvétique." He died in 1742. Moreri.

BOURGUIGNONS. See **BURGUNDIANS**.

BOURGUIGNOTTE, a defensive weapon wherewith to cover the head; being a kind of cask, open before, and proof against either pike or musket; its name arose from the Bourguignons, who first introduced it.

BOURI, in *Ichthyology*, the Arabic name of *Mugilcephalus*, Linn.

BOURIGNON, **ANTOINETTE DE LA PORTE**, in *Biography*, an enthusiast of a wild imagination and turbulent disposition, was born at Lille in Flanders in 1616. Under a pretence of a divine inspiration and commission, she engaged in reviving the true spirit of Christianity, which she represented as extinguished by theological animosities and debates. Her own temper, however, was very different from that truly Christian spirit which she professed to rouse and reanimate. Adverse to marriage, though urged to it by her family, which was opulent, she eloped in order to avoid their persuasions; and, after a variety of adventures, became governess of an hospital in her native town, and assumed the order and habit of St. Augustin. Here, however, her restless and overbearing temper occasioned such disturbances, that, in consequence of the interference of the magistrates, she was obliged to remove to Ghent. One of her converts, named Christian Bartholomew de Cordt, who had been a Jansemit and priest of the oratory at Mechlin, was owner of part of an island in Holstein, called Noordstrandt. Of this patron of her fanaticism, she bought an estate in this island, and determined to settle there with her disciples. In the mean while she resided at Amsterdam, and made many proselytes. She also wrote several books, and particularly one, entitled, "The Light of the World," in which she professes to explain her mystical principles. Mosheim suggests, that an attentive reader of her works will perceive,

that her intellect must have been in a disordered state; that most of her divine effusions were borrowed from the productions of the Mystics; and that, by the intemperance of her imagination, she has given an additional air of absurdity and extravagance to the tenets which she had derived from those pompous enthusiasts. The predominant principle of her works is this: "that the Christian religion consists neither in knowledge nor practice, but in a certain internal feeling and divine impulse, that arises immediately from communion with the Deity." Upon the death of De Cordt, who made this female fanatic his heiress, she left Holland in 1671, with a view of settling at Noordstrandt; but she discouraged many of her disciples from attending her, under an apprehension that their attachment was selfish, and that they wished to obtain a subsistence at her expence. She wrote in French, Dutch, and German, with great facility; and printed her numerous works in a press, which she had set up in her own house. Such, however, were both her principles and temper, that they exposed her to a variety of persecutions, which disquieted her mind, and made it necessary for her frequently to change her abode. At length she obtained the direction of an hospital in East Friesland, where her time was devoted to the service of the poor, whilst she retained her money under a notion, that she could find none that were deserving objects of her bounty. After a life of vicissitude and vexation, and suffering many insults on account of her religious fancies, she ended her days at Franeker, in 1680. Whilst she lived her followers were few in number; but after her death, her writings were the means of multiplying her proselytes, who were distinguished by the appellation of "Bourignonists." Amongst these a Cartesian, of a bold and penetrating genius, whose name was Peter Poiret, took the lead; and he dressed out in an artful manner, and reduced to a kind of system, the wild and incoherent fancies of Bourignon, in a large work, entitled, "L'Œconomie Divine, ou Système Universel," which was published, both in French and Latin, at Amsterdam, in 1686, in 7 vols. 8vo. In Scotland her notions occasioned a controversy, in which Dr. Cockburn distinguished himself as the opponent of the Bourignonists. Gen. Dict. Mosheim. Eccl. Hist. vol. v. p. 514, &c. 8vo.

BOURMONT, in *Geography*, a town of France, in the department of the Upper Marne, and chief place of a canton, in the district of Chaumont, and 6 leagues E. N. E. from it, seated on a steep mountain; the population of the town is estimated at 1071, and of the canton at 10,370; the territory includes 272½ kilometres, and 26 communes. N. lat 48° 12'. E. long. 5° 32'.

BOURN, a market town of Lincolnshire, in England, stands on the southern side of the county, near the borders of Rutlandshire, at the distance of 97 miles north from London. Here have been a castle and a priory, but both are partly destroyed. The outworks, ditches, and some fragments of the former are left to commemorate the spot; and as the fortified area includes about eight acres of land, we may presume that it was a place of considerable strength and importance. "Very large irregular works," says Mr. Gough, "are on the north and west sides between the two ditches; the earth raised about 20 yards in length, and 10 in breadth, and a ditch between every one of these pointing to the grand moat." These works are said to have been formed by Oliver Cromwell, when he attacked the town. Some of our ancient historians have stated that S. Edmund, king of the East Angles, was crowned at Bourn; but this is confuted by Mr. Gough, who places the scene of that event at Bures in Suffolk; indeed this castle does not appear to be connected with any public event till the time of the Danish invasions.

invasions. Some of these marauders having made an inroad into Lincolnshire, Marcot, lord of Bourn, with his numerous family and attendants trained in arms, and about 250 men from Croyland abbey, marched against them, and met them at Laundon, where a desperate battle ensued, which terminated in favour of Marcot and his party. Bourn, as its name implies, is situated in a valley, and has a stream running through part of it, which turns three mills, very near its source. Here is also a medicinal mineral spring, the waters of which are rather brackish, and are found to be serviceable in some disorders. Here are some tanneries, and one parish church, a chapel, and some alms-houses. The markets are weekly on Saturdays, and here are three annual fairs. Vessels of about ten tons burthen convey articles of commerce, &c. from this place to Spalding, Boston, &c. That distinguished statesman, Sir W. Cecil, who was created baron Burleigh, by queen Elizabeth, was born here in 1521, and possessed this manor. At an inn in this town was formerly a curious old portrait of queen Elizabeth, on a pannel. The town-hall was built by the above nobleman. The township contains 282 houses, and 1474 inhabitants.

At Stanefield, a village a little to the north, is a chalybeate spring, and, according to Dr. Stukeley, many Roman coins have been found here. About four miles hence is Grimsthorpe, a seat belonging to the Duke of Ancaster. The house, a magnificent structure, stands on a hill in the midst of a large park, which, with its fine woods, and large piece of water, constitute many grand and beautiful scenes. "Grimsthorpe," says Fuller, "I may call an extempore structure, got up on a sudden by Charles Brandon, duke of Suffolk, to entertain king Henry VIII. in his progress into these parts." Since the period of Fuller's writing, this house has undergone many improving alterations, and is now finished and fitted up in an elegant style. Gough's edition of Camden's Britannia, vol. ii. Fuller's Church History of England.

BOURNASEL, a town of France, in the department of the Aveyron, $4\frac{1}{2}$ leagues N. W. of Rhodéz.

BOURNEVILLE, a town of France, in the department of the Eure; 2 leagues N.W. of Pont Audemer.

BOURNEZEAU, a town of France, in the department of the Vendée; 5 leagues N.W. of Fontenay le Comte.

BOURNIQUEL, a town of France, in the department of the Lot, and chief place of a canton, in the district of Montauban, seated on the south side of the Aveyron; 13 miles E. N. E. of Montauban.

BOURNOU. See BORNOU.

BOURNOU, *Great and Little*, two capes at the commencement of the road in the gulf of Salonica. This road, which terminates at a shoal, which is situated at the head of the gulf, affords good anchorage to ships of every size, and a safe retreat to fleets.

BOURO, one of the Moluccas, or Spice islands, in the East Indies, lying between Ceram on the east, and Celebes on the west; its shape is oval, the longest diameter extending east and west; about 9 $\frac{1}{2}$ miles in length by 50 in breadth. This isle was nominally subject to the king of Ternat; but in 1660 the Dutch built a fort in the bay of Cagale, or Cayeli, at the north-east end of the island, where the natives, who profess the Mahometan religion, have a mosque, whose roofs, gradually arising in a regular gradation one above another, present a very agreeable appearance; and though they burned the exterior woods, they seem to have improved the industry of the inhabitants. This island rises suddenly from a deep sea, being encompassed as with a wall. Part of its northern coast is inhabited by a people who are

subjects of the Dutch company, and are governed by their "Oran-cayos," who have each a "dap," or deputy under them. The interior parts, which consist of mountains so lofty, that they may be sometimes deferred at the distance of 28 leagues, are the haunts of the "Alforese," or wild mountaineers. The south coast is now deserted, on account of the continual invasions of the Papuas. The coast, to the east of the village of Cayeli, is watered by a number of small streams; but to the north-west there is a very considerable river, called by the natives "Aer-Bessar," which discharges itself into the road-head. This river is very deep, and for some distance from its mouth more than 70 feet broad. On its borders is found the beautiful shrub, known by the name of "Portlandia grandiflora." The pebbles rolled from the mountains by the rivulets are fragments of "quartz," mixed with mica. Birds, especially parrots, are so numerous, that the island probably derives from this circumstance its name, which signifies in the Malayan language, a bird. The woods afford abundance of deer, goats, and wild boars. The civet weasel is found in this island, and the curious hog called babiroussa. A green ebony, and a kind of iron-wood, are mentioned among the trees, and several other kinds of wood, proper for inlaid work, much valued by the Chinese, and others useful for dyeing; and it is not improbable that the clove, and perhaps the nutmeg, defy, in the recesses of the mountains, the wild avarice of man. The sago tree grows here in great abundance, supplying the inhabitants with the principal means of their subsistence, as well as an article of exportation. The "Cayou pouti," of the Malays (*Melaleuca laifolia*) grows in great abundance upon the hills; and from this is obtained, by distillation, a great quantity of the oil of cajuput. According to astronomical observations, made by those who pursued the voyage in search of la Pérouse, at the village of Cayeli, its latitude was $3^{\circ} 21' 54''$ S. and longitude $127^{\circ} 21' 6''$ E. The dip of the magnetic needle was $20^{\circ} 30'$. Its variation, observed on board, was $0^{\circ} 54'$ E. The highest point indicated by the thermometer (Reaumur's) on board was 23° , and on shore $25^{\circ} \frac{2}{3}$ ths. The mercury in the barometer varied only from 28 inches 1 line to 28 inches 2 lines. The time of high water on the full and change days was three quarters after eleven; it then rose to the perpendicular height of 6 feet. Voyages in search of la Pérouse, drawn up by M. Labillardiere, vol. ii. p. 308, &c. Eng. ed.

BOURO, is also a small island, north of the island of Sumatra; 5 leagues N. E. of Acheen.

BOURON, a town of European Turkey, in Romania, the see of a Greek bishop, seated on a lake of the same name, and 15 miles distant from the coast of the Archipelago.

BOURRE, in Ornithology. According to Salerne, the common or domestic duck is called *bourre* in Normandy, and the ducklings *bourret*.

BOURRE, in Zoology, is also a word in use in France to express the hair of several quadrupeds, such as the ox, the buffalo, the horse, stag, &c. Thus also they have the distinction of *bourre de laine* for the woolly kinds, and *bourre de soie* for that of a silky texture.

BOURRE, Fr. the air of a dance so called, is supposed to come from Auvergne, in which province it is still in use. The tune is in common time, and begins with an odd crotchet. Rousseau.

BOURRERIA, in Botany. See EHRETIA.

BOURRIQUE, in Zoology, synonymous with *Panasse*, the she-ass.

BOURSAULT, EDMÉ, in Biography, a French dramatic writer, was born in the province of Burgundy, in 1638; and by singular assiduity, though his education was

altogether neglected in his youth, attained to a very accurate acquaintance with the French language. After his settlement at Paris, he was employed by the king in composing a work for the Dauphin, entitled "The true Study of Sovereigns," which was so well received, that the author would have been appointed sub-preceptor to the dauphin, if he had understood Latin. For a weekly gazette in verse, with which he amused the court, he obtained a pension; but, on account of an imprudent attack upon the Capuchins, a complaint was lodged against him by the queen's Spanish confessor, who belonged to that order, and in consequence of it, his gazette and pension were suppressed, and he himself was in danger of being confined in the bastille. In a similar gazette, he afterwards introduced a satire on the prince of Orange, which political considerations induced the court to suppress. At length, however, he was appointed receiver of the tallies at Montluçon, where he died in 1701. As a writer for the stage, Bourfault was distinguished by his talents for agreeable ridicule, united with good sense, and also by an harmonious versification, as well as a style that was easy and adapted to his subjects. His "Esope à la Ville," and "Esope à la Cour," still retain their reputation on the theatre. An attack upon Boileau, by way of retaliation for some personal reflections in this author's satires, prevented the introduction of his piece in one act, entitled "La Satyre des Satyres," on the stage; but it was afterwards printed with a preface. Some years afterwards, Bourfault, by his polite attention to Boileau, conciliated his friendship, and induced him to insert some other name terminating with *aute*, in his satires. Bourfault also wrote tragedies and operas; and his dramatic works were published in 1746, under the title of "Theatre de Bourfault," in 3 vols. 12mo. His letters, miscellaneous pieces, and romances, are now forgotten. *Nouv. Dict. Hist.*—

BOURSE, in *Ichthyology*, in the isles of France and Madagascar, the common name of all the fishes of the TETRODON genus. In the French American colonies, *baliste vieille* (*balistes vetula*) bears the same name. Lacepede likewise assigns the word *bourse* as a specific name to a new species of balistes described by Sonnerat, the first dorsal fin of which has three rays; the second is spotted; tail forked; and below the eye a black lunated spot.

BOURSIER, LAWRENCE-FRANCIS, in *Biography*, an eminent theologian and metaphysician, was born at Ecouen, in the diocese of Paris, in 1679, and entered into the Sorbonne in 1709, where, in 1711, he obtained the degree of doctor. As he devoted himself to study, he refused several benefices which were offered to him; and, at the age of 31, acquired great celebrity, both as an eloquent writer, and profound reasoner, by a work entitled "The Action of God on the Creatures," or "Physical Premotion proved by reasoning," 2 vols. 4to. and 6 vols. 12mo. This work was highly extolled by the Jansenists; and Voltaire speaks of it (Age of Lewis XIV.) as deeply argumentative, learned, and sometimes extremely eloquent. It involved him in a controversy with the famous Malébranche. He was also the author of a memoir presented to Peter the Great by the doctors of the Sorbonne, concerning a proposed union between the Russian and the Latin churches, which originated from a conference held by the author with the czar, on his visit to the Sorbonne. His other works, which were numerous, chiefly related to the disputes that subsisted in the Gallican church. In 1729, he was one of many doctors who were expelled the Sorbonne; and from this time he was under a necessity of securing his personal liberty by living in privacy. He died at Paris in 1749. *Nouv. Dict. Hist.*

BOURSIRE, in *Entomology*, the *cancer latro*. *Roche*. *Ant. 1. c. 21.*—See LATRO.

BOURTANG, in *Geography*, a town and fortress of Groningen; 12 miles S.S.W. of Winschotten.

BOURTH, a town of France, in the department of the Eure; 2 leagues N.W. of Verneuil.

BOURTHES, a town of France, in the department of the Straits of Calais, and chief place of a canton, in the district of Boulogne; 4 leagues S.E. of Boulogne.

BOURTRY, or BOTRO, a village of Africa, in the kingdom of Anta, on the Gold coast, seated on a small river, at the foot of an eminence, on which the Dutch have built an irregular and mean fort, of an oblong form, divided into two parts, each defended by four small pieces of cannon. The fort was built by one Carolus, in the service of the Dutch, who afterwards passed into the pay of France, and obtained that privilege from the king of Anta, on acknowledging his superiority by a slight tribute. This fort is called Badentyn; its batteries command the village of Bourtry, which has no other commerce besides the gold trade carried on with the negroes of Adom. The inhabitants are of a mild and gentle disposition, much attached to the Europeans, whom they consider as their protectors. In 1708, the Dutch concerted a plan for forming sugar plantations, which alarmed Sir Dalby Thomas, then the English governor at cape Coast, who represented to the Royal African company the danger of permitting the Dutch to execute a scheme which would diminish the value of the British colonies in the West Indies. These sugar-plantations, the plan of which was thus counteracted, never answered the great expectations of the Dutch.

BOURY, in *Zoology*, a species of ox, that inhabits Madagascar. It is of the size of a camel, of a snowy white colour, and, like that animal, has a protuberance on the back. Boury is the name by which this kind is called by the natives.

BOUSCH, or BOUCH, in *Geography*, a town of Upper Egypt, situate about a quarter of a league from the west bank of the Nile, and 4 miles N. E. of Benisouef. The houses are built of brick, and the roofs are elevated in the form of pigeon-houses. The inhabitants occupy the ground-floor, and the pigeons the first; a practice which is general through the rest of the Thebais. These houses, which make some figure at a distance, exhibit on entering them only tokens of wretchedness in the midst of an abundantly rich country. In this town is occasionally held a considerable market for cattle and provisions. The canal of Bousch formerly poured its waters into the river for six months of the year. At present it conveys them through the whole year into the lake Moeris, which does not receive a sufficient quantity by Joseph's canal, half choked up as it is, to admit of its restoring any to the Nile.

BOUSIER, of the French *Entomologists*. See COFRIS.

BOUSKAVIR, in *Geography*, a river of Persia, which discharges itself into the Persian gulf, near Bender Rik.

BOUSSAC, a town of France, and principal place of a district, in the department of the Creuse, 6 leagues N.E. of Gueret. The place contains 586, and the canton 7787 inhabitants; the territory includes 337½ kilometres, and 17 communes.

BOUSSANGES, a town of France, in the department of the Herault; 6 leagues N. of Beziers.

BOUSSIERE, a town of France, in the department of the Doubs, and chief place of a canton, in the district of Besançon; the town contains 347, and the canton 7025 inhabitants; the territory comprehends 135 kilometres, and 25 communes.

BOUSSU,

BOUSSU, a town of France, in the department of Jemappe, and chief place of a canton, in the district of Mons; the town contains 1882, and the canton 13,571 inhabitants; the territory includes 82½ kilometres, and 13 communes.

BOUSTROPHEDON, compounded of *βουσ*, bullock, and *τροπή*, I turn, in *Literature*, is used in speaking of the ancient method of writing among the Greeks, wherein the lines were continued forwards and backwards, like the furrows in ploughing.

Pausanias (lib. v. c. 17. Eliaca) mentions several ancient inscriptions written in this manner: the laws of Solon are also said to have been thus written; which, as the author last cited explains it, is when the second line is turned on the contrary side, beginning at the end of the former, thus:

ΕΚ ΔΙΟΣ ΑΡ

ΝΟΜΟΝ

Potter. Arch. Græc. lib. i. cap. 26. tom. i.

BOUT, in *Ornithology*. Under this name Buffon describes two birds of the *Κροτοφάγα* genus; namely *C. ani*, as *le petit bout de Petun*; and *C. major*, as *le grand bout de Petun*.

BOUTA, in *Ancient Geography*, a town of Africa, in Libya Interior, near the source of the river Cinipha, according to Ptolemy.

BOUTADE, in *Music*, an irregular flight or movement without art or study.

The word was also formerly used for a *sclo* on the *viol di gamba*, thus called as being supposed to be extemporary.

Richelet speaks of a dance called *boutade*, invented by the famous Bocan, in the reign of Lewis XIII. so called from the brisk humorous manner of its beginning; but now out of use.

BOUTAEL, in *Ichthyology*, the local name of a certain kind of fish, that is said to inhabit the lakes, ponds, and standing waters in the East Indies, where it is also called the *Neegen eegen*. Ray describes it under the name of *lampetra Indica*. It is conjectured that this must belong to the *lamprey*, or *petromyzon* genus, from the accounts of authors who have seen it; but whether really so, or not, it is difficult to determine.

BOUTAN, in *Geography*. See BOOTAN.

BOUTANT, in *Architecture*. An arc boutant is an arch or buttress, serving to sustain a vault; and which is itself sustained by some strong wall, or massive pile.

The word is French, and comes from the verb *bouter*, to but, or abut.

A pillar BOUTANT is a large chain or pile of stone, made to support a wall, terrace, or vault.

BOUTE', in the *Manege*. A horse is called *bouté*, when his legs are in a straight line from the knee to the coronet; short-jointed horses are most apt to be *bouté*.

BOUTKOUJA, in *Geography*, a town of Persia, in the province of Ghilan; 120 miles N.N.W. of Reihd.

BOUTON, or BOOTON, one of the Molucca or rather Celebesian islands, in the Indian sea; situate about 12 miles to the south east of Celebes. It is a large and woody island, and is a kingdom of itself, to which the neighbouring islands belong. The king of Bouton is in alliance with the Dutch company, who pay him a yearly sum of 150 rix-dollars, or 21. 14s. 6d. sterling, in new Dutch coin, upon condition, that he should not only permit the extirpation by the company of all the clove-trees in this and the neighbouring islands, but also assist them in effecting it. For this purpose, the company annually send out a serjeant, who is styled the "extirpator," and who goes through all the woods in the islands, and causes all the clove-trees which he meets

with to be cut down. The king of Bouton is obliged to provide for him guides and interpreters, and also vessels, if he should need them. But as this contract has not been regularly fulfilled, the government in India has thought proper to withhold this pecuniary allowance, at least for one year, in order to induce this prince to adhere more rigidly to his contract, and to be more active in assisting the company to destroy this rich production in his country, for the benefit of Amboyna and Banda. The passage between Bouton and the Toucan-bessis is the second dangerous part of the navigation for ships going to the Moluccas or Spice islands; the other being that of the "Budgeroons." The former channel is, indeed, wider than the latter, being about 4 leagues in breadth from the nearest part of Bouton to the westernmost of the Toucan-bessis; but the danger is of longer duration, on account of the numerous small islands that form the cluster called the "Toucan-bessis;" all of which are either connected or surrounded by rocky shoals, over and between which very rapid currents set strongly to the eastward: besides, a large and dangerous flat, called the "Hoefzyer," or horse-shoe, lies one and a half or two leagues south of them, upon which many vessels of the company have been wrecked. In the narrowest part of the passage is also a bay running into the land, west and north, into which vessels are in danger of being driven by the currents which set into the bay, if the point opposite Toucan-bessis be approached too near in calm weather. From this bay there is no escape till the west monsoon sets in again; and some of the company's ships have been under a necessity of remaining in it for five or six months. From this circumstance, the navigators have given it the name of "Dwaal," or Mistake-bay. The principal town of this island is Callasufurg, seated about a mile from the sea, on the top of a hill, and surrounded by walls. The inhabitants are small, but well-shaped, and of a dark olive complexion. Their houses are erected on posts; and their religion is Mahometanism. Stavorinus's Voyages to the East Ind. vol. ii. p. 300. S. lat. 5°. E. long 123° 30'.

BOUTON de Camifelle, in *Conchology*, a trivial name in France for *trochus latio* of Linnæus.

BOUTON de la Chine, the Linnæan *trochus niloticus*.

BOUTON de Rose, a species of BULLA, ornamented with red bands, *bulla aplystre* of Linnæus.

BOUTON terrestre, the common name of a terrestrial snail, figured by D'Argenville. It is the *helix rotundata* of Linnæus.

BOUTONNE, in *Geography*, a river of France, which runs into the Charente, 2 leagues east of Rochfort; passing by St. Jean de Angely, and navigable to that town.

BOUTS-RIMES, a popular term in the French Poetry; signifying certain rhymes, disposed in order, and given to a poet, together with a subject, to be filled up with verses ending in the same words and the same order. The invention of the bouts-rimes is owing to one Du Lot, a poet, in the year 1649. In fixing the bouts, it is usual to chuse such as seem the remotest, and have the least connection.

Some good authors fancy that these rhymes are of all others the easiest, that they assist the invention, and furnish more new thoughts than any others. Sarrafin has a poem on the defeat of the bouts-rimes. The academy of Lanternists, at Thoulouse, have contributed towards keeping in countenance the bouts-rimer, by proposing each year a set of fourteen, to be filled up on the glories of the grand manège the victorious sonnet to be rewarded with a fine medal. An instance hereof may be given in the following one, filled up by P. Commire:

Tout

Tout est grand dans le roi, l'aspect seul de son
Rend nos fiers ennemis plus froids que des
Et Guillaume n'attend que le tems des
Pour se voir foccomber sous un bras si
Qu'on ne vous vante plus les miracles d'
Louis de bien regner lui feroit des
Horace en vain l'egale aux dieux dans ses
Moins que mon heros il etoit sage et
BOUTSALLICK, in *Ornithology*, synonymous with
cuculus scolopaceus, which see.

busse
glagons.
moissons,
robuste.
Auguste;
leçons:
chansons:
juste, &c.

BOUTTONNE'E, Fr. in *Heraldry*, is applied to the seed of a rose, when represented of a different colour from the flower; which the English call *seeded*: e. g. a rose gules seeded.

BOUVERET, in *Ornithology*, the French name of *loxia aurantia*.

BOUVERON. Under this name *loxia lineola* is described by several French writers. Brisson, however, calls it *petit bouvreuil noir d'Afrique*.

BOUVIER, the name of *motacilla nevia*. Salern. Orn.

BOUVIERA, in *Ichthyology*, a name given by some writers to a small fresh-water fish, found in the clear streams of France and Germany. The French call it *bouvière*. It also bears the name of *bubulca*. This is *cyprinus amarus* of naturalists.

BOUVIERE, the common name in France of *cyprinus amarus*.

BOUVIGNES, in *Geography*, a town of the Netherlands, in the county of Namur, seated on the Meuse. Near Bouvignes, which was formerly surrounded with a wall, and had a strong castle, are the remains of an ancient city, called "Chivemont," the inhabitants of which committed many depredations, and defended themselves with valour against Charles the Simple, in 922; against Otho, in 939; and against Bruno, archbishop of Cologne, in 960. But it was at length taken and destroyed, in 992, by Notger, bishop of Liege. It is distant 4 leagues S. from Namur.

BOUVINES, or PONT-A-BOUVINES, a village of Flanders, seated on the river Marque, 3 leagues S.E. of Lille, where Philip Augustus obtained a great victory over the emperor Otho in 1214.

BOUVREUIL, in *Ornithology* (Buffon, &c.), *loxia pyrrhula* of Linnæus and other systematic writers; and *bullfinch* of the English. Bouvreuil, in a more general sense, implies all the birds of the *LOXIA* genus.

BOUXIERES-AUX-DAMES, in *Geography*, a town of France, in the department of the Meurthe, 1 league N. of Nancy.

BOUXWILLER, a town of France, in the department of the Lower Rhine, and chief place of a canton, in the district of Saverne; 6 leagues N.W. of Strasburg. The town contains 2700, and the canton 12,264 inhabitants; the territory includes 105 kilometres, and 21 communes.

BOUZANNE, a river of France, in the department of Indre, which rises near Aigurande, 7 leagues from Argenton, and discharges itself into the Creuse, near Cluseau.

BOUZDOGAN, a town of Asiatic Turkey, in the province of Natolia; 24 miles N.W. from Mogla.

BOUZE, a town of France, in the department of the Côte d'Or, and chief place of a canton, in the district of Beaune; 1 league N.W. from Beaune.

BOUZEK, a town of Asiatic Turkey, in the province of Caramania; 32 miles E.N.E. of Kir-shehr.

BOUZILLE', a town of France, in the department of the Maine and Loire; 1 league S.E. of Ancenis.

BOUZILS, a town of France, in the department of Vendée, and in the district of Montaigu; 5 miles south of it.

BOUZKIR, a town of Asiatic Turkey, in the province of Natolia; 30 miles S.S.E. of Beishehri.

BOUZOLS, a town of France, in the department of the Upper Loire; 1 league S. of Puy-en-Velay.

BOUZONVILLE, a town of France, in the department of the Moselle, and chief place of a canton, in the district of Thionville, and 5 leagues S. of it, seated on the Nied. The town contains 1400, and the canton 12,740 inhabitants; the territory comprehends 190 kilometres, and 40 communes.

BOW, *Arcus*, a weapon of offence, made of wood, horn, or other elastic matter; which, after being strongly bent, by means of a string fastened to its two ends, in returning to its natural state, throws out an arrow with great force.

The bow is the most ancient, and the most universal of all weapons; and has been found to obtain among the most barbarous and remote people, who had the least communication with the rest of mankind.

Its invention was ascribed by the ancients to Apollo, and was said to have been first communicated by the primitive inhabitants of Crete: Hence, even in latter ages the Cretan bows were famous, and preferred by the Greeks to all others. Some, however, rather chose to honour Perseus, the son of Perseus, with the invention; while others ascribed it to Scythes, the son of Jupiter, and progenitor of the Scythians, who were not only excellent at the bow, but by many reputed the first masters of it. (Potter's Arch. Græc. &c.) All these different tales, however, serve but to shew that its antiquity must be referred to the remotest periods of history.

The earliest instance in the Old Testament, where the use of the bow is implied, is in that remarkable passage where Hagar and her son, driven from the house of Abraham, wander in the wilderness of Beer-sheba. Of Ishmael it is said (Gen. xxi. 20.), "And God was with the lad, and he grew, and dwelt in the wilderness, and became an archer." The connection of which with the fifth preceding chapter (xvi. 12.) implies an earlier practice with the bow than any that can possibly be adduced from the profane historians. The overthrow of Saul was particularly owing to the Philistine archers. (1 Sam. xxxi. 3.) and (2 Sam. i. 18.) David, we are told, who succeeded him, "bade them teach the children of Judah the use of the bow: behold it is written in the book of Jasher."

The practice of the bow indeed, at this time, appears to have been so general, that it was not unfrequently made use of as a figure of speech. Israel, when blessing his sons, (Gen. xlix. 23, 24.) says of Joseph, "The archers have sorely grieved him, and shot at him, and hated him. But his bow abode in strength, and the arms of his hands were made strong, by the hands of the mighty God of Jacob." The companies that came to David at Ziklag (1 Chron. xii. 2.) "were armed with bows, and could use both the right hand and the left." Its earliest application was undoubtedly to the purposes of food: and accordingly, when Isaac sent Esau to the forest, he said, "Take, I pray thee, thy weapons, thy quiver, and thy bow, and go out to the field, and take me some venison."

The fabulous writers of antiquity assert, that Teutarus, a Scythian, first gave Hercules a *Scythian* bow and arrows (Lycophron. Cassandra, v. 56.); and Theocritus mentions it by the name of the Mæotian bow.

From the Scythians, it was derived to the Grecians, some of whose ancient nobility were instructed by the Scythians in its use, which in those days passed for a most princely education (Potter, Arch. Græc. tom. ii. l. iii. cap. 4. Aquin. Lex. Milit. ii. 260). The Scythian was distin-

gished from the Grecian *bow*, as well as from that of every other nation, by the singular incurvation of its shape, which was so great as to form a half-moon or semicircle (Amm. Marcellinus, l. xx.); whence the shepherd, in Athenæus, being to describe the letters in Theleus's name, and expressing each of them by some apposite resemblance, compares the third to the Scythian bow, meaning not the more modern character of Σ , but the ancient Σ , which is semicircular, and bears the 3d place in ΘHCEVC .

Among the ancients, the bow-string, called $\tau\epsilon\chi\eta\sigma\tau\epsilon\varsigma$, was made of horse's hair, and thence called $\sigma\tau\epsilon\tau\tau\alpha\varsigma$; though Homer's bow-strings are frequently made of hides cut into small thongs; whence $\tau\epsilon\chi\eta\sigma\tau\epsilon\varsigma$. The uppermost part of the bow, to which the string was fastened, was called $\kappa\epsilon\phi\alpha\lambda\eta$, being commonly made of gold, and the last thing towards finishing the bow.

The Grecian bows were frequently beautified with gold or silver; whence we have mention of *aureus arcus*; and Apollo is called $\alpha\gamma\chi\upsilon\sigma\tau\epsilon\varsigma$. But the matter of which they were ordinarily composed, seems to have been wood; though they were anciently, Scythian like, made of horn, as appears from that of Pandarus in Homer (Iliad. δ . v. 105. Potter Arch. Græc. tom. ii. cap. 4.)

Till the second Punic war the Romans had no bowmen in their armies, but such as came with their auxiliary forces. (See Potter, ut supra.)

The bows of the Arabians, who attended Xerxes' expedition, werelong, flexible, and crooked, (Herodotus Polymn. l. ix.) The Bactrians also had their bows and arrows (Ibid. l. iv.): and among the Indians they are still retained.

In drawing the bow, the primitive Grecians did not pull back their hand towards their right ear, according to the fashion of modern ages, and of the ancient Persians (Procopius de bello Persico, l. i.); but, placing their bows directly before them, returned their hand upon the right breast (Eutathius, Iliad. δ . p. 344. &c.). This was likewise the custom of the Amazonian women, who are reported to have cut off their right breasts, lest they should prove an impediment in shooting.

The most barbarious nations often excel in the fabric of the particular things which they have the greatest necessity for, in the common offices of life. The Laplanders, who support themselves almost entirely by hunting, have long had an art of making bows, which we, in these improved parts of the world, have never arrived at.

Their bow is made of two pieces of tough and strong wood shaved down to the same size, and flatted on each side; the two flat sides of the pieces are brought closely and evenly together, and then joined by means of a glue made of the scales of perch, which they have in great plenty, and of which they make a glue superior in strength to any which we have.

The two pieces, when once united in this manner, will never separate, and the bow is of much more force to expel the arrow, than it could possibly have been under the same dimensions, if made of only one piece.

Having thus traced the early history of the bow, and evinced its general use, we now come to its history as principally confined to England. The bows in use have been of two kinds; the common or *long-bow*, and the *cross-bow*: but as the *Saxon bow* appears to have differed from them both, our readers may not be displeased to read the description of it separate. Its particular use among the Anglo-Saxons and the Danes has been already mentioned: their skill, however, does not appear to have been extended beyond the purposes of procuring food or pastime: and the representation of a Saxon bow, as given in an ancient MS. of

the tenth century. (MS. Cott. Claud. B. iv.) shews it was made very different from what one might expect in a military weapon: the string not being fastened to the extremities, but suffered to play at some distance from them. In size too it was a mere toy, compared with the *long-bow* of succeeding ages. (Strutt's Sports and Pastimes, p. 39.)

The history of the *long-bow* has been already detailed, under the head of ARCHERY. We have here little else to add, than that a variety of acts of parliament, passed in different reigns, tended much to the encouragement of those who used it. In 1482 (12 Ed. IV. c. ii.), four bow-staves were ordered to be imported, with every ton of merchandize, from Venice; and by other acts, passed in the first of Richard III. the sixth of Henry VIII. and the thirteenth of Elizabeth, ten bows for every butt of malmsey. Malmsey or Tyre wine, at that time came chiefly from Crete, which then belonged to the Venetians; and the price of bows, it appears, had risen from 40s. to 8l. a hundred (Archæol. vol. vii.) In the 38th of Henry VIII. the price of a yew-bow was reduced to three shillings and four pence. (Ibid.)

In the ages of chivalry its use was considered as an essential part of the education of a young man, who wished to make a figure in life: and even the ladies, as in later times, partook of the amusement. It is said of Margaret the daughter of Henry the VII. that when she was on her way to Scotland, a hunting party was made for her amusement in Alnwick park, where she killed a buck with an arrow. (Leland's Collect. vol. iv. p. 278.) And the use of the bow was more than once practised by queen Elizabeth. The ladies, however, might probably have used the *cross-bow*.

James I. issued one or two commissions for the prevention of enclosures in the grounds which had formerly been used for the practice of the bow: agreeably to which, the archers' grounds in the immediate neighbourhood of London were reduced to the same state they were in in the beginning of the reign of Henry VIII. (Strutt's Sports and Pastimes, p. 14.)

Among the ancient charters preserved in the British Museum (Rol. ix. 8.), is a petition of the bowyers, fletchers, arrow-head-makers, and string-makers, dated 1635, requesting the king to appoint Richard Adames and Jeffery le Neve to put in force the statute of the thirty-third of Henry VIII. It was referred by the king to the privy council; and a commission, the original of which, with the broad seal annexed, is in the same collection (xii. 68.), was afterwards directed to "Timothie Taylor, John Hobart, Henry Hobart, and Jeffery le Neve for the maintenance of artillery, archerie, and shooting in long-bowes, to enforce an act of the thirty-third of Henry VIII. that all persons under 60 years of age should use and exercise in shooting in long-bowes; and that men children, from 7 to 17 years of age, should be instructed in the same."

This, it seems, was one of the last acts by which public encouragement was given to archery. The great body of the people, from the improvements that had been made in military tactics, were not likely to support the commissioners in what was now proposed: and the troubles which were rising turned the attention of the legislature to more serious objects.

Ascham (Toxophilus. 1571. 4to.) says, it was necessary for the archer to have a *bracer*, or close sleeve, to lace upon the left arm, that the bow string, when loosed from the hand, might not be impeded: to this was to be added a *shooting glove*, for the protection of the fingers. The bow, he tells us, should be made with well-seasoned wood, and formed with great exactness, tapering from the middle towards each end.

end. Bows were sometimes made of brazil, elm, ash, and several other woods; but yew, had the sanction from general experience of superiority.

The marks usually shot at by the archers for pastime were "butts, prickes, and roavers." The *butt* was a level mark, and required a strong arrow with a broad feather. The *pricke* was "a mark of compass," but certain in its distance; and to this mark a strong swift arrow, with a middling-sized feather, was best suited. The *roaver* was a "mark of uncertain length." And thus were they skilled in the different kinds of shooting.

The two ends or extremities of a bow, to which the string is fastened, are called its horns, *cornua*. And the strength of a bow may be calculated on this principle, that its *spring*, i. e. the power whereby it restores itself to its natural position, is always proportionate to the distance or space it is removed therefrom.

The *cross-bow*, or *Arbalet* (from *arbalesta*, i. e. *arcu balista*, a bow with a sling), consists of a steel bow, fastened upon a stock, and is discharged by means of a catch or *trigger*, which probably gave rise to the lock upon the modern musket. Bayle, explaining the difference between testimony and argument uses this simile: "Testimony is like the shot of a *long-bow*, which owes its efficacy to the force of the shooter; argument is like the shot of a *cross-bow*, equally forcible whether discharged by a dwarf or a giant."

The invention of cross-bows is said by ancient writers to have come from the Sicilians. They made both great and small bows. The great ones, drawn on wheels, as our cannon are, threw darts three cubits long; while those of the smaller kind were carried by foot-soldiers, the length of whose quarrels was scarce a cubit and an half. The larger ones were called *balista*, of which, as Livy informs us, there were no less than three and thirty at the siege of Carthage, beside fifty-two of a smaller kind (see *BALISTA*); and Josephus mentions forty at the siege of Jerusalem. Vegetius says, that the *balista* discharged arrows with such rapidity and violence, that nothing could resist their force. And Athenæus tells us, that Agesistratus made one of little more than two feet in length, that shot darts almost five hundred paces. (Rollin's Arts and Sciences, vol. ii. p. 52.)

Cross-bows were first used in England by the Normans, at the battle of Hastings; and a quarrel, or bar-bolt, from one of them, was the immediate cause of Harold's death. That they were afterwards adopted among our military weapons, is evident from the continual recurrence of *balistarius* in the Domesday Survey. In the reign of Stephen, 1139, the second council of Lateran prohibited their use; and some historians assert, that they were not again used in this country till the reign of Richard I., whose death, occasioned by one, was considered as a judgment on his impiety: but Fitzstephen, who wrote his History of London about 1180, in the reign of Henry II., says, the skaiters of the metropolis moved faster than the *pilum baliste*; which seems to imply that both the cross-bow and its use were known. From the death of Richard I. till the splendid victories of Edward III. we hear little of the cross-bow as a military weapon. Its use appears to have been principally confined to the sieges of fortified places and to sea fights.

In 1346, at the battle of Cressy, a large body of Genoese soldiers, who were particularly expert in the management of the cross-bow, were in the service of the French. At the commencement of the action, a sudden shower wetted the strings, and prevented the archers from doing their usual execution.

But in England, after the reign of Henry III., its use seems to have been studiously discouraged. The English

found the long bow a more effectual weapon; though the French, even in the reign of Henry V., after the English bow had so often proved superior in execution, to the great cost of their countrymen, were still attached to the cross-bow; and Henry V. as duke of Normandy, confirmed the charter and privileges of the *balistarii*, who had long been established as a fraternity at Rouen.

Their use, under our two last Henrys, has been already noticed as frequently forbidden; and by the statute of the 25th of Henry VIII. a penalty of ten pounds was inflicted on every one in whose house a cross-bow might be found. From this time they seem to have been chiefly used for killing deer (see Shakspeare's Henry VI.), till, in 1627, they were again used by the English as a military weapon, in the expedition to the isle of Rhé. (Gent. Mag. vol. liv. p. 269.)

The cross-bow is of a most inconvenient form for carriage, even with the modern improvements; and in case of rain could not be easily secured from the weather. After the first shot, moreover, it could not be re-charged under a considerable time, whilst the bolts are also heavy and cumbersome. The English long-bow, on the other hand, together with the quiver of arrows, was easily carried by the archer, as easily secured from rain, and re-charged almost instantaneously. It is not therefore extraordinary, that troops, who solely used this most effectual weapon, should generally obtain the victory, even when opposed to much more numerous armies. (Barrington's Obs. on Archery, Archæol. vol. viii.) The reach of the cross-bow was confined; that of the long-bow more extensive: although when the armies were opposed at no considerable distance, the quarrels of the former might possibly be poured in with the most regular effect.

Bow, or STRATFORD-LE-BOW, in *Geography*, is a village of Middlesex, in England, seated on the river Lea, at the distance of about two miles east from London. The village has no particular claims to public notice, but from its ancient bridge, which crosses the river Lea at this place. This structure is said to have been the first *arched* bridge erected in England. Stowe, Leland, and some other antiquaries, concur in ascribing its first building to Maud, or Matilda, the queen of Henry I.; and thence some writers coincide in the current tradition of its being the most ancient *arched stone bridge* of this country. The faithful Stowe relates, that Matilda had been "washed in the water, in passing this dangerous forde;" and to provide against such accidents in future, caused this, and another smaller bridge to be erected, "arched like a bow," which, he farther observes, "was a rare piece of worke; for before that time *the like* had never been *seen in England*." An old bridge of three arches still occupies the place of the original structure. Through this place, and over this ford, passed the ancient Roman road, called Watling-street, from Londinium (London) to Camelodunum (Colchester). From this arched bridge, and the name *Street-ford*, this place evidently derives its name.

At a short distance northward, are the *Temple-mills*, which anciently belonged to the knights Templars, and afterwards to the knights of St. John of Jerusalem. In the year 1720, they were used for brass works, but are now appropriated to the manufacture of sheet lead. (Lyson's Environs of London, vol. iii. p. 489.)

Bow, a small market town of Devonshire, in England, seated on the banks of one of the branches of the river Taw. Deprived of the advantages of manufacture, and situated at a distance from the great turnpike road, this place is fast sinking into decay, and at present consists of only 162 houses, most of which

which are occupied by the peasantry. Yet here is a small fair of a market on Thursday, and it has two annual fairs. A few blacksmiths, carpenters, and shoe-makers, are the principal tradesmen of the place. It is 188 miles W. of London; the parish contains 677 inhabitants.

Bow, an island in Lough Erne, county of Fermanagh, Ireland, on the northern part of the lake, and one of the largest in it, being three miles long, and one and a half broad. It is well wooded, and contributes much to the beauty of the lake. It is about 15 miles from Enniskillen.

Bow, an island in the South Pacific Ocean, about 10 leagues in circumference. S. lat. $18^{\circ} 23'$. W. long. 141° .

Bow, a township of America, in Rockingham county, New Hampshire, seated on the west bank of Merrimack river, south of Concord, and 53 miles from Portsmouth; containing 568 inhabitants.

Bow, in *Musical*, denotes a machine that serves to play, or give the sound to, viols, violins, and other instruments of that kind, by drawing it gently over the strings thereof.

The bow consists of three parts; the first is the stick, or wood, to which the hair is fastened; the second is composed of about eighty or an hundred horse-hairs, or filaments of silk; the third is the nut, a sort of half-wheel, which serves to keep the hairs in the due degree of tension.

The ancients do not appear to have been acquainted with bows of hair; in lieu of these they struck their instruments with a plectrum; over which our bows have great advantage, for giving long and short sounds, and other modifications, which a plectrum cannot produce.

Bow, in *Trade and Manufactures*, denotes a flexible instrument consisting of a piece of steel or iron, to the two ends of which is fastened a cat-gut, used by smiths, watch-makers, and other artificers, for the piercing and turning of divers sorts of works.

This is more peculiarly called a drill-bow.

It is sometimes also made of wood, whalebone, and the like.

Operators in Mosaic have a sort of bow made of a piece of white wood, with a brass wire fastened to the ends of it, which serves to saw hard and precious stones. Letter-casters have also a bow wherewith to keep the matrix even. See *FOUNDRY*.

Bow, among *Builders*, denotes a beam of wood, or brass, with three long screws, that govern or direct a lath of wood or steel to any arch; chiefly used in drawing draughts of ships, and projections of the sphere, or wherever it is requisite to draw large arches.

Bow, in *Navigation*, an instrument formerly used for observing the altitude of the sun, in order to determine the latitude of the ship.

This instrument consists of the five following parts; viz. first, an arch, or portion of a circle, capable of containing upwards of ninety degrees, whence the name of the instrument; second, a straight rod or bar, equal in length to the radius of that circle of which the arch is a portion; and three vanes, called the *sight*, *shade*, and *horizon* vanes.

The arch of the bow is divided into 90 degrees, and numbered from the top downwards; and these degrees are subdivided into halves, quarters, or tenths, &c. according as the size of the instrument will admit; but the common method is to divide the degree into three equal parts, and by means of concentric arches and diagonal lines, the subdivisions may be carried as low as two minutes.

One end of the radius or straight bar is put into a perforation in the arch at 45 degrees; and the horizon vane,

having a narrow slit in it, through which the horizon is to be seen at the time of observation, is to be put upon the other end of the radius. The shade vane, which is sometimes fitted up with a convex lens, is placed on the arch above 45 degrees; and the sight vane, having a small perforation, through which, and the slit in the horizon vane, the sight is to be directed to the horizon, is put on the arch below 45 degrees. These two vanes are moveable upon the arch. The manner of using this instrument is as follows:

1. *To observe the meridian altitude of the sun with the bow.*

With the latitude of the ship by account, and the sun's declination, find the estimated meridian altitude, which will be equal to the sum, or difference, of the complement of the latitude of the ship by account, and the declination of the sun, according as they are of the same, or of a contrary denomination. Then place the shade vane to any whole degree, as much above 45 degrees as amounts to nearly half the estimated meridian altitude, and the sight vane is to be placed as much below 45 degrees. Now let the observer look to the opposite point of the horizon with respect to the sun, and hold the bow vertically, and in such a manner that the horizon may be seen through the slit in the horizon vane, the eye being placed at the sight vane; then, if the bright solar spot, from the lens in the shade vane, is upon the slit in the horizon vane, the sight vane is in its proper place; if not, the sight vane is to be raised or depressed accordingly: continue observing in this manner, until the sun has attained its greatest altitude; and the degrees, and parts of a degree intercepted between the fiducial edges of the two vanes, will be the sun's meridian altitude: and hence the true latitude of the ship may be found as usual.

When the sun begins to fall, that is, when the altitude diminishes, or the sun is past the meridian, the solar spot will appear above the slit in the horizon vane, that slit and the horizon being in one.

2. *To observe the altitude of the sun, when off the meridian, by the bow.*

Let the altitude of the sun, at the time of the observation, be estimated; then place the shade vane to any whole degree, as much above 45 degrees as is about half the altitude by estimation; and move the sight vane upwards or downwards, until the solar spot is upon the slit in the horizon vane, at the same time that the horizon is seen through the vane; and the intercepted degrees and parts of a degree upon the arch, between the sight and shade vanes, will be the altitude of the sun.

Bow, in *Ship-building*, that circular part of a ship in which the stem is in the middle, and its extremes near the foremost part of the fore-chains. A proper form of a bow is of the utmost consequence. A vessel with a sharp bow will, *ceteris paribus*, sail faster in smooth water than one with a full bow; but in a high sea, she will plunge and dive greatly more, and thereby diminish her rate of sailing. A proper medium between these two extremes, consistent with the form of the ship, is, therefore, to be employed. M. Bouguer has paid very particular attention to this subject; and he has given a set of tables, deduced from algebraic formulæ, for the construction of bows that will meet with the least resistance, and that will have the greatest velocity, or of such as will render a ship more capable of carrying sail, and at the same time will divide the fluid with the greater facility; also, of the greater motion which, he says, differs in some cases from that of the greatest velocity. M. Bouguer observes, that it is very doubtful whether that figure, which meets with the least resistance in dividing the water, may be the most advantageous to acquire the greatest degree of velocity; for it is possible

possible that a bow which meets with a little more resistance may render the ship capable of carrying a proportionable quantity of more sail, although the two bows, which may be distinguished by naming the one that of the least resistance, and the other that of the greatest velocity, should have such an affinity to one another, that one should, in a great measure, partake of the most essential properties of the other. M. Bouguer also observes, that a bow which meets with the least resistance in a direct course, not only meets with the least resistance in oblique courses, but the vessel has also the additional property of driving the least to leeward; which is a double advantage gained, by forming the bow so as to give it that figure which will be the least opposed in moving through any medium.

Bow, Bold, a full high bow.

Bow, Lean, a sharp bow, having little bearing or support, so that, in a rough sea, a vessel with a bow of this kind is apt to pitch greatly, which retards her rate, and also to ship much water.

Bow, Starboard, that part upon the right-hand side of the stem, to a person on deck looking forward; and that part upon the left-hand side is called the *larboard bow*.

Bow, Weather, is that part of the bow towards the wind when a ship is close-hauled: and the other part is called the *lee bow*.

Bow, On the, an expression used to denote the position of any object, as a ship, the land, &c. appearing in the direction of some particular part of the bow. If the ship is sailing directly towards the object, it is said to be *right-a-head*; if not, the object is said to be on the *starboard*, or on the *larboard bow*; or it is said to be on the *weather*, or on the *lee bow*. If the object is in the direction of any particular part of the vessel, with respect to the observer, as the cat-head, &c. it is then said to be right over the cat-head.

The position of an object, with respect to the course of the ship, may be estimated by the intercepted portion of the horizon between them; and in this case it may be expressed either in points of the compass, or in degrees, but the former is most commonly used. Hence, if from a ship running N. by W. with her starboard tacks aboard, a light or sail was observed to bear N. W. by N. it would be said to bear two points upon the lee bow.

When the angle, contained between the object and the ship's course, is greater than four points, it is usual to express the bearing from the beam; thus, in place of saying that an object bears six points on the larboard bow, it is expressed to bear two points before the beam.

Bow-bearer, an under officer of the forest, who is to observe and take notice of all manner of trespass, against vert or venison; and to attach, or cause to be attached, the offenders in the next court of attachment.

Bow-compass. See COMPASS.

Bow-dye, a new kind of scarlet-red, superior to madder, but inferior to the true scarlet-grain, for fixedness and duration. It was brought into England, and first practised at the village of Bow, near London, by Kephler, a Fleming, in the year 1643; whence its name.

In the year 1667, another Fleming, named Brewer, invited to England by Charles II. with the promise of a large salary, brought this art to great perfection. These accounts, however, and the names of the persons, are extremely dubious. Anderson's Commerce, vol. ii. p. 77. Beckmann's Hist. Invent. vol. ii. p. 206.

Bow-legged, in Surgery. See BANDY-legs.

Bow-net, or *wheel*, an engine for catching fish, chiefly lobsters and craw-fish, made of two round wicker-baskets,

pointed at the end, one of which is thrust into the other; at the mouth is a little rim, four or five inches broad, somewhat bent inwards. It is also used for catching sparrows.

Bow, rain. See RAIN-bow.

Bows of a saddle, are two pieces of wood laid archwise, to receive the upper part of a horse's back, to give the saddle its due form, and to keep it tight.

The fore-bow, which sustains the pommel, is composed of the withers, the breasts, the points, or toes, and the corking.

The hind-bow bears the trousséquin, or quilted roll.

The bows are covered with sinews, that is, with bulls' pizles beaten and so run all over the bows, to make them stronger. They are likewise strengthened with bands of iron, to keep them tight. It is on the lower side of the bows that the saddle-straps are nailed; the use of which is to make fast the girths.

Bow-piece, a gun, or piece of ordnance placed in the bow.

Bow-grace, or *Boun-grafe*, a frame or composition of old ropes, or junks of cables, used to be laid out at the bows, stems, and sides of ships, to preserve them from bodies or fields of ice, when in high latitudes where these are expected.

Bow-slaves. See GARBLING of bow-slaves.

Bow-saw. See SAW.

BOWDOIN, in Geography, a township of America, in Lincoln county, and district of Maine, on the north-eastern bank of Androscoggin river; distant from York, north-easterly, 36 miles, and from the mouth of Kennebeck river 6 miles, and 166 N. E. from Boston. It contains 1260 inhabitants.

BOWDOINHAM, a township of Lincoln county, and district of Maine, separated from Pownalborough east, and Woolwich south-east, by Kennebeck river. It lies 171 miles N. E. from Boston, and contains 792 inhabitants.

BOWED, in Botany, (*arcuatus*) bent like a bow; a term expressing the direction of filaments, and the figure of a legume. It is employed also by Gartner, to denote that figure of the cotyledons which is found in some of the leguminosæ and siliquosæ, in canella, myrtus, cystus, scorpiurus, &c. and that figure of the embryo which occurs in allium, moræa, asparagus, &c.

BOWEL-GALLED, in Farriery, denotes a laceration occasioned by the tightness and heat, or friction, of the girths, just behind the elbows of the fore-legs, and is soon hardened and obliterated by two or three applications of a soft sponge, impregnated with common vinegar.

BOWELLING, *exenteratio*, the act of pulling out the entrails of an animal. Bowelling makes part of the progress of embalming.

BOWELLING is also a part of the punishment of traitors in England, who are to have their bowels ripped open, torn forth, and burnt before them. *Fractioni, suspendio, decollationi, exenterationi, & quæritationi adjudicavit.* Knyght. sub. Edw. II. in the sentence of Hugh Spencer.

BOWER, ARCHIBALD, in Biography, a native of Scotland, was born at or near Dundee in 1686, educated in the Scots college at Douay, and admitted, in 1706, into the society of Jesuits at Rome. After some varieties of situation and employment, during the succeeding interval, he at length, viz. in 1723, settled at Macerata, where, according to his own account, he performed the office of counsellor to the Inquisition: conceiving disgust, as he states the fact, at the enormities committed by this tribunal, or, as his enemies assert,

assert, charged with incontinence, he removed, in 1726, to Perugia, and secretly made his escape to England. Of the circumstances attending his escape he has given a very ample account; but his written documents and oral testimony have been found to differ in several particulars from each other, and of course his integrity was not only suspected but reproached. Soon after his arrival, he was introduced by Dr. Aspinwall to Dr. Clarke and to Bishop Berkeley, from intercourse with whom, added to his own reading and reasoning, he obtained, as he says, the fullest conviction that many of the favourite doctrines of the church of Rome were not only repugnant to scripture and reason, but wicked, blasphemous, and utterly inconsistent with the attributes of the deity. Under the impression of these sentiments he withdrew himself from the Romish communion, and abandoned the order with which he had been connected. His mind seems at this time, according to his own account, to have been in a state of scepticism and indecision on the subject of religion; and though he continued a Protestant for about six years, he connected himself with no particular denomination of Protestant Christians. At length, however, he conformed to the church of England, alleging that this church was "as free in her service as any reformed church from the idolatrous practices and superstitious of popery, and less inclined than many others to fanaticism and enthusiasm." By the recommendation of Dr. Goodman, physician to king George I., he obtained patronage in the family of lord Aylmer, and was entrusted with the education of two of his lordship's children. By lord Aylmer, he was introduced to lord Lyttleton, who considered him as a kind of religious confessor, and remained his active friend and zealous advocate, even when he was deserted by almost every other person of any distinguished reputation. Whilst he lived with lord Aylmer, he formed a connection with the bookfellers, and was employed, first, in a monthly publication, entitled "*Historia Literaria*," and afterwards in the compilation of the "*Universal History*." The part of this work which he undertook was the Roman history; but in the execution of it he is charged by his coadjutor, George Psalmanaazar, with having introduced it is false reports, and in other, particularly in the Byzantine history, with having injuriously abridged it. By the emolument accruing from his tuition and writings, he accumulated a considerable sum of money, the disposal of which led to discoveries which very materially injured his character, and subjected him to just reproach. According to his own statement, he proposed to purchase a life annuity with this money, amounting to 1100*l.* of old South-Sea annuities; but being disappointed in these views he negotiated with Mr. Hill, a Jesuit, respecting the loan of it; and obtained from him an interest equal to that which he might have made of it by the purchase of the annuity in which he was disappointed. A very different account of this transaction has been given by those persons who have questioned his integrity; and it must be acknowledged, that it is accompanied with such kind of evidence, as leaves little room for hesitation in admitting the credibility of it. They allege, that being desirous of re-admission into the church, which he had abandoned, he made use of his money in a way which would serve to recommend him to the superiors of the society with which he wished to be re-united. Accordingly, he proposed to father Shirburn, then provincial in England, to deliver up to him, as representative of the society, his whole stock, on condition of their granting him a life-annuity of 7 per cent. The offer was accepted; and Bower paid at sundry times sums of money, amounting in the whole to 1350*l.* and stipulated by a bond to receive yearly 94*l.* 10*s.* In consequence of this negotiation, Bower was re-admitted,

in a formal manner, into the order of Jesuits, at London, about the end of the year 1744, or beginning of the year 1745. Afterwards he determined, for reasons not satisfactorily ascertained, to separate from the order of Jesuits; and upon leaving them he obtained a return of his money. When a second edition of the "*Universal History*" was in contemplation, the bookfellers, very unfortunately for themselves and for the credit of the work, engaged Bower to revise and correct it; but though he received a considerable sum of money, not less than 300*l.* he published it without any material emendation. In 1747 he announced to the public proposals for a "*History of the Popes*;" the first volume of which was presented to the king in the following year. In recompence of his labour, Mr. (afterwards lord) Lyttleton, obtained for him the place of keeper of queen Caroline's library; and his credit being somewhat revived, he married a niece of bishop Nicholson, with a fortune of 4000*l.* His "*History of the Popes*" was continued, in successive volumes, printed at different periods. In 1754 his unalterable friend, Mr. Lyttleton, appointed him clerk of the buck-warrants, a place which, though of no great emolument, evinced his continued attachment. In this year the first attack was made on his "*History*," which the advocates of popery considered as peculiarly hostile to their church, in a pamphlet printed at Doway, entitled "*Remarks on the two first volumes of the late lives of the popes*," 8vo.; a publication ascribed by Mr. Bower to a popish priest of the name of Butler, one of the most active and dangerous emissaries of Rome in this kingdom. But an event soon happened, which was much more ruinous to the reputation of Mr. Bower, and which sunk him into total disgrace; and this was the divulging of his correspondence with the Jesuits. The charges alleged against him were repelled with spirit by himself; but his veracity, though attested by an affidavit, was questioned; and he had scarcely any friend left besides lord Lyttleton. In the course of this controversy, he was in danger of being exhibited on the stage, as a mock convert of profligate character, by Mr. Garrick, on account of the manner in which he mentioned that incomparable actor and his lady, in his "*Summary of the controversy between the papists and the author*," 4to. But Mr. Garrick, by the mediation of lord Lyttleton, was induced to wave that public chastisement which he had intended. The reputation of Bower's history declined with his own; the fourth volume was published during the agitation which the controversy in which he was engaged had produced; the fifth appeared in 1761; and the sixth and seventh volumes were presented to the public a little time before his death; and whatever may be the estimation in which the preceding volumes deserve to be held, these two are executed with such haste as to deserve very little regard. The whole period from 1600 to 1758 is comprehended in 26 pages! Bower died in 1766, at the age of 80; and he left a will, dated in 1749, which contained no written declaration of his religious principles, agreeably to the practice which very much prevailed in those times, and which, in his peculiar circumstances, might have been reasonably expected. His widow, however, some time after his death attested his having died in the Protestant faith. *New Biogr. Dict.* 8vo. 1798.

BOWER, Lady's, or Virgin's, in Botany. See *CLIMATIS*.

BOWIE, in Gardening, a shady place, under covert of trees or branches interwoven. A bowie differs from an arbour, in that the latter is always built long and arched, but a bowie either round or square at the bottom, and made with a sort of dome or ceiling at the top. See *ARBOURS*.

BOWLER-anchors, best and small, in Sea-Language. See *ANCHOR*.

BOWES, in *Geography*, a town of Yorkshire, England, is more noted for its former than present consequence. During the abode of the Romans in Britain, this place was chosen for one of their military stations; and from an inscribed altar found here, it appears, that, in the reign of Severus, when Virius Lupus was legate and proprætor of Britain, the first cohort of the Thracians was in garrison here. Horsley, in his *Britannia Romana*, says, "there is an old castle here, which, with the church, stand in the north part of the old Roman station, and no doubt have been built out of the ruins of it." About two furlongs south of this station (called Lavatris) runs the river Greta.

Bowes is included in that division of the county of York, called Richmondshire, in the north riding, at the distance of 4 miles from Barnard castle, and 248 miles north from London. The town consists of one long street, running east and west, and contains 120 houses and 670 inhabitants. Here is a weekly market on Fridays, and one fair annually. This parish includes the three townships of Bowes, Boldron, and Gilmonby. The surrounding country, consisting mostly of moors and commons, abounds with coal and lead mines, which, with the royalty, belong to the proprietor of Carlton-hall.

About two miles from Bowes, is a singular natural curiosity, called *God's Bridge*, which is formed by a rude arch of freestone. This stretches across the river Greta, the waters of which are precipitated over different ledges of rocks, and soon afterwards sink beneath the surface, and continue though a subterraneous passage of about half a mile, when they again emerge into light through some rocky cavities. Gough's edition of Camden's *Britannia*. Hutchinson's *Tour to the Lakes*, 8vo.

BOWET, or **BOWESS**, among *Falconers*, denotes a young hawk when she draws things out of her nest, and covets to clamber on the boughs.

BOWGE of court. See *BOUCHE* of court.

BOWL, denotes either a ball of wood for the use of bowling, or a vessel of capacity for holding liquors.

BOWL-wassel. See *WASSEL-bowl*.

BOWLDER-stones, a species of small stones, of an indeterminate texture and figure, generally roundish, found on the shores of the sea and banks of rivers. Bowlders, or bowlder-stones, are only lumps and fragments of stones or marble, broken from the adjacent cliffs, and rounded by being bowled and tumbling to and again by the action of the water; whence the name bowlder-stones, as being formed by an action like that of a bowl, and thereby reduced to the shape of one. Neither the bowlders nor rubble-stones are ever invested with an exterior strong crust or skin: it is plain from the manner of their formation they cannot. This is one mark by which they are distinguished from flints, pebbles, or the other native nodules, which were formed before the subsiding of the matter of the strata, and are always covered with such a crust or skin, unless it has been worn off.

BOWLE, JOHN, in *Biography*, rector of Idmington near Salisbury, was a descendant of Dr. John Bowle, bishop of Rochester in the 17th century, born in 1725, and being admitted of Oriel college, in the university of Oxford, took the degree of master of arts in 1750. He had the honour of being, according to Dr. Douglas's account, the original detector of Lauder's forgeries, for the purpose of injuring the reputation of Milton. He was the author of a "Letter to Dr. Percy," and editor of Don Quixote in Spanish, and of Marston's Satires, and some old poetry in English. He died in 1788. *New Biog. Dict.*

BOWLESIA, in *Botany* (named after Bowles, author of *Travels in Spain*). *Flora of Peru*. pl. 34. Bosc in *Nouveau*

Dictionnaire d'Histoire Naturelle. Class, *pentandria digynia*. Nat. Ord. *umbellifera*.

Gen. Char. *Umbel* of three flowers. *Invol.* none. *Fruit* tetragonal. *Seeds* two, externally concave.

BOWLINE, in *Sea-language*, a rope fastened near the middle of the leech, or perpendicular edge of the principal square sails, by three or four subordinate parts called *bridles*, and leading forward towards the bow, and hence its name. It is always used when the wind is so unfavourable that the sails must be all braced sideways, or *close-hauled* to the wind: in this situation, the bowlines as employed to keep the weather or windward edges of the principal sails tight forward and steady, without which they would be always shivering, and rendered incapable of service. Neither the spritsail, nor sprit-sail top-sail has bowlines, as there is no place forward to which they could lead, and therefore these sails cannot be used when the vessel is upon a wind. The bowlines of the fore-sail, fore-top-sail, and fore-top-gallant-sail, lead to the bowsprit. Those of the main-sail, main-top-sail, and main-top-gallant-sail lead to the foremast; and the mizen-top-sail, and top-gallant bowlines lead to the main-mast.

To *check* or *ease* the bowline, is to slacken it, when the wind becomes large, or more aft; and when the wind comes more a-head, or the ship lies nearer to it, so that any particular sail is shivering, or nearly so, it then becomes necessary to get the weather-leech of that sail more forward, that the sail may stand, or be kept full; and the order for this purpose is to *haul taught*, or *take a pull* of the weather bowline belonging to that sail.

BOWLINE-bridles, the ropes by which the bowline is fastened to the leech of the sail.

BOWLINE-knot, a particular kind of knot which will not slip, by which the bowline bridle is fastened to the cringle. See *KNOT*.

BOWLING, the act or art of throwing bowls. Bowling, among us, is chiefly the name of a game or exercise, practised either in open places, as bars and bowling-greens, or in close bowling-alleys. The skill of bowling depends much on a knowledge of the ground, and the right choice of a bowl suitable to it: for close alleys the flat bowl; for green swards plain and level, the bowl as round as a ball is preferred.

The terms used in bowling, are, to *bowl wide*, which is when the bias does not hold, or is not strong enough; *narrow*, when it is too strong, or holds too much; *finely bowled*, is when the ground is well chosen, and the bowl passes near the block, even though it goes much beyond it; *bowling through*, or *a yard over*, is done in order to move the block; an *over-bowl*, that which goes beyond it; a *bowl laid at hand*, is that put down within the gamester's reach, to be in the way of the next bowler, and hinder his having the advantage of the best ground; *bowling at length*, neither bowling through nor short; a *dead length*, a just or exact one; *throwing* or *flinging*, is discharging a bowl with a strength purposely too great for a length, in order to carry off either the block or some near bowl; *bowl-room*, or *missing wood*, is when a bowl has free passage, without striking on any other; *get off*, is when a bowl being narrow, is wanted to be wider; *bowl best at block*, that nearest the block; *drawing a cast* or *bowl*, is to win it by bowling nearer, without stirring either the bowl or block; a bowl is said to *rub*, when it meets with some obstacle in the ground which retards its motion and weakens its force; *it is gone*, when far beyond the block. *Block* signifies a little bowl laid for a mark, also called a *jack*. *Mark*, is a proper bowling distance, not under so many yards; and being at least a yard and a half from the edge of the green. *Ground*, a bag or hand.

handkerchief laid down to mark where a bowl is to go. *Lead*, the advantage of throwing the block, and bowling first. *Cal*, is one best bowl at an end. *End*, a hit, or when all the bowls are out. The *game, end*, is five casts, or best bowls.

BOWLING-GREEN, in *ornamental Gardening*, is a spacious plat laid evenly with turf in pleasure or other grounds, designed for the purpose of ornament, as well as amusement, in the summer season, in bowling upon.

These sorts of compartments should mostly be formed as near the houses or habitations as possible, being laid out on the back fronts so as to serve by way of lawns to such parts as they may be situated in; as at the termination of walks or avenues. They may also be contrived amidst detached contiguous plantations, or wilderness quarters, to serve as portions of sward ground, or as openings to such places, and should always, if possible, have tall trees so situated on the boundaries, as to afford shade, especially in the afternoon. The dimensions must vary according to circumstances; but where there is scope of ground sufficient, they should not be less than from half an acre to an acre. The most common form is that of a square moderately extended; but some are made oblong, others circular, though, to suit the general plan or figure of the ground, they may be of any other form, so as to avoid the garden ground. Their boundaries may also be spacious planted borders of either the straight or serpentine kind. The plane or surface of the greens should be perfectly level, and as high, at least, as the general level of the adjoining ground, so as that it may be always preserved from stagnant moisture.

In forming these plats, the surface should be levelled in the most exact manner, and laid with the finest grass turf that can be procured from a close pasture, common, or down. See **TURF**. The extent and proper levels of the greens are then set out with stakes placed round the extremities or boundaries, at fifteen or twenty feet distance, on which should be marked the determinate levels of the ground, and from which, on the opposite sides, levels in other crossways at the same distance should be made; and then, according to these levels, proceed by line and spade to form the ground to a proper surface, making it up firmly in lines from stake to stake; the pannels or spaces between being made up equally firm and regular, so that no part may sink in a hollow afterwards. The whole should then be raked level, and finished off evenly and smooth. Two or three inches deep of light sandy soil, or any light dry poor earth may then, if necessary, be laid evenly over the surface, as equal in quantity as possible, as by that means the turf or grass will form a moist fine, regular, and even sward.

The grassy surfaces should always be formed by laying them with fresh cut turf, as being much superior to the method of only sowing them with grass seeds. The turfs should be cut each a foot wide, a yard long, and about an inch thick, and laid with exactness, closely joining them edge to edge, then beating them well down with large wooden beaters, repeatedly rolling them with a large heavy iron roller.

The best season for performing work of this sort is the autumn, or very early in the spring; but the first is to be preferred when it can be conveniently done, as the turf has time to establish itself well before the hot season sets in.

In order to keep bowling-greens neat after being thus formed, they require frequent mowing in summer, probably once or twice a week, or oftener, in order to keep the grass sufficiently fine and short for bowling, as well as occasional rolling to preserve the surface firm and even. When wormy casts are much thrown up over their surfaces, they should be poled occasionally to break and scatter them, and then well rolled with a wooden roller, to which the scattered

earthy particles may adhere, and the surface be thereby made more clean. See **POLING GRASS**. Where coarse weeds, as the dock, dandelion, &c. present themselves, they should be wholly eradicated, to prevent their seeds from being dispersed over the surface, and new plants thereby raised which would prove injurious, and render the turf unfit for the purpose of bowling upon.

BOWLING-Green, in *Geography*, a village of Virginia, in America, situated on the post-road, 22 miles S. of Fredericksburg, 48 N. of Richmond, and 25 N. of Hanover-court-house. Another village of this name lies in Warren county, Kentucky, 808 miles from Washington. In both are post-offices.

BOWNESS, in *Geography*. See **BORROSTOWNESS**.

BOWSE, in *Sea-language*, an order to all the people employed in hauling upon any particular rope, to pull together. *Bowse away*, that is, *pull away*, and all at the same instant.

BOWSPRIT, a large boom or sprit projecting from the bow of a ship, over the stem, and hence its name. The bowsprit makes an angle with the keel, which is various, according to the fancy of the builder; being, in general, between twenty degrees, and three points or upwards, as the height of the bowsprit at the cope, above a horizontal line at the keel, extends from one third to one half of its length. According to Mr. Chapman, the elevation of the bowsprit of a merchant ship ought to be three-sevenths of its length, and in ships of war four-sevenths. This elevation of the bowsprit is called its *steering* or *stiving*. Mr. Gower is a strong advocate for diminishing the steering of bowsprits, and upon this subject he expresses himself as follows: "As every position of the rudder, except a middle one, takes from the speed of the vessel, it should be preserved as much amidstships as possible. Almost every ship under full sail, with a side wind, carries a weather helm; to counteract which, it is recommended to lower the steering of the bowsprit to one angle of five or ten degrees with the keel, and to increase the jib-boom in stoutness, that a large jib of strong canvas may be carried in most weathers. With the bowsprit lowered, it will be better without a spritsail yard; and let the jib boom be secured from the cat-heads and stem, by a standing and travelling guy on each side, and a standing and travelling martingale." In cutters, schooners, luggers, and shallops, the bowsprit is nearly parallel to the keel.

The length of that part of the bowsprit which is without the stem, is generally equal to the extreme breadth of the ship. In trading ships, the celebrated Mr. Chapman makes the length of the bowsprit to be equal to the sum of the extreme breadth, and one-tenth of it; and in ships of war, it is equal to the sum of the extreme breadth, and three-twentieths of the same. Thus, if the extreme breadth of a ship is 32 feet, the length of that part of the bowsprit beyond the stem will be 35.2 for a merchant ship, and 36.8 for a ship of war.

The diameter of the bowsprit is equal to half the sum of the diameters of the main and fore-masts.

As the safety of the fore-mast depends greatly upon the bowsprit, every precaution, therefore, is used to have this last well secured. The keel is firmly fastened to the decks; that part of the bowsprit at the stem is strongly fastened thereto by several turns of a rope, which is called the *gammoning of the bowsprit*; and the bobstay connects the lower part of the stem or cutwater with that part of the bowsprit at the forestay.

BOWYER, WILLIAM, in *Biography*, an eminently learned printer, the son of a printer of the same name, was born in London, December 17, 1699; received his grammatical education under Mr. Ambrose Bonwicke, a non-juring clergyman.

clergyman of acknowledged piety and learning; and was admitted in 1716, as a sizar at St. John's college, in the university of Cambridge, where he continued for six years, and probably took his degree of bachelor of arts. Although his disposition was naturally reserved, yet he cultivated, during his residence at college, an intimate acquaintance with several respectable members of the university, and particularly with Mr. Markland and Mr. Clarke, with whom he maintained through life a regular correspondence, which furnishes a valuable treasure of polite literature and sound criticism. When he left Cambridge, he officiated as a school-master for the benefit of the family of Mr. Bonwicke, who died in 1722; and thus testified his gratitude for the assistance he had received from him in his education, at a time when the whole property of his father was destroyed by a fire. Having performed this act of kindness and of gratitude, he joined his father in the printing business; and began with a correct and complete edition of Selden's works by Dr. David Wilkins, in 3 vols. fol. As he read the proof sheets, he drew up an epitome of the treatise "De Synedriis." This work was followed by an admirable sketch of William Baxter's Glossary of the Roman Antiquities; in which Bowyer sufficiently evinced his literary talents. In 1729 he was appointed printer of the votes to the house of Commons, which office he held for nearly fifty years. It is hardly necessary to mention the part taken by him, in 1731, in a controversy which is now sunk into oblivion. It produced, however, on his part, a pamphlet entitled "The traditions of the clergy not destructive of religion; being remarks on Mr. Barman's sermon, exposing that gentleman's deficiency in Latin and Greek, in ecclesiastical history and true reasoning." In the same year he printed, and is supposed to have translated, Voltaire's *Life of Charles XII. of Sweden*. In 1736, he was admitted a fellow of the Society of Antiquaries, of which he was an assiduous and useful member. His translation of "Trapp's Latin lectures on poetry," with additional notes, was published in 1742; and about the same time, he corrected and formed a new and useful school-book, entitled "*Selectæ ex profanis scriptoribus historiæ*." We should far exceed the bounds of this article, if we were to mention the prefaces, notes, and various additions, which he contributed to the works that issued from his press. We shall content ourselves with noticing some of the principal of this kind. In 1744, he wrote, as it is supposed, a small pamphlet on the present state of Europe, chiefly taken from Puffendorf; and, in 1746, he published the "*Life of the emperor Julian*," translated from the French of M. Bletterie, with curious notes, and a genealogical table. In 1750, he annexed a prefatory critical dissertation, and some valuable notes, to Kuster's treatise, "*De vero usu verborum medicorum*," which was published, with further improvements, in 1773. About the same time he wrote a Latin preface to Leedes's "*Veteres poetæ citati, &c.*" and soon after improved an edition of col. Bladen's translation of Cæsar's commentaries. In 1751, he wrote a long preface to Montesquieu's "*Reflections on the rise and fall of the Roman empire*;" translated the dialogue between Sylla and Socrates, and improved the edition by several corrections from the baron's "*Spirit of Laws*," as well as by his own notes. Of this work a new edition, with additional notes, was printed in 1759. In the same year (1751) he published the first translation that was made of Rousseau's paradoxical oration, which gained the prize of the academy at Dijon, in 1750; and thus he first announced that singular genius to the attention and admiration of Europe. To Mr. Bowyer we are indebted for the notes signed (B) in the 9th 4to. volume of Swift's works, extracted from letters, which

were printed but never published. His "*Remarks on the speech made in common council, on the bill for permitting persons professing the Jewish religion to be naturalized, so far as prophecies are supposed to be affected by it*," was intended for the purpose of allaying the ferment occasioned by the Jew-bill in 1753, and of shewing, that whatever political reasons might be alleged against the bill, Christianity would in no degree be prejudiced by the indulgence proposed to be granted to the Jews. In this year also appeared his notes, annexed to bishop Clayton's translation of "*A journal from Grand Cairo to mount Sinai, and back again*." In 1761, Mr. Bowyer was appointed printer to the Royal Society; and he had the honour of retaining that office till his death. Without mentioning other publications, in which he was concerned either as a writer or as an editor, we shall proceed to notice an excellent edition of the Greek Testament, in 2 vols. 12mo., which appeared in 1763, under the following title: "*Novum Testamentum Græcum, ad fidem Græcorum solum codicum MSS. nunc primum impressum, ad stipulante J. J. Wettlenio, juxta sectiones Jo. Alberti Bengelii divisum; et nova interpretatione sæpius illustratum. Accessere in altero volumine emendationes conjecturales virorum doctorum undique collectæ*." This edition was sold with great rapidity; and the conjectural emendations were well received by the learned. These were separately published, with very considerable enlargements, in one volume, 8vo., in 1772. A new and correct edition of this Greek Testament, with the conjectures, in 4to. much enlarged from the margin of Mr. Markland's Testament, and by new communications from bishop Barrington, professor Michaelis, M. Stephen Weston, Dr. Gosslet, &c. was printed by Mr. Nichols in 1782 and 1783, under the inspection of the learned Dr. Owen, with his remarks. At the request of Thomas Hollis, esq. Mr. Bowyer wrote, in 1765, a short Latin preface to Dr. Wallis's "*Grammatica Linguae Anglicanae*;" a larger English preface, written by him, and intended for that work, is communicated to the public in his "*Miscellaneous Tracts*," published by Mr. Nichols in 1785, 4to. In 1766, he formed a partnership with Mr. Nichols, who had been trained by him to the profession, and had assisted him several years in the management of business. This connection with a person, whose disposition was amiable and communicative, and who resembled himself in his solicitude, by literary researches and publications, to promote the cause of literature, ensured the prosecution of views and plans similar to his own; and warranted a confidence which enabled him to withdraw, in the declining state of his health, from the fatigues of active employment. It also afforded him greater leisure for indulging his own studious inclination. Accordingly, in this year (1766) Mr. Bowyer wrote an excellent Latin preface to "*Joannis Harduini, Jesuitæ, ad censuram scriptorum veterum prolegomena*," in which he gives an account of the nature of the work, and of the manner in which it had been preserved. About the same time were published Mr. De Missy's remarks on the extraordinary production of the celebrated Jesuit, in a Latin letter to Mr. Bowyer. In 1767, he was appointed, by the recommendation of the earl of Marchmont, to print the journals of the house of Lords, and the rolls of parliament. In this year he printed Mr. Clarke's learned work, entitled "*The connection of the Roman, Saxon, and English coins*," with notes by himself, together with a dissertation on the Roman sesterce, which was partly his own production, and an excellent index of his own compilation. In 1771, the late Matthew Raper, esq. communicated to the Royal Society a very ingenious "*Inquiry into the value*"

of the ancient Greek and Roman money," which was printed in the Philosophical Transactions; and Mr. Bowyer published "Remarks," on this dissertation, which he intended as an appendix to Mr. Clarke's treatise on coins. Three small tracts were published by him in 1773, under the title of "Select Discourses; 1. of the correspondence of the Hebrew months with the Julian, from the Latin of professor Michaelis; 2. of the Sabbatical years, from the same; and 3. of the years of jubilee, from an anonymous writer in *Maillon's Histoire Critique de la Republique des Lettres*;" and in 1774, he corrected a new edition of Schrevelius's Greek Lexicon, to which he added a number of new words, collected in the course of his studies. Of his critical skill in the learned languages, he left in MS. many evidences, which appear in the additions made by him to the lexicons of Hederic and of Buxtorf, the Latin ones of Faber and of Littleton, and the English dictionary of Bailey; and also in the corrections and enlargements of Leigh's "*Critica Sacra*," and Dugard's "*Lexicon Græci Testamenti alphabeticum*;" together with his notes on Middleton's *Life of Cicero*, Duncan's and Bladen's *Cæsar*, Theocritus, Horace, and Pope, and an astonishing number of critical remarks on the Old and New Testament. In 1774 was published "The origin of Printing, in two essays: 1. The substance of Dr. Middleton's dissertation on the origin of printing in England. 2. Mr. Meerman's account of the invention of the art at Haerlem, and its progress to Mentz; with occasional remarks, and an appendix." Of this work the original idea was Mr. Bowyer's; but it was completed by Mr. Nichols. A second edition of this work, which was well received both at home and abroad, was published, with very considerable improvements, in 1776. In 1777, he closed his literary career, with a new edition of Dr. Bentley's "*Dissertation on the epistles of Phalaris*," with additional notes and remarks by himself and others. On this occasion he was much indebted to the friendly assistance of Dr. Salter, late master of the charter-house, and Dr. Owen.

Mr. Bowyer had been always subject to a bilious colic, and for the last ten years of his life he was afflicted with the palsy and the stone: and yet he retained, to a great degree, a remarkable cheerfulness of disposition; and his faculties, though somewhat impaired, enabled him to derive great satisfaction from the conversation of his literary friends, to pursue a course of incessant reading, which was his principal amusement, and to correct the learned works, especially the Greek books, which were printed at his press. Within a few weeks before his death he sunk under his maladies and the progress of decay, and at length terminated a life of singular reputation and usefulness, on the 18th of November, 1777, in his 78th year. His numerous publications afford ample evidence of his talents and learning, and he was honoured with the friendship and patronage of many of the most distinguished ornaments of the age in which he lived. As a learned printer he had no rival for more than half a century; and he was no less distinguished by his moral qualities than by his mental abilities and literary attainments. Of his regard to religion, both in the principles and practice of it, his whole life afforded unquestionable evidence; his probity was inflexible; the promptitude with which he relieved every species of distress marked the benevolence of his mind: and his modesty in endeavouring to conceal his benefactions reflects great honour on his memory. Although his literary avocations and natural temper induced him to seclude himself very much from the world, and from intercourse with any persons besides men of letters, he was reckoned to possess an excellent talent for discriminating the real characters of man-

kind. In the decline of his life, and in his testamentary arrangements, he seems to have been influenced by a regard to two great objects; one was to repay the benefactions which had been conferred on his father at a time when he peculiarly needed assistance, and in this respect he manifested a very amiable disposition; his other object was to be himself a benefactor to the meritorious in his own profession. A transcript of his will, if our limits would admit of it, would bear ample testimony to the laudable views by which he was actuated; and we have been induced to enlarge in our account of him from real respect to his memory. After liberally providing for his only surviving son, by his first wife, (for he was twice married,) and allotting various bequests to his relations, executors, private friends, and his father's benefactors; he appropriated several sums to "the benefit of printing," particularly with a view to the relief of aged printers, compositors, or pressmen, and to the encouragement of the journeyman compositor, whom he particularly detested, and who is required to be capable of reading and construing Latin, and at least of reading Greek fluently with accents: these latter bequests he committed to the direction and disposal of the master, wardens, and assistants of the company of stationers. Mr. Bowyer was buried, agreeably to his own direction, at Low-Layton, in Essex, and a neat monument was erected, at the expence of his successor Mr. J. Nichols, to his father's memory and his own, upon which is a Latin inscription written by himself. A bust of him is placed in Stationers' hall, with an English inscription annexed to it, in his own words; and besides this there are also a good portrait of his father, and another of his patron Mr. Nelson; all presented to the company by Mr. Nichols. Biographical and literary anecdotes of William Bowyer, printer, F. S. A., and of many of his learned friends," by John Nichols, his apprentice, partner, and successor. 4to. 1782.

BOWYERS, artificers whose business is to make bows.

In which sense, bowyers stand distinguished from fletchers, who made arrows.

The bowyers' company was incorporated in 1620, and consists of a master, two wardens, twelve assistants, and thirty on the livery. See COMPANY.

BOX, in its most general acceptation, is used to denote a case for holding things; of which there are several kinds, as a salve-box, *pyxis unguentaria*, that used by surgeons to carry with them.

Box is sometimes also used for a kind of measure, though variable according to the commodity. Thus the box of quicksilver contains from one to two hundred weight; of primellas, about fourteen hundred; of rings for keys, two gross, &c.

Box, in *Botany*. See BUXUS.

Box, *African*. See MYRSINE.

Box, *coach*, a place under the coachman's seat, wherein he puts what may be wanted for the service of the coach or horses.

Box, *dice*, a narrow deep cornet, channelled within, where-in the dice are shaken and thrown. This answers to what the Romans called *fritillus*; whence *crepitantes fritilli*, and, in Seneca, *resonante fritillo*. The same author also uses *concavere fritillum*, figuratively for playing. Besides the *fritillus*, the Romans, for greater security, had another kind of dice-box, called *pyrgus*, and sometimes *turricula*. It was placed immoveable in the middle of the table, being perforated or open at both ends, and channelled also within: over the top was put a kind of funnel, into which the dice were cast out of the *fritillus*; whence descending, they fell through the bottom on the table; by which all practising

on them with the fingers was effectually prevented. For want of some contrivance of this kind, our sharpers have opportunities of playing divers tricks with the box, as palming, topping, slabbing, &c. Hyde. Hist. Nerdilud. § 5. p. 27, 28.

Box iron, a kind of case wherein the heaters are inclosed for ironing linen.

Box-money, at *Hazard*, is that which is paid the box-keeper, or him who furnishes the box and dice. Betterers have the advantage over casters, as they have no box-money to pay, which at long run would beggar the most fortunate player. Hence some gamesters will never cast, to save the expence of box-money.

Box of a plough, a name by which the farmers call that cross-piece in the head of the plough, through which the spindle of the two wheels passes, and to which are fastened the two cross-slaves, serving, by their holes, to regulate the height of the beam, the tow-chain below, the stake which supports the bridle-chain above, and the gallows behind, into which are fixed the wilds with the crooks of iron, for the drawing of the whole plough along. This part of the plough is placed cross-wise with the beam, and stands much below it, and not far from the ground. See *Plough*.

Box of a rib-saw, two thin iron plates fixed to a handle; in one of the iron-plates is an opening to receive a wedge, by which it is fixed to the saw.

Box, strong, a coffer of iron, or of thick wood, secured with iron plates, and a lock with several bolts, difficult either to be opened or forced; chiefly used for putting money in.

Box the compass, in *Sea-language*, to repeat the opposite points of the compass alternately. Thus, N. S. N. by E. S. by W. N.N.E. S.S.W. &c.

Box of the compass, the square wooden box which contains the mariner's compass; in the construction of which no iron work is to be used.

Box of a watch, the case or cover.

Box of a wheel, the aperture wherein the axis turns.

Box-puceron, in *Entomology*, among old writers, the *coccus hesperidum*, an insect that infests the box, in common, with various other evergreens. See *Hesperidum*. The word puceron, and bassard puceron, appears to have been formerly applied indiscriminately to several distinct genera of insects that infest plants, as those of the *cynips*, *aphis*, *thrips*, and others.

Box-thorn, in *Botany*. See *LYCIUM*.

Box-tree, sand. See *HURA*.

Box-hauling, in *Seamanship*, a particular method of veering a ship, when the swell of the sea renders tacking impracticable, or when there is not room to veer by the common method of filling the head, and shivering the after-fails. This operation is performed by putting the helm hard a-lee, which brings the ship's head to windward; the after-fails, particularly the main-fail, mizen, and mizen stay-fail, are to be hauled up; as soon as the fails begin to shake, haul in the weather-head braces, and the lee-fore, and fore-top bowlines; the ship's head will then fall off, which, together with the action of the water upon the rudder, by the sternway she has acquired, will bring her round until the wind is right aft; when her sternway will have ceased, and then the helm is to be put hard a-weather: in the mean time the after-fails are to be braced up, which will greatly assist in bringing the ship round; the main-fail, mizen, and mizen stay-fail are to be set, the head-yards braced up, as the ship comes to the wind, and the helm shifted to its proper position.

Box-hill, in *Geography*, near Dorking, in Surrey, England, received its name from the great number of box-trees

which ornament its shelving sides and summit. Many of these are said to have been planted on the south side of it by the celebrated earl of Arundel, in the reign of Charles I. Since that period they have proved highly beneficial to the proprietor, and to the public. "Formerly," says Mr. Gilpin, "the ships from the Levant brought such quantities of this wood in ballast, that the trees on this hill could not find a purchaser; and not having been cut in 65 years, they were growing in many parts cankered. But the war having diminished the influx of it from the Mediterranean, several purchasers began to offer for this native wood; and in the year 1795, sir Harry Mildmay put it up to auction, and sold it for the immense sum of twelve thousand pounds." This hill, and the neighbouring eminences, on which the box-tree flourishes in such profusion and perfection, should be considered as making a part of the natural history of Britain. The extensive prospects commanded from this place, combining with its singular and beautiful scenery, frequently excite the attention and admiration of travellers. In its immediate vicinity are several elegant villas, and the river Mole, which runs under ground for some distance, winds its slow waters beneath the precipitous sides of this hill. Gilpin's *Observations on the Western Part of England*, 8vo. 1798. Manning's *History of Surrey*, fol. vol. i. 1804.

BOXBERG, in *Geography*, a town of Germany, in the circle of the Lower Rhine, and the Palatinate; 34 miles E. of Heidelberg.

BOXBOROUGH, a township of America, in Middlesex county, and state of Massachusetts, containing 387 inhabitants; 30 miles N. W. from Boston.

BOXERS, a kind of *athletæ*, who combat or contend for victory with their fists. See *ATHLETÆ*.

Boxers are the same with those who, among the Romans, were called *pugiles*. The ancient boxers contended with such force and fury, that they frequently dashed out one another's teeth, broke their bones, and killed each other.

The strange disfigurement these boxers underwent were such that frequently they could not be known, and rendered them the objects of many raileries. In the Greek anthology, there are four epigrams of the poet Lucilius, and one of Lucian, wherein their disfigurements are pleasantly enough exposed. Anthol. Græc. lib. ii. Ep. 1, 2, 3. 10. 14.

BOXES, in a play-house, are little apartments behind and aside of the pit. We say, the front boxes, the stage-boxes, &c.

BOXES of the pump. See *PUMP*.

BOXFORD, in *Geography*, a small township of America, in Essex county, Massachusetts, seated on the S. E. side of Merrimack river; 7 miles W. of Newbury port, and containing 852 inhabitants.

BOXHORN, MARK ZUERIUS, in *Biography*, an eminent philologist, the son of James Zuerius, was born at Bergen-op-Zoom, in 1612, and assumed the name of his maternal grandfather, Henry Boxhorn, a convert from popery, and minister of Breda. At Breda, where he was educated, his proficiency in literature was such, that at the age of 17 years he published some Latin poems that were well received, and at the age of 20 he was editor of some learned works. In 1632, he became professor of rhetoric in the university of Leyden. Declining to accept the invitation of queen Christina to an honourable office in Sweden, he succeeded Daniel Heinsius in the professorships of politics and history, both which departments he occupied with great honour to himself and benefit to his auditors. His literary career, however, was terminated by death, in 1653. His works were numerous and curious. He published, in addition to his juvenile labours as an editor,

notes upon Justin, Pliny's Epistles, and Tacitus, and a "Commentary upon the Life of Agricola," by the last mentioned author. In a work written by him on the invention of printing, he endeavoured to establish the claims of Haerlem in opposition to those of Mentz. He also wrote a Latin account of the siege of Breda. Among his political pieces are enumerated his defences of the liberty of navigation claimed by the Dutch, a short account of the Dutch constitution, and a vindication of the rights of Charles II. to the English throne. He wrote "Critical and historical dissertations on the antiquities of Gaul and Scythia;" and "Sacred and prophane history from the birth of Christ, to the year 1650," in one volume 4to. His account of learned women never appeared. His letters, and his Latin and Greek poems, were printed after his death. Gen. Dict.

BOXING, the exercise of fighting with the fists, either naked or with a stone or leaden ball grasped in them: in which sense boxing coincides with the *pugillatus* of the Romans, and what, on our amphitheatres, is sometimes called trial of manhood. When the champions had *σφαίρας*, or balls, whether of lead or stone, it was properly denominated *σφαίρομαχία*, Potter, Arch. Græc. lib. ii. cap. 21. vol. i.

The ancient boxing differed from the *pugna castruum*, in which the combatants had leathern thongs on their hands, and balls, to offend their antagonists; though this distinction is frequently overlooked, and fighting with the *castrus* ranked as part of the business of the *pugiles*. We may distinguish three species of boxing; *viz.* where both the head and hands were naked; where the hands were armed and the head naked; and where the head was covered with a kind of cap called *AMPHOTIDES*, and the hands also furnished with the *castrus*, which see.

Boxing is an ancient exercise, having been in use in the heroic times, before the invention of iron or weapons. Accordingly we find in the Latin and Greek poets, several descriptions of this rudest, and most dangerous of the gymnastic combats. In Homer, we have that of Epeus and Eurialus; in Theocritus, that of Pellux and Amycus; in Apollonius Rhodius an account of the same battle; in Virgil that of Dares and Entellus; and in Statius, and Valerius Flaccus, are relations of several other combatants. Diofcor. Idyl. 22. Argonautic. l. 2. Æneid. l. 1. Theocritus, l. 6. Argonaut. l. 4.

Those who prepared themselves for it, used all the means that could be contrived to render themselves fat and fleshy, that they might be better able to endure blows: whence corpulent men or women were usually called *pugiles*, according to Terence: "*Siqua est habilior panlo, pugilem esse atunt.*" M. Burette has given the history of the ancient pugilato, or boxing, with great exactness. Mem. Acad. Inscript. tom. iv. p. 353, &c.

The athletes sometimes came immediately to blows, and began with charging in the most furious manner. Sometimes whole hours passed in harassing and fatiguing each other, by a continual extension of their arms, rendering their mutual blows ineffectual, and endeavouring by this mode of defence to keep off their adversaries. But when they fought with the utmost fury, they aimed chiefly at the head and face, which parts they were most anxious to defend, by either avoiding or catching the blows that were aimed at them. When a combatant threw himself with all his energy upon another, they had a surprising address in avoiding the attack, by a nimble turn of the body, which caused the incautious adversary to fall, and deprived him of the victory. Notwithstanding the ferocity with which the combatants contended, they were sometimes so exhausted

by the duration of the combat, as to be under the necessity of making a truce, upon which the battle was suspended for some minutes, which were employed in recovering from their fatigue, and rubbing off the sweat with which they were bathed. They then renewed the fight, till one of them, by letting fall his arms through weakness, or by swooning away, indicated that he could no longer support the pain and fatigue, and desired quarter, which was confessing himself vanquished.

This art, adapted, as one might conceive, only to a period of barbarism, has in modern times been almost appropriated by the English; and about half a century ago it formed a part of the exhibitions at places of public amusement. It was encouraged by the nobility, and even tolerated by the magistrates. Before the establishment of Broughton's amphitheatre, a booth was erected at Tottenham court in London, the proprietor of which, Mr. Geo. Taylor, invited the professors of the art of pugilism to display their skill, and the public to attend their performances. The entrance money, amounting sometimes to 100 or 150 *l.*, was shared among the performers, in such proportion, that the victorious champion had two-thirds of it, and the vanquished one-third; and in some cases both had an equal share. When complaints were made by the nobility and gentry of the inconvenience attending the exhibitions in Taylor's booth, they prevailed on Mr. Broughton, at that time of rising fame in the class of pugilists, to build a place better adapted for the purpose. A subscription was raised, and, in 1742, a building was erected behind Oxford road, and denominated "Broughton's new Amphitheatre." In this building there were, besides a stage for the combatants, seats corresponding to the boxes, pit, and galleries in other theatres. In process of time, the public taste was refined and improved, so that exhibitions of this kind ceased to be popular, and sunk into neglect. At a later period, the death of one of the combatants served to render them still more disreputable, and unworthy of any patronage and encouragement. Instances, however, are often occurring of the renewal of these contests; but they are now so disgraceful in the public estimation, and so much restrained and prohibited by the interference of the magistrates, that they are attended by few persons above the lowest class of the community, whenever, by eluding notice, they happen to take place.

BOXING, an operation in sailing, somewhat similar to box-hauling. It is performed by laying the head sails a-back, to receive the greatest force of the wind in a line perpendicular to their surface, in order to bring the ship's head back into the line of her course, after she had inclined to windward of it, by neglect of the person at the helm, or otherwise. But should a ship be taken first a-back, or through neglect, in not timely boxing her off, it should cause the wind to be broad upon the other bow, and it should be the wish of the officer to have her upon the same tack as before, then furl the helm over to that side, which just before was the weather; brail up the mizen, and mizen-stay-sail; raise the main-tack and sheet, and square the after-yards. In this situation of the helm and sails, she will pay round off upon her keel; and when she has brought the wind aft, and gathered head-way, shift the helm. The wind round upon the other quarter, haul aft the mizen and mizen-stay-sail sheets, brace up the after-yards, get on board the main tack, and haul aft the sheet. As she comes to, right the helm, and trim sharp as before.

BOXING, in *Ship-building*, the projection left on the haule pieces, in the wake of the haule-holes, where the planks do not run through.

BOXING is also used for the tapping of a tree, to make it yield its juice.

The boxing of maple is performed by making a hole with an axe or chisel into the side of the tree, about a foot from the ground; out of it flows a liquor from which sugar is made. Phil. Trans. N° 364. See **MAPLE**, **BLEEDING-BIRCH**, and **SAP**.

BOXMEER, in *Geography*, a town of Germany, situate on the west side of the Meuse, on the frontiers of the duchy of Gueldres: 8 leagues E. of Bois-le-Duc, and 4 S.S.W. of Cleves.

BOXTEHUDE, a town of Germany, in the circle of Lower Saxony, and duchy of Bremen, seated on the river Elbe or Esse, navigable for boats to the Elbe. It is subject to the Danes; 14 miles W. of Hamburg. N. lat. $53^{\circ} 40'$. E. long. $9^{\circ} 35'$.

BOXTEL, a town of Brabant, seated on the Dommel, and furnished with sluices; 5 miles S. of Bois-le-Duc. N. lat. $51^{\circ} 30'$. E. long. $5^{\circ} 15'$.

BOY-BISHOP, in *Antiquity*. See **BISHOP**.

Boy, *St.* in *Geography*, a town of Spain, in the province of Catalonia; 6 miles S.W. of Barcelona.

BOYAR, or **BOIAR**, a term used for a Russian lord, or grandee. According to Becman, boyars are what, in other countries, are called the upper nobility; he adds, that the czar of Muscovy, in his diplomas, names boyars before waywodes.

It has not yet been satisfactorily determined, what the ancient boyars were; whence they derived their descent; and how they maintained their dignity; and whether this dignity was conferred by the sovereign; whether it attached to birth, or whether it sprung from the rank and importance which they brought with them into the country. If we consider them as the privy counsellors of the sovereign, then their precedence arises merely from their office, or they must have possessed it by their birth. But it has been likewise affirmed that the boyars, now in general the most considerable of the Russian nobility, came from abroad, were sprung from foreign ancestors, and brought their nobility into the empire with them. However, future researches are necessary for obtaining satisfaction, with regard to these questions. During the Tartarian and Mongolian sovereignty no trace of them is found; and even during the reign of czar Ivan Vassilievitch I. no such title appears, though it seems to have arisen at that time, or very soon after it: for under the czar Ivan Vassilievitch II., the boyars had already endeavoured to collect a considerable force; but were much overawed by that monarch. In the succeeding period of distraction, occasioned by the aspiring views of the patriarch and his superior clergy, the boyars seized the favourable opportunity of extending their power. It is also probable, that persons of respectable birth from other countries, occupied high stations in Russia, and on this account, as well as from the privileges brought with them, enjoyed great authority; and hence all boyars, *i. e.* the superior officers, might take occasion to assume a consequence, which they afterwards, as opportunities occurred, endeavoured to enlarge. Although the boyars are always mentioned in history as persons of distinction, yet the same history also informs us, that they received their dignity from the sovereign alone, that it was entirely personal, and that it was not transmitted by inheritance from father to son. Accordingly, it depended on the will of the monarch, whether he would have many or few boyars: and, therefore, they can never be considered as native privileged deputies of the people, nor as persons who could restrain the power of the sovereign, or

resist him in the undue exertions of it. In some cases, however, they usurped an authority to which they had no just pretensions, and then brought great distress upon the empire. At the drawing up of the *ulooshenie*, or old law of the land, they, as well as the clergy, were consulted: but probably only as privy counsellors, under which description they were generally noticed in the *ukasses*. However, in order to prevent any further usurpation and mistakes, an edict was issued in 1701 by Peter I., that they should no longer be mentioned at all in the *ukasses*. From the authority they possessed, and with a natural desire of extending it, it may be reasonably presumed, that they took a lead in the elections of the sovereign princes, if they were not the prime managers of them; they without doubt thought themselves the first personages after the sovereign and the privileged representatives of the people, especially of all the rest of the nobility; and this seems to be the reason why the latter are not named among the electors. The boyars, in early times, when wars were frequent, besides having a share in the election, were commanders of the army, as well as the ministers and counsellors of the prince. The directing senate in the Russian government, instituted by the emperor Peter I. about the year 1711, and raised to the rank of the supreme college of the empire, consisted at first of 9 boyars; and seems to have been created in the place of the old boyars. The boyars before his time sat at the helm of state in the capital, and officiated as viceroys in the provinces, deciding, commanding, and acting according to their own humours. But he abrogated the court of boyars, called "*Boyarskoi dvor*," which had hitherto constituted the ministry of the czar or tzar, and without whose consent nothing could be enacted, inasmuch that all the decrees of government began with these words, "By command of the tzar, and with the approbation of the boyars;" and substituted the senate in its room. Writers are not agreed as to the precise meaning of the word "*boyar*," or "*boyarin*." In the dictionaries it is made to denote a lord, a person of quality, or a nobleman. Sometimes it peculiarly denotes a soldier. In the Russian language, "*boyarin*" signifies a gentleman, a person of distinction, or a master of a family: and the Russian peasant usually styles his nobleman, even though he has neither rank nor estate, *boyarin*, or contractedly, *barin*, and his spouse, *boyarina*. Hence the task-service, performed by the boors to their lord, is called "*boyarschtschina*." Tooke's view of the Russian Empire, vol. ii.

BOYAU, in *Fortification*, a branch of the trenches; being a ditch covered with a parapet, which forms a communication between two trenches; it runs parallel to the defensive works of the body of the place, and serves as a line of contravallation, to hinder the sallies of the besieged, and also to secure the miners. When it is a line or cut, that runs from the trenches to cover some spot of ground, it is drawn so that it may not be enfiladed, that is, that the shot from the town may not scour along it.

BOYCE, DR. WILLIAM, in *Biography*, organist and composer to his majesty, was a musician to whom our choral service is greatly indebted, not only for his own excellent choral works, but for the well selected, correct, and splendid edition of our cathedral music, which he published in three volumes, large folio, upon the plan, and at the recommendation of his master and predecessor, Dr. Greene, to whom he served an apprenticeship.

This eminent professor (Boyce) was born at Joiners' hall, in the city, of which his father was housekeeper, and with whom he resided during celibacy. When he became a family-man, his residence was in Chancery-lane, to the end of the reign

reign of his late majesty George II, about which time he removed to Kensington Gore, where he ended his days in 1779. He was educated at St. Paul's school, and began his musical career as a chorister in that cathedral. When he lost his treble voice, he was bound apprentice to Dr. Greene, then organist of the metropolitan church. The master and scholar seemed worthy of each other, living in the utmost cordiality and friendship; the master loving the pupil, and the pupil honouring and respecting the master, to the end of their lives.

In 1734, he was a candidate for the place of organist of St. Michael's church, Cornhill, with Froud, Young, James Worgan, and Kelway. But though he was unsuccessful in this application, Kelway having been elected, yet he was appointed, the same year, to the place of organist of Oxford chapel; and, in 1736, upon the death of Weldon, when Kelway, being elected organist of St. Martin's in the Fields, resigned his place at St. Michael's Cornhill, Boyce was not only elected organist of that church, but organist and composer in the chapel royal.

The same year he set "David's Lamentations over Saul and Jonathan," which was performed at the Apollo Society. About the year 1743, he produced his serenata of "Solomon," which was not only long and justly admired, as a pleasing and elegant composition, but still affords great delight to the friends of English music, whenever it is performed. His next publication was "Twelve Sonatas or Trios for two Violins and a Bass," which were longer and more generally purchased, performed, and admired, than any productions of the kind in this kingdom, except those of Corelli. They were not only in constant use, as chamber music, in private concerts, for which they were originally designed, but in our theatres, as act-tunes; and public gardens, as favourite pieces, during many years.

In 1749, he set the ode written by the Rev. Mr. Mason, for the installation of the late duke of Newcastle, as chancellor of the university of Cambridge, at which time he was honoured with the degree of doctor in music by that university. Soon after this event he set the "Chaplet," a musical drama, written by the late Mr. Mendez, for Drury-lane theatre, which had a very favourable reception, and long run, and continued many years in use among the stock pieces for that theatre. Not long after the first performance of this drama, his friend Mr. Beard brought on the same stage the secular ode, written by Dryden, and originally set by Dr. Boyce for Hickford's room, or the Castle concert, where it was first performed, in still life. This piece, though less successful than the "Chaplet," by the animated exertions of Mr. Beard, was many times exhibited before it was wholly laid aside. These compositions, with occasional single songs for Vauxhall and Ranelagh, disseminated the fame of Dr. Boyce throughout the kingdom, as a dramatic and miscellaneous composer, while his choral compositions for the king's chapel, for the feast of the sons of the clergy at St. Paul's, and for the triennial meetings at the three cathedrals of Worcester, Hereford, and Gloucester, at the performances in all which places he constantly presided till the time of his death, established his reputation as an ecclesiastical composer and able master of harmony.

Dr. Boyce, with all due reverence for the abilities of Handel, was one of the few of our church composers who neither pillaged nor servilely imitated him. There is an original and sterling merit in his productions, founded as much on the study of our own old masters, as on the best models of other countries, that gives to all his works a peculiar stamp and character of his own, for strength, clearness, and

facility, without any mixture of styles, or extraneous and heterogeneous ornaments.

On the decease of Dr. Greene, in 1757, he was appointed master of the king's band, and, in 1758, on the death of Travers, organist of the chapel royal; of which he had succeeded Weldon, in 1736, as composer; so that he enjoyed three honourable appointments at once, which used to be supplied by three several professors. The gout put an end to the existence of this worthy man, and excellent composer, at the age of 69. He was succeeded in the chapel royal by Mr. (afterwards Dr.) Dupuis, and, as a master of his majesty's band, by Mr. Stanley.

BOYD, MARK ALEXANDER, a descendant of the ancient family of this name in Scotland, was born in Galloway in 1562, and placed for education at Glasgow, under the care of his uncle, the archbishop. But being of an ungovernable and turbulent temper, he quarrelled with his preceptors, destroyed his books, and renounced the pursuits of literature. He then sought to push his interest at court; and when all the endeavours of his friends to serve him in that situation proved ineffectual, they sent him in a military capacity to the wars of the United Provinces, with a view of restraining the violence of his temper. From hence he soon removed to Paris, and lost his whole stock of money by gaming. The distress that ensued seems to have brought him to reflection, and he determined to apply to literary studies. Accordingly he repaired to Bourges, and attended the lectures of the famous civilian Cujacius. To this eminent professor he recommended himself by peculiar attention and respect, and by adopting his taste in Latin poetry; and thus he acquired a fondness for the antiquated style of Ennius, and of the older Latin poets. From Bourges he was driven by the plague to Lyons, and thence to Italy. On the renewal of the civil wars in France, he removed thither, and bore arms with reputation in the royal cause; and after a variety of adventures he returned to his native country, where he died in 1601. The talents and performances of Boyd have been much over-rated; and he has been represented as another "admirable Crichton." But though he possessed a vigorous and versatile genius, he never acquired, probably on account of his indolence and dissipation, any kind of distinguished excellence. Besides several manuscripts which he left behind him, on political, critical, and poetical topics, his "Epistolæ Heroïdum," and his "Hymni," were published in the "Deliciæ Poetarum Scotorum," printed at Amsterdam, in 2 vols. 12mo. 1637. His "Epistolæ" were inscribed to James VI. of Scotland, or James I. of England, whom he represents as superior to Pallas in wisdom, and Mars in arms. As to the character of his poetry, it consists in an imitation of the worst manner of Ovid; and his hymns, which have no tincture of devotion, are poems to which he has annexed the title of some flower or herb, the qualities of which he has described. Bishop Tanner informs us, that, besides his epistles and hymns, he published two books of "Epigrams." Biog. Brit.

BOYDELL, JOHN, a liberal patron of the arts, and an honour to his country, was born at Dorrington, in Shropshire, on the 19th of January 1719. His father, who was a land-surveyor, intended his son for his own profession; and, had it not been for one of those little accidents which often determine the path that men are destined to walk, he had wasted that life, which has been so honourable to himself, and beneficial to this nation, in measuring and valuing the acres of Shropshire squires, and the manors of Welch baronets. Fortunately for himself and the arts, a trifling incident gave a different direction to his mind, and led him to aim at the delineation of scenes more picturesque than the ground-

plans of houses, boundaries of fields, or windings of obscure roads. While he was yet very young, chance threw in his way "Baddeley's Views of different Country Seats;" and among them was one of Haward-n castle, Flintshire;—which being the seat of sir John Gynn, by whom he was then employed in his professional capacity, and in the parish of which his father was an inhabitant, naturally attracted his attention. An exact delineation of a building that he had so often contemplated, afforded him pleasure, and excited an astonishment easier to be conceived than described. Considering it as an engraving, and reflecting that from the same copper might be taken an almost indefinite number of impressions, he determined to quit the pen, and take up the graver, as an instrument which would enable him to disseminate whatever work he could produce, in so much wider a circle. This resolution was no sooner made, than it was put in execution; for, with that spirit and perseverance which he manifested in every succeeding scene of life, he, at twenty-one years of age, walked up to the metropolis, and bound himself apprentice for seven years to Mr. Toms, the engraver of the print which had so forcibly attracted his attention. These, and accidents equally trifling, sometimes attract men of strong minds into the path that leads direct to fame, and have been generally considered as proving that they were born with some peculiar genius for some peculiar study; though, after all, genius is perhaps little more than what a great moralist has defined it:—"a mind with strong powers accidentally directed to some particular object." Sir J. Reynolds had the first fondness for his art excited by the perusal of "Richardson's Treatise on Painting;" and, as we have before observed, Mr. Boydell was induced to learn the art of engraving, by a coarse print of a coarse artist, representing a mis-shapen Gothic castle.

His conduct, during his apprenticeship, was eminently assiduous. Eager to attain all possible knowledge of an art on which his mind was bent, and of every thing that could be useful to him; and impelled by an industry that seemed inherent in his nature, he, whenever he could, attended the academy in St. Martin's-lane to perfect himself in drawing; his leisure hours in the evening were devoted to the study of perspective, and to the learning of French without the aid of a master. After very steadily pursuing his business for six years, and finding himself a better artist than his teacher, he bought from Mr. Toms the last year of his apprenticeship, and became his own master; and the first use that he made of his freedom was to return into his own country, where he married a very deserving young person of a most respectable family, to whom he had an early attachment, and with whom he lived many years in great felicity.

In the year 1745, or 1746, he published six small landscapes, designed and engraved by himself. This publication, from his having, in most of the views, chosen a situation in which a bridge formed part of the scenery, was entitled "The Bridge-Book," and sold for a shilling. Small as this sum was, he sometimes spoke with apparent pleasure of a silversmith in Duke's-court, St. Martin's-lane, having sold so many, that when he settled his annual account, he thought it would be civil to take a silver pint mug in part of payment, and this mug he retained until his dying day. He afterwards designed and engraved many other views, generally of places in and about London, and published the greater part of them at the low price of one shilling each. But even at this early period, he was so much alive to fame, that after having passed several months in copying an historical picture of Coriolanus by Sebastian Concha, he so much disliked his own engraving, that he cut the plate to pieces. Beside these, he engraved

many prints from Brooking, Berchem, Salvator Rosa, &c. The manner in which many of them are executed is highly respectable; and, being done at a time when the artist had much other business to attend to, displays an industry rarely to be paralleled, and proves, that had he devoted all his time to engraving, he would have ranked high in the profession. His facility of execution, and unconquerable perseverance, having thus enabled him to complete 152 prints, he collected the whole in one port-folio, and published it at five guineas. He modestly allowed, that he himself had not at that time arrived at any eminence in the art of engraving; and that those prints are now chiefly valuable from a comparison of them with the improved state of the art within the last 50 years. In fact, there were at that time no eminent engravers in England; and Mr. Boydell saw the necessity of forcing the art by stimulating men of genius with suitable rewards. With the profits of the folio volume of prints above mentioned, he was enabled to pay very liberally the best artists of his time, and thus presented the world with English engravings from the works of the greatest masters. The encouragement that he experienced from the public was equal to the spirit and patriotism of his undertaking, and soon laid the foundation of an ample fortune. He used to observe, that he believed the book we have alluded to was the first that ever made a lord mayor of London; and that when the smallness of the work was compared with what had followed, it would impress all young men with the truth of what he had often held out to them, "that industry, patience, and perseverance, if united to moderate talents, are certain to surmount all difficulties." Mr. Boydell, though he never himself made any great progress as an engraver, was certainly the greatest encourager of the art that this country ever knew. English engravings, which were before considered as extremely inferior to those of foreign nations, began from that time to be highly prized; and the exportation of them soon became a valuable article of commerce. On the 5th of August, 1782, Mr. Boydell was chosen alderman of London, for the ward of Cheap, in the room of alderman Crichton, deceased.

Having been so successful in promoting the art of engraving in this country, he resolved to direct his next efforts to the establishing of an English school of historical painting; and justly conceiving that no subject could be more appropriate for such a national attempt, than England's inspired poet, and great painter of nature, Shakspeare, he projected, and just lived to see completed, a most splendid edition of the works of that author, illustrated by engravings from paintings of the first artists that the country could furnish, and of which the expence was prodigious. These paintings afterwards formed what was termed "The Shakspeare Gallery," in Pall-Mall; and we believe there are few individuals, possessed of the least taste, or even curiosity, who have not inspected and been delighted by them.

In the year 1790, Mr. Boydell was chosen lord mayor of London; an office, of which he discharged the duties and the honours with a diligence, uprightness, and liberality, that may be equalled, but will rarely be exceeded.

After having expended, in his favourite plan of advancing the fine arts in England, no less a sum than 350,000*l.* this worthy and venerable character was necessitated by the stoppage of his foreign trade during a dozen years of war, to apply to parliament, in the beginning of 1804, for permission to dispose of the Shakspeare gallery, and his other collections of pictures and prints, by way of lottery. His letter to sir John William Anderson, bart. on the occasion of his introducing a petition for that purpose to the house of commons, is preserved in most of the respectable periodical

cal publications of the time, and w^hl at once inform, instruct, and deeply affect the feelings of the reader. It is, however, too long for insertion in this place; and, indeed, the facility of reference to the Gentleman's, the European, the Monthly Magazines, &c. render it little necessary.

[A coincidence that may be just worth mentioning here is, that by mere chance this article came under the writer's hand on the very day which, by the result of the lottery, transferred the property of this valuable collection to Mr. Tassie, an artist of Leicester Square, the nephew of a late well known imitator of ancient cameos and intaglios.]

Mr. Boydell's death was occasioned at last by a too scrupulous attention to his official duties. Always early in his attendance on public business, he arrived at the Sessions-house in the Old Bailey, on Friday, the 7th December, 1804, before any of the other magistrates, and before the fires were lighted. Standing near a grate while this was done, the damp was drawn out, and he took a cold; this produced an inflammation of the lungs, which terminated his life on the Tuesday following. He was interred, with great civic pomp (the spontaneous result of private friendship and public respect), on the 19th of the same month, in the church of St. Olave, J-wry; leaving behind him, for the instruction of mankind, a striking example to what heights of fame and fortune men may attain by the united efforts of persevering industry, prudent enterprize, and honourable dealing. We have shewn how Mr. Boydell's 152 plates, engraved by himself, laid the foundation of his fortune. We understand, however, that he was also the means of making Mr. Woollet's genius known to the public, by employing him to engrave the Niobe and the Phaeton, from pictures by Wilson. For the first of these he agreed to give Woollet 50 guineas, and when it was completed, paid him 100. The second the artist agreed to engrave for 50 also; but Mr. Boydell paid him 120. The two prints were published by subscription at 5s. each; and proof impressions have since been sold at public auctions for ten, and sometimes eleven guineas each!!

BOYER, ABEL, was born at Calres in 1664, and on occasion of the revocation of the edict of Nantes, he became a refugee, and finally settled in England, where he became a considerable writer. His "French and English Dictionary," 4to. has been often published, and is well known; and so is his "French and English Grammar." His "Political State" was a monthly publication, commenced in January, 1710, and continued to November, 1729. He also wrote the "History of king William," 3 vols. 8vo.; "Annals of queen Anne," 11 vols. 8vo.; a French translation of "Aldison's Cato;" "Letters French and English;" an English translation of "Telemachus;" "State Trials to that of the Earl of Oxford," and several other works. He died at Chelsea in 1729. *Morri. Gen. Eng.*

BOYER, JOHN BAPTIST NICHOLAS, was born at Marseilles, August the 5th, 1693. His father, intending to bring him up to business, gave him a suitable education, and, at a proper age, sent him to Constantinople, to his uncle, who was consul there; but finding him inclined to literature, and to the study of medicine, he sent him, on his return from the Levant, to the university at Montpellier. In the year 1717, he took the degree of doctor, and gave for his inaugural thesis, "A Dissertation on Inoculation of the Small Pox," which he had seen practised at Constantinople. On the plague breaking out at Marseilles, in 1720, he was sent there with five other physicians; and his practice, or his conduct on that occasion, having been approved, he was rewarded by the king with a pension, and was made physician to a regiment of guards. He was some years after invited to Hunspruche, a town in the bishopric of Treves, where an

infectious fever was making great ravages, and, in 1742, to Paris, on a similar occasion. His success at these places occasioned him to be sent for to Beauvais, in 1750, where by his judicious management he prevented the spreading of an infectious fever, infecting that country. For these services he was honoured by the king with letters of nobility, and invested with the order of St. Michael. He died Jan. 1768. His works are, "Methode indiquée contre la maladie epidemique qui vient de regner à Beauvais," Paris, 1750, 4to. It consists of only ten pages. "Methode a suivre dans le traitement de differentes maladies epidemiques qui regnent le plus ordinairement dans la generalite de Paris," 1761, 12mo. He wrote, in 1745, a "Memoir" on the disease infecting the cattle at that time. It was sent to the Royal Society in London, and procured him a place in the list of their foreign members. He also gave a new edition of the *Codex medicamentarius*, seu "Pharmacopœia Parisiensis," 4to. a very useful and well digested work. *Eloy. Dict. Hist.*

BOYER'S Bay, in *Geography*, lies at the N.W. end of the island of St. Kitt's, in the West Indies.

BOYER, in *Navigation*, a kind of Flemish sloop, or small vessel of burden, having a boltsprit, a cattle at each end, and a tall mast; chiefly fit for the navigation of rivers, and, in many of its parts, resembling a smack.

The boyer has a double bottom, and a forked mast, that it may run better with the bowling-line, without driving.

BOYERA, in *Geography*, a village of Africa, in the kingdom of Anta, on the Gold coast, situate between Bourtry and Tokorari, and wholly inhabited by fishermen and labourers, who carry on a considerable trade with their neighbours by exchanging the fruits of the earth and fish for the produce of other countries. This village, and an adjoining one, called "Pandos," of the same description, are known at sea by a large pointed rock that lies before the coast.

BOYES, an order of American priests or magicians, used by the savages for calling up their gods, either to be revenged on those who have done them any injury, or to be cured of some disease, wherewith they are infected, or to drive out some devil. They are also consulted with regard to the event of their wars. Each boye has his peculiar duty; who is invoked by certain forms of words, sung in a quaint tone, accompanied with the fumes of tobacco.

BOYEUPECANGA, in *Zoology*, the name of a very large serpent, distinguished by this name on account of certain prominences on its back. It is a very large and remarkably thick serpent, and of very fatal poison. *Ray.*

BOYLE, RICHARD, in *Biography*, an accomplished statesman, generally stiled the "Great earl of Cork," was the descendant of an eminent and honourable family in Herefordshire, and the second son of Roger Boyle, a younger brother, who settled at Canterbury, where he was born in 1566. Having pursued his studies for some time at Bennet college in the university of Cambridge, he removed to the Middle Temple with a view to the profession of the law; but he soon changed his destination, and entered into the service of sir Richard Manwood, chief baron of the exchequer. This situation presenting to him no prospect of speedy advancement, he went to Dublin in 1588; and, though his whole wealth amounted only to 27l. 3s. he had good recommendations, which, together with his own talents, introduced him into connection with the principal persons employ'd in the government, to whom he rendered himself eminently useful. The business in which he was engaged afforded opportunities of acquiring a comprehensive and accurate knowledge of the kingdom, and of the state of public affairs, which he did not neglect duly to improve. His marriage also, in 1595,

with

with a lady possessing 500*l.* *per annum* of landed property, served to accelerate his advancement. By several advantageous purchases, at a time when land was of precarious tenure, and consequently cheap, he laid the foundation of his future ample estate; and the office of clerk of the council, under sir George Carew, in the province of Munster, to which he was appointed by queen Elizabeth, served to give him additional importance. His constant attendance on sir George in all his expeditions against the Irish rebels, offered him various opportunities of singular service to the state, and of justifying the confidence that was reposed in him. Accordingly, after the battle of Kingsale, A. D. 1601, in which the Irish and their Spanish auxiliaries were totally routed, he was dispatched by his patron, the president of Munster, to communicate the news of the victory to the queen; and he executed this commission with such dispatch, and so much to the satisfaction of sir George, that he was employed in another embassy to England, in order to obtain the queen's permission for the president's return to his own country. In consequence of the advice of his patron, Mr. Boyle purchased, at a low rate, sir Walter Raleigh's estate in Ireland, consisting of 12,000 acres, in the counties of Cork and Waterford, which he so cultivated and improved as very much to enhance their value. In 1603 he married the daughter of sir Geoffrey Fenton, and in the same year received the honour of knighthood from his friend and patron sir G. Carew, then lord deputy of Ireland. The next step of his progressive advancement to the high honour and ample fortune, which he afterwards acquired, was the office of privy-counsellor for the province of Munster, to which he was appointed by king James in 1606; and as he had considerable estates in this province, he was enabled, by this promotion, to pay due attention, at the same time, to his own interest and to that of the public. With a view to both these objects, he took care to let his estates to English protestants only, and to erect several towns and boroughs, as well as some castles, for their security. His conduct was so much approved, that in 1612 he was promoted to the dignity of privy-counsellor for the kingdom of Ireland, and in 1616 to the rank of peerage, by the title of baron of Youghall, in the county of Cork, and in 1620 to that of viscount Dungarvan and earl of Cork. By his active and unremitting exertions for promoting the security and prosperity of the English and protestant interest in Ireland, and improving the arts and manufactures of the country, he conciliated the favour of king Charles I., and obtained for his sons, even in their infancy, several titles of distinction. As they grew up he settled them in separate estates, and formed connections for his daughters with the best families in the country. At the castle of Lismore, the centre of very ample domains, which on this account he chose for his own residence, he lived in a style of princely splendour. In 1629 he was appointed one of the lords justices of Ireland; an office of high dignity and influence, which he held for many years; and in 1631 he was appointed lord treasurer of the kingdom, accompanied with the unprecedented circumstance of hereditary succession in his family. But it has not continued in the sole line of the house of Boyle; for, on the death of the last earl of Burlington, in 1753, the office was conferred by his late majesty, on the then marquis of Hartington, who was not of the Boyle family; and it is now enjoyed by his son, the present duke of Devonshire, who descends from a female branch. In the exercise of the powers with which he was invested, he assiduously executed the rigorous laws of queen Elizabeth against the papists; and for the more effectual suppression of the popish religion and worship, he shut up several mass-houses both in Dublin and in the country.

He was also active in providing a regular and competent subsistence for the army; and in transplanting a multitude of barbarous Irish "septs," or "clans," out of the fertile and well cultivated province of Leinster, into the wilds and deserts of the county of Kerry. He also took great pains in endeavouring to procure a mint to be settled in that county. Upon the arrival of lord Wentworth, who was appointed lord-deputy of Ireland in 1633, the high powers possessed and exercised by the earl of Cork excited jealousy and opposition; and the cold civilities which at first passed between them terminated in open and avowed hostility. This hostility continued for several years; very much to the mortification and disquietude of both parties. However, when the earl of Stafford was impeached before the house of lords in 1641, the earl of Cork, who was then in England, had an opportunity of retaliating by giving evidence against him. Soon after this event, and just before the commencement of the fatal rebellion in that country, he returned thither; and assuming a military capacity, exerted himself with all the ardour of youth, and collected an army among his tenants and dependants, at his own expence, which he committed to the command of his four sons, distributing them through various parts of his extensive domains, so as to secure them, in a great degree, against the depredations of the superior forces of the Irish, and to gain many advantages over them. In this contest he lost one of his sons, who fell at the battle of Liscarol, in 1642; nor did the earl himself, whose active exertions overpowered a constitution already impaired by age, long survive. In September, 1643, he closed his honourable career of private advancement and public service, and was interred in his own chapel, in the parish church of Youghall, near the noble monument he had erected for his family. How well he deserved the title of the "Great earl of Cork," under which appellation he is always mentioned, even among the native Irish, the historians of the interesting period in which he lived have amply testified. "The noble earl of Cork, lord high-treasurer," says sir Richard Cox, an intelligent and impartial writer, in his introduction to the 2d volume of his History of Ireland, "was one of the most extraordinary persons, either that or any other age hath produced, with respect to the great and just acquisitions of estate that he made, and the public works that he began and finished, for the advancement of the English interest and the protestant religion in Ireland, as churches, alms-houses, free-schools, bridges, castles, and towns, *viz.* Lismore, Tallow, Cloghnakilty, Iniskeen, Castletown, and Bandon, (which last place cost him fourteen thousand pounds,) insomuch, that when Cromwell saw these prodigious improvements, which he little expected to find in Ireland, he declared, "that if there had been an earl of Cork in every province, it would have been impossible for the Irish to have raised a rebellion." And whilst he was carrying on these solid works, he lived in his family at a rate of plenty that exceeded those who consumed great estates in the lavish ways of ill-ordered excess. His motto, "God's providence is my inheritance," shews from whence he derived all his blessings, the greatest of which was the numerous and noble posterity he had to leave his estate unto." By his second lady he had fifteen children, of whom many survived him, and rose to great eminence. Biog. Brit.

BOYLE, ROGER, earl of Orrery, fifth son of the great earl of Cork, was born in 1621, and created baron Broghill, of the kingdom of Ireland, at the age of seven years. At Dublin, where he received his education, he was distinguished by his genius and application; and, in 1636, he set out on the tour of France and Italy. Upon his return from his travels, he found the country in great confusion; and

and having married the daughter of the earl of Suffolk, they landed in Ireland on the day when the rebellion in that kingdom broke out, viz. October 23, 1641. On this occasion the post which his father assigned him was the defence of the castle of Lismore, in which he behaved with equal prudence and valour: after the cessation of the contest between the protestants and popish parties in Ireland, he visited England, and paid his respects to king Charles I. at Oxford; to whom he communicated information concerning the true state of Ireland; and he returned with a commission to lord Inchiquin, and instructions to act against the rebels, in which service he assisted that nobleman to the utmost of his power; and he continued his service, as the only means of promoting the protestant interest, under the commissioners named by parliament, till the king's death. When this event took place, he left his country and retired to Marlton in Somersetshire, where he remained for some time in close retirement; but here he formed a scheme of crossing the seas, under a pretence of visiting the Spaw, on account of his health, and of applying to Charles II. for a commission to raise forces in Ireland, for the restoration of his majesty and the recovery of his own estates. The committee of state, however, were apprized of his design; and Cromwell, wishing to avail himself of his talents and influence, proposed an interview with him. In this interview he was informed, that the committee of state knew the object of his leaving the kingdom, and that they had determined to make an example of him, if he himself had not interposed and diverted them from their purpose. Lord Broghill, finding that it was vain to dissuade, and that Cromwell had copies of several letters which his lordship had sent to those in whom he had confided, and which he put into his hands, returned Cromwell thanks for his protection against the committee, and solicited instructions how he was to act in his peculiarly delicate and embarrassed circumstances. Cromwell assured him of the high opinion he entertained of his merit and character; and, as he had been appointed lord lieutenant of Ireland, he informed him, that he had obtained leave of the committee to offer his lordship the command of a general officer, if he would serve in the war for reducing the country; pledging himself at the same time, that no oaths or engagements would be imposed upon him, and that he should not be obliged to draw his sword against any but the Irish rebels. Whilst his lordship was hesitating about accepting an offer so generous and unexpected, Cromwell urged the necessity of an immediate resolution; as the committee, who were then sitting, determined, if he refused the offer, to send him to the Tower. Lord Broghill, apprehending danger both to his liberty and life, and overpowered by the apparent frankness and generosity of Cromwell's conduct, gave him his word and honour, that he would faithfully serve him against the Irish rebels. Accordingly he directed him to repair immediately to Bristol, where he would find a supply of forces, and a sufficient number of ships to transport him into Ireland. Having accepted Cromwell's commission, he served under him with great military skill and vigour in his Irish campaigns. After Cromwell's assumption of the protectorate, lord Broghill became his constant companion and confidential counsellor; and it has been said, that he proposed a matrimonial connection between the exiled king, Charles II. whom he had founded upon it, and whom he found not altogether averse from the project, and Frances, the daughter of the protector, who was not inclined to adopt it. It has also been said, that he advised Cromwell to restore the old constitution, and to assume the title of king. The measures he recommended, whilst he enjoyed the confidence of the protector, were mild and lenient; and by these he equally served both Cromwell

and the nation. In parliament he opposed and defeated the detestable measure, proposed by some party-men, which was that of a law for decimating the royal party. In 1656, lord Broghill accepted, on conditions previously stipulated, a commission to govern Scotland for one year with absolute authority; and in the execution of it he gave great satisfaction both to the Scots and to Cromwell. It redounds much to the credit of his lordship's judgment, that, notwithstanding the number and influence of his enemies, and their frequent access to the protector, he retained his confidence to the last, and possessed some of the most distinguished posts under his government, being a general officer in the army in Ireland, a member of both parliaments, a lord of Oliver's creation, and one of his confidential council. After the death of Cromwell he adhered faithfully to his son Richard, as long as he had any prospect of maintaining his power; but as soon as he had dissolved the parliament, he thought the government subverted, and himself absolved from all obligations of attachment to the Cromwell family, considered as that of a prince. He, therefore, determined, for his own security, to withdraw to Ireland, and to assume his command in the province of Munster. Availing himself of the advantages which his situation afforded him, he was eminently useful in restoring and re-establishing the king's authority in Ireland; and soon after his arrival, he came over to England, and farther ingratiated himself with his majesty, by giving him full information with regard to the state of parties in Ireland. For the services that were rendered by him on this occasion, he was advanced, in 1660, to the dignity of earl of Orrery, and appointed one of the lords justices for Ireland. Having drawn up the act of settlement for that kingdom, and thus secured the protestant interest, he withdrew in 1662, upon the appointment of the duke of Ormond to the lieutenantancy, to his local jurisdiction in the province of Munster. In this situation of subordinate authority, and comparative retirement, and though he was occasionally afflicted with paroxysms of the gout, he took an active part, when opportunity offered, in public affairs. He is said to have had the seals offered him, when he made a visit to England in 1665, but he declined accepting them. On his return to Munster, he found ample employment for his talents during the progress of the Dutch and French war. Besides other services of an important nature which he performed, he put the town and harbour of Kinsale into such a state of defence, as to relieve the people amidst their alarms and apprehensions, and to render abortive the scheme for seizing it projected by the admiral of the French fleet. To him it was owing, that this port became afterwards a commodious refuge in time of war, both for our East and West India fleets. Notwithstanding all his labours and services for the safety of the kingdom, an unhappy dispute arose in 1667 between him and the duke of Ormond; so that he was deprived of his presidential power in Munster, and a charge of high treason was preferred against him in parliament, but it produced no effect. He still retained the king's esteem and confidence; though he was incapable of rendering him any essential service. Accordingly he determined to spend his latter years in Ireland, and to devote himself to literary pursuits, to the improvement of his estates, to the encouragement of manufactures, and to the support of the protestant interest. He closed his life, much respected by his domestics and tenants, and generally esteemed, October 16, 1679. As a statesman and soldier the earl of Orrery appeared with singular advantage; but though he was ambitious of obtaining the reputation of a writer, and published a great number of works, in prose and verse, tragedy, comedy, and romance, &c. none of them

them have escaped oblivion. As a patron and encourager of literature, he has been mentioned with respect and applause. *Biog. Brit.*

BOYLE, ROBERT, an eminent philosopher, illustrious by birth, learning, and virtue, was the 7th son of Richard, earl of Cork; and born at Lismore in the county of Cork, February 25th, 1726-7. In his infancy he was committed to the care of a country nurse, with instructions to bring him up hardily, as if he were her own son; and he thus acquired a strong and vigorous constitution, which was afterwards enfeebled by too tender treatment. About the age of 3 years, he lost his mother, whom he mentions with great respect; and whilst he was under the care of his nurse he acquired, by imitating some children of his own age, a habit of stuttering, which was never entirely cured. In his father's house he was taught to write a fair hand, and to speak both French and Latin; and at this early period he manifested a docility and an invariable regard to truth, which very much endeared him to his father, and formed distinguishing features of his character in the progress of his life. In 1635, when he was about eight years of age, he was sent to Eton college, of which sir Henry Wotton was then provost, and placed under the care of Mr. Harrison, to whose attention and judicious mode of instruction he acknowledged himself indebted for those habits of assiduous investigation in which he afterwards excelled. At Eton he was afflicted with an ague, which rendered it advisable to divert his attention from the course of study which he was pursuing, and to allow him to seek that kind of amusement, which the perusal of romances might afford him; but though he was only 10 years old, he was sensible of the injury produced by this kind of desultory reading; and as soon as he regained his health, he sought a remedy for this evil in the severer studies of mathematics and laborious calculations. After having spent between 3 and 4 years at Eton, he was placed under private tuition for the recovery of his knowledge of the Latin language which he had nearly lost; and in 1638 he accompanied his brother Francis on his foreign travels, under the care of Mr. Marcombes. In their route they passed from Dieppe to Rouen, Paris, and Lyons, and at length settled at Geneva, where they were directed to remain and to pursue their studies. The principal objects of Mr. Boyle's attention were mathematics, in the prosecution of which he found great pleasure; but besides these, he employed himself in the study of rhetoric, logic, and political geography, and in acquiring the external accomplishments of fencing, dancing, &c. At this time some incidents happened, which concurred with his naturally serious disposition to direct his thoughts to the subject of religion; and in examining the evidences of the christian revelation, he obtained full satisfaction, notwithstanding the doubts and difficulties which had occasionally perplexed his mind; and was confirmed in his belief of its truth and importance. Having remained a year and three quarters at Geneva, he left it in September 1641, and traversing various parts of Italy and Lombardy he arrived at Venice; and from Venice he proceeded to Florence, where he spent the winter. During his residence in this city, he acquired a knowledge of the Italian language; and employed a great part of his time in reading modern history; and in acquainting himself with the new discoveries of Galileo, who died in the vicinity of Florence at the period of Mr. Boyle's abode in this city. Towards the end of March, 1642, he commenced his journey to Rome, visiting the most remarkable places in his route thither; and from Rome, where his stay was short, he returned to Florence, and from thence he passed to Leghorn, and afterwards to Genoa. Having travelled through the

country of Nice, and crossed the sea to Antibes, he proceeded to Marseilles, where he expected bills of exchange; but, to his great mortification, he found a letter from his father informing him and his brother, that the rebellion had broke out in Ireland, and that it was with considerable difficulty that he had been able to procure for them a remittance of 250l. in order to defray their expences in their return to their own country. But through the negligence of the person, to whom the remittance was entrusted, they received no part of this money, and were, therefore, left in a destitute condition. At Geneva, whither they were enabled to proceed by the assistance of Mr. Marcombes, their governor, they waited two years without receiving any supplies; and by the disposal of some jewels which they took up on his credit, as they proceeded on their journey homeward, their travelling expences were defrayed, and they arrived safe in England about the middle of the year 1644. On their arrival they received the news of their father's death; but Mr. Boyle was amply provided for by the bequest of the manor of Stalbridge in England and other estates in Ireland; and yet on account of the confusion of the times, he was for some months unable to procure any money. However he was relieved on his arrival by his sister the lady Ranelagh; and by her interest, and that of his brother lord Broghill, his English and Irish estates were secured for him. He also obtained leave to go to France; and having settled his accounts with Mr. Marcombes, he soon returned. In March, 1645, he retired to his manor of Stalbridge, and for 5 years devoted himself to various kinds of literary and scientific pursuits in this place; and more particularly to the study of natural philosophy and chemistry. During this period of retirement, when he was about 20 years of age, he commenced that extensive correspondence with the principal persons of his time, which he maintained, with distinguishing reputation to himself and benefit to the world, till near the close of his life. In the list of his first literary friends and correspondents, we may enumerate Mr. Francis Tallents, afterwards known to the world as the author of the "Chronological Tables;" Mr. Samuel Hartlib, whom he greatly esteemed, and who is mentioned with peculiar commendation by Milton in his "Tractate of Education;" Dr. William Petty; Mr. John Beale, besides many others. At this early age he manifested his zeal for religion, as well as his candour and christian charity, by favouring the designs of Mr. John Drury, for effecting a reconciliation between the Lutherans and Calvinists. He was likewise one of the first members of that learned body, which, after the restoration, was incorporated under the title of the *Royal Society*. Notwithstanding the disease of the stone, with which he was afflicted, and numerous avocations which his various connections imposed upon him, his application to study was assiduous and indefatigable; and before he had attained the age of 20, he had completed three treatises, viz. "Seraphic Love," "Essay on mistaken Modesty," and "the Swearer silenced," or "Free discourse against swearing." Mr. Boyle was distinguished as a promoter of literature and science, by his patronage of others engaged in similar pursuits, as well as by his own labour and writings. Accordingly, in 1651, Dr. Nathaniel Highmore, an eminent physician, dedicated to him his "History of Generation," which was a work at that time much esteemed. Whilst he was unwearied in his chemical and philosophical inquiries and experiments, he was no less attentive to the subject of religion; and with this view he applied to the study of the scriptures in their original languages. About the year 1652 he began his "Essay on Scripture;" and he continued it during frequent interruptions, occasioned by his journeys to Ireland at this period. Ireland, however, where he spent a great part of

two years, from 1652 to 1654, did not afford favourable opportunity for prosecuting the researches to which he was devoted; and, therefore, he employed the time of his continuance there principally in anatomical dissections, with the assistance of his friend Doctor, (afterwards Sir William) Petty. Upon his return to England in 1654, he settled at Oxford, where he had the advantage of pursuing his experiments, and where he enjoyed the society of many learned friends, who occupied different situations in the university. It was during his residence at Oxford, that he invented, or rather improved, the construction of the air-pump (See *Air-pump*): an instrument, by the use of which he was enabled to perform a variety of experiments, relating to the gravity and elasticity, and other qualities of the air, which entitled him to rank amongst the first philosophers of any age. He had at this early period of his scientific career renounced the philosophy of Aristotle, as a system of words instead of things; and attached to the only just and effectual mode of pursuing philosophical researches by experiment, and fearing lest his mind should acquire any improper bias from the ingenuity of the author, he declined the perusal of the works of Des Cartes, whose philosophy was held by many in high estimation. Mr. Boyle did not restrict himself, whilst he continued at Oxford, to the study of philosophy; but he availed himself, in the prosecution of sacred criticism, of the assistance of those great orientalists, Dr. Edward Pococke, Mr. Thomas Hyde, Mr. Samuel Clarke, and Dr. Thomas Barlow, afterwards bishop of Lincoln. His correspondence was also at the same time very extensive; and was carried on for the purpose of the promotion of science with Mr. Henry Oldenburgh, afterwards secretary to the Royal Society, Dr. John Beale, John Evelyn, esq. Dr. John Pett, and Dr. John Wallis, who honoured him with the dedication of his excellent treatise "*De Cycloide, et corporibus inde genitis*."

In 1659, as soon as he was made acquainted with the distressed circumstances of Dr. Robert Sanderson, afterwards bishop of Lincoln, who had been deprived of his preferments on account of his attachment to the royal cause, he settled upon him an annuity of fifty pounds a year; a favour which was respectfully acknowledged by the doctor in his dedication of "*Ten lectures on cases of conscience*," delivered in Latin in 1647, and printed at Oxford in 1659.

After the restoration in 1660, Mr. Boyle was treated with great respect by the king, and also by the lord-treasurer, lord Southampton, and lord chancellor Clarendon; and by the latter he was urged to enter into holy orders. Having considered the proposal with due attention, his pious scruples determined him to decline the clerical office. In this year he published his "*New experiments touching the spring of the air*," which involved him in a controversy with Franciscus Linus and Mr. Thomas Hobbes, and to which he annexed a defence in the edition of 1662; and also his discourse "*On seraphic love*." Mr. Boyle's reputation had at this time extended itself to foreign countries; so that the grand duke of Tuscany communicated to him by Mr. Southwell, then resident at Florence, his wish to correspond with him on philosophical subjects. In 1661 he published his "*Physiological essays, and other tracts*," and soon afterwards his "*Sceptical chemist*." Other treatises, to which he refers in this publication, and which were in great forwardness, were unfortunately lost at the time of the great fire of London. In 1662, a grant of the forfeited impropriations in Ireland was obtained from the king in his name, but without his knowledge; and they were applied by him to the promotion of religion and learning. He was also appointed governor of the corporation for propagating the gospel in New England; and in this office he was active and

successful in restoring an estate, of which they had been deprived by Col. Bedingfield, a papist, although they had given him for it a valuable consideration. In the conduct of the concerns of this institution he was, in other respects, eminently useful. When the Royal Society was incorporated in 1662, Mr. Boyle was appointed one of the council; and as he may justly be regarded as one of the founders of this society, he continued through life one of its most useful and industrious members. In the following year he published his "*Considerations on the usefulness of experimental philosophy*," his "*Experiments and considerations upon colours*," with "*Observations on a diamond that shines in the dark*;" and "*Considerations on the style of the holy scripture*," extracted from a larger work, entitled "*An essay on scripture*," published after his death by Mr. Peter Pett, attorney-general for Ireland. In 1664, Mr. Boyle was elected into the company of royal miners; this new connection, and other engagements of a benevolent and public nature, prevented his publishing any treatises, either on religion or philosophy, in this year. But the year 1665 produced his "*Occasional reflections on several subjects*," to which is prefixed, "*A discourse concerning the nature and use of such kind of writings*." This piece, which had been written by Mr. Boyle in his youth, and at various intervals, was ludicrously attacked by Dr. Swift in his "*Pious meditations upon a broomstick, in the style of the honourable Robert Boyle*." How far Mr. Boyle possessed in his youth, or acquired in his maturer years, a correct taste and style of writing, particularly in works of imagination, it is now needless to inquire; it is sufficient to observe, that no attack on the part of Dr. Swift can affect the fame of this distinguished person, either as a man or a philosopher. In this year Mr. Boyle, besides some communications to the Royal Society, printed in the *Philosophical Transactions*, published "*Experiments and observations relative to an experimental history of cold, with several pieces thereunto annexed*," a work well received at the time, and containing a variety of observations and facts that have been useful to those who, in more modern times, have directed their attention to this interesting subject. Towards the close of this year, his majesty appointed Mr. Boyle provost of Eton college; but he declined accepting this honourable and lucrative office, because he did not wish his studies to be interrupted, and because he thought it more suitable to a person in holy orders.

About this time Mr. Valentine Greatraks, an Irish gentleman of good family and competent fortune, and of a ferocious disposition inclining to melancholy, persuaded himself that he possessed the power of curing diseases by stroking. In some cases he succeeded, but in others he failed. His performances, however, were so extraordinary, that they excited very general attention; and an account of them was published, by Mr. Henry Stubbs, in a letter entitled "*The miraculous conformat, &c.*" and addressed to Mr. Boyle. To this letter Mr. Boyle replied; but his answer was not published till eighty years afterwards, in Dr. Birch's account of his life. Nevertheless, the sentiments and reflections contained in it were probably communicated to his friends; and though they were expressed with a caution, candour, and judgment, that did him great honour, they were thought to countenance what some persons deemed a deception, or the mere effects of enthusiasm, and they produced a controversy of some continuance. As far as Mr. Boyle was concerned in this business, it will be sufficient to observe, that, firmly believing the actual exercise of those miraculous powers which attested the truth and divine origin of christianity, and admitting, in consequence of the extent and variety of his

researches into the operations of nature, the reality of facts, which he could not immediately reconcile by analogy to the small aggregate of human acquisition, the letter, hastily written by him in reply to Mr. Stubbs, did not at all derogate from his character as a philosopher, or as a man of rational piety. He neither denied nor admitted the existence of the miraculous power ascribed to Mr. Greatraks; but allowing the facts, he proposed a variety of inferences and queries, which demanded discussion; and in the whole of this controversy he conducted himself in such a manner as to avoid personal censure from any of the disputants. See STROAKING.

In 1666 Dr. Wallis addressed to Mr. Boyle "An hypothesis about the flux and reflux of the sea," printed in N° xvi. of the Philosophical Transactions; and Dr. Sydenham dedicated to him his "*Methodus curandi febres, propriis observationibus superstructa*." His own publications in this year were "Hydrostatical paradoxes;" "The origin of forms and qualities, according to the corpuscular philosophy, illustrated by experiments;" and several papers communicated to the Royal Society, and printed in the Philosophical Transactions of that period. In the dispute that occurred in the establishment of the Royal Society between the adherents to the Aristotelian or old philosophy, and the advocates for the new method of philosophising by experiments, Mr. Boyle took a decided part with the latter; but without incurring censure or reproach from the most violent of the opposite party. About this time Mr. Boyle removed to London, where he afterwards resided, very much to the advantage of the Royal Society, which he countenanced by his personal presence and philosophical communications; as well as of the cause of science in general.

In 1669, he published his "Continuation of new experiments touching the weight and spring of the air," to which he annexed "A discourse of the atmospheres of consistent bodies;" and also "A discourse of absolute rest in bodies;" together with other hydrostatical pieces subjoined to his larger works: and in the same year he revised several of his former tracts, which had been translated into Latin for the benefit of foreigners. In the following year appeared his treatise "Of the cosmical qualities of things," containing a variety of interesting facts and observations; and several papers, communicated to the Royal Society. At this time his studies were interrupted by a stroke of the palsy, the effects of which were removed by a strict attention to a proper regimen; so that he soon returned to his labours. In 1671, he published a second volume of "Considerations touching the usefulness of experimental philosophy," and "Tracts of a discovery of the admirable rarefaction of the air," &c.; and in 1672 appeared his "Essay concerning the nature and virtue of gems," 8vo.; his "Tracts, containing new experiments touching the relation between flame and air, and various other interesting subjects chiefly relating to the statical action of fluids;" and, in the Philosophical Transactions, "Observations on shining flesh," and a paper on the effects of the varying pressure of air. In 1673 he published "Essays on the strange subtlety, great efficacy, and determinate nature, of effluvioms;" "Experiments on the weighing and coercion of fire and flame," 8vo.; and "A letter concerning ambergris," communicated to the Royal Society. In 1674 appeared a collection of "Tracts on the saltness of the sea; on a statical hygroscope; on the natural and preternatural state of bodies, and on the positive or privative nature of cold," 8vo.; "The excellency of theology compared with natural philosophy," 8vo.; "Tracts, containing suspicions about the hidden qualities of the air: animadversions upon Hobbes's problem concerning a va-

cuum; and a discourse of the cause of attraction by function," 8vo.; and in this year he communicated to the editor of the Philosophical Transactions, "An account of the two sorts of Helmontian laudanum." In 1675 he published "Some considerations about the reconcilableness of reason and religion," by T. E. a layman; to which is annexed, by the publisher, "A discourse of Mr. Boyle about the possibility of the resurrection," 8vo. T. E. are supposed to be the final letters of his own name, as both these tracts are ascribed to him. In this year he communicated to the Royal Society four papers, which appear in the Transactions: "On the air-bladders of fishes;" "A new essay instrument;" "New experiments touching the spring of the air," &c.; and "An experimental discourse of quicksilver growing hot with gold." In 1676 he published "Experiments and notes about the mechanical origin of particular qualities," in which he treats of alkalis and acids, heat and cold, tastes, odours, volatility, fixity, corrosive action, precipitation, magnetism, and electricity; and he also communicated to the Royal Society two papers on the configuration of the surfaces of fluids in contact with each other.

Mr. Boyle, having been for several years an active and useful director of the East India company, wished to avail himself of his office for propagating the gospel in those remote parts to which their commerce extended: and with this view he caused 500 copies of the four gospels and acts of the apostles to be printed at Oxford, in the Malayan tongue, under the direction of Dr. Thomas Hyde, and to be sent abroad at his own expence. For similar purposes of piety and benevolence, he had transmitted, about three years before, several copies of Grotius's treatise "*De veritate Christianæ religionis*," translated into Arabic by Dr. Edward Pococke, into the Levant.

In 1677 a miscellaneous collection of his works, defective, and badly arranged, was printed in Latin at Geneva. In the following year he communicated to Mr. Hook a "Short memorial of some observations made upon an artificial substance that shines without any preceding illustration," which was published in that philosopher's "Cutlerian lectures;" this substance was the phosphorus of urine. In this year he also published his "Historical narrative of a degradation of gold made by an anti-elixir," 4to.; and he received a tribute of singular respect, in a letter from the great Newton, laying before him his sentiments concerning an ethereal medium, which he afterwards proposed, in his Optics, as the mechanical cause of gravitation. In the year 1680, he published "The aerial noctiluca," 8vo.; and "An account of a new lamp," in Hook's Philosophical Collections; and he improved the second edition of his "Sceptical Chemist." Some persons have very unwarrantably asserted, that Mr. Boyle assumed to himself the invention of phosphorus, after having purchased the secret of Kraft. This calumny is refuted by his own narrative, in which he discusses the claims of Brand, Kunckel, and Kraft, and acknowledges the advantage which he derived, in the prosecution of his inquiries, from the information communicated to him by the latter, that the shining substance was obtained from a matter belonging to the human body. From the narrative it appears, that the aerial noctiluca was an aqueous solution, or diffusion of phosphorus, obtained by distillation from putrid urine in an experiment where his retort failed; and which did not prove altogether successful. At the annual election of officers for this year, Mr. Boyle was elected president of the Royal Society; but having objections of delicacy with regard to the official oaths that are required, and for some other reasons, he declined accepting the honour. At this time

time he contributed very liberally to the publication of Burnet's History of the Reformation, as the author acknowledges in his preface to the second volume. It was probably about the beginning of the year 1681, that he exerted himself for promoting the propagation of the gospel among the Indians; as his letter on this subject was a reply to one from Mr. John Eliot, of New England, dated Nov. 4, 1680. From this letter, which is preserved by Dr. Birch, it appears that he was a declared enemy to persecution on account of religious opinions. In this year (1681) he published his "Discourse of things above reason;" and in the following year, "New experiments and observations made upon the icy noëtiluca," 8vo.; and also a "Continuation of new experiments physico-mechanical, touching the spring and weight of the air, with a large appendix." It appears that his icy noëtiluca was the solid phosphorus, which at first he found some difficulty in making; but from a paper left with the secretary of the Royal Society, to be opened after his death, which was nevertheless communicated to his friend Dr. Beale during his life, we find that he evaporated urine by distillation till it acquired the consistence of syrup, then mixed it with siliceous sand, and distilled by a strong heat into a reservoir containing water. See PHOSPHORUS. In 1683 he wrote a letter, sanctioning and encouraging an undertaking of Mr. Fitzgerald for rendering sea-water fresh; and in the following year, he published his "Natural history of human blood," and his "Experiments and considerations about the porosity of bodies," both in 8vo. From a letter addressed to Mr. Boyle in 1684 by the learned Dr. Cudworth, it appears how highly he appreciated his talents and labours. After recommending a collection of his several treatises, he concludes in these terms: "You have much outdone Sir Francis Bacon in your natural experiments; and you have not insinuated any thing, as he is thought to have done, tending to irreligion, but the contrary." The year 1685 produced his "Short memoirs for the natural experimental history of mineral waters," and an "Essay on the great effects of even languid and unheeded motion;" to which is annexed an "Experimental discourse of some hitherto little regarded causes of the salubrity and insalubrity of the air," 8vo. In the course of that year appeared in the Philosophical Transactions, "An account of a strangely self-moving liquor," which was a compound of oils and bitumens, the ingredients of which, though known to himself, he has not specified: and also a distinct treatise "On the reconcileableness of specific medicines to the corpuscular philosophy," to which is annexed, a discourse about the advantages of simple medicines," 8vo. Besides these philosophical tracts, he presented the world in this year with a theological treatise, entitled, "Of the high veneration man's intellect owes to God, particularly for his wisdom and power," 8vo. The only work that appeared in 1686, was his "Free inquiry into the vulgar and received notion of nature." This treatise was much admired by the advocates for pure religion and sound philosophy; it was translated into Latin, and reprinted in the following year in 12mo. In this year, 1687, he published a work, written in his youth, entitled "The martyrdom of Theodora and Dydimia," and five decades of "Choice remedies," to which, when the work was reprinted in 1692, five more were added. In 1688 appeared "A disquisition about the final causes of natural things;" wherein it is inquired whether, and if at all, with what caution, a naturalist should admit them; to which was subjoined, by way of appendix, "Some uncommon observations about vitiated sight." About the beginning of this year our author found it expedient to apprise the public, by way of preface to his mutilated and

unfinished writings, and as a general apology for the state in which they appeared, that some of his papers had been stolen from him, and that others had been destroyed by corrosive liquours. The decay of his health, and the derangement of his affairs in Ireland, obliged him to diminish the number of his communications to the Royal Society, and induced him to resign the office of governor of the corporation for propagating the gospel in New England. From other arrangements with regard to his private affairs, his papers, and the number of visits which he received, it appeared that he was not without apprehensions of an approaching change. The time, however, which he thus reserved to himself, he industriously improved; as he availed himself of it for collecting various elaborate processes in chemistry; which, as we are informed in a letter preserved by Dr. Birch, "he left as a kind of hermetic legacy to the studious disciples of that art." This collection he committed to the care of a friend, enjoining him to impart it to the public faithfully, and without envy, verbatim in his own expressions. This friend is unknown, and the work was never published. From many circumstances, however, we are led to conclude, that Mr. Boyle concurred, with many other ingenious alchemists of the age in which he lived, in believing, what is now rejected as a groundless opinion, the possibility of transmuting the baser metals into gold; and hence, probably, he was led to take pains in procuring, in 1689, the repeal of the statute of the 5th of Henry IV. against the multiplying of gold and silver.

In 1690, he published his "Medicina hydrostatica, or hydrostatics applied to the materia medica," 8vo. With the promise of a second volume, which never appeared; and "The christian virtuoso, shewing, that by being addicted to experimental philosophy, a man is rather assisted, than indisposed to be a good christian;" a second part of which was published in an imperfect state, after his death. In 1691, he communicated to M. de la Croze, "An account of some observations made in the great congregation of waters, by lowering down bottles into the sea 600 feet from the surface," which was printed by that author in the "History of learning." Mr. Boyle's last work, published by himself, was his "Experimenta et observationes physicae;" to which is added "A small collection of strange reports," 8vo.

In July of this year, Mr. Boyle executed his last will, and in the succeeding months his health rapidly declined. On the 23d of December, he lost his sister, lady Ranelagh, to whom he was affectionately attached, and within a week afterwards, viz. on the 30th of December, 1691, he departed this life, in the 65th year of his age, and was interred at the upper end of the south side of the chancel of St. Martin's in the fields, near the remains of his sister, with whom he had lived for the greatest part of 47 years. His funeral sermon was preached by Dr. Burnet, bishop of Salisbury.

Mr. Boyle's posthumous works are as follow: 1. "The general history of the air, designed and begun," 1692, 4to.; 2. "Medicinal experiments, or a collection of choiced remedies, for the most part simple, and easily prepared," 1692, 12mo; 3. "General heads for the natural history of a country, great or small, drawn out for the use of travellers and navigators," 1692, 12mo.; 4. "A paper of the honourable Robert Boyle's, deposited with the secretaries of the Royal Society, Oct. 14, 1680, and opened since his death; being an account of his making the phosphorus, &c. Sept. 30, 1680;" 5. "An account of a way of examining waters, as to freshness or saltness;" 6. "A free discourse against customary swearing, and a dissuasive from cursing;" 1695, 8vo. 7. "Medicinal experiments, or a

collection of choice remedies, chiefly simple and easily prepared, used in families, and fit for the service of the country people;" the 3d and last volume published from the author's original MSS. A collection of all Mr. Boyle's works was published in 1744, in 6 volumes folio, with a life prefixed, by Dr. Birch; and in 6 vols. 4to. in 1772.

Mr. Boyle, as to his person, was tall and slender, and of a pale and emaciated countenance. His constitution was so delicate, that he regulated his cloathing by a thermometer: and he was occasionally subject to such debility of body, such painful paroxysms of the stone, and such depression of spirits, that we may be well astonished at the number and variety of his scientific and literary performances. However, to the simplicity of his diet, and the strict temperance which he observed, we may reasonably ascribe the degree of health which he enjoyed, and the length to which his life was protracted. His speech was slow and deliberate, and subject to hesitation; in his conversation he was unassuming, never dictating his own opinions, or urging his objections to those of others with confidence, but rather proposing them as topics of inquiry and discussion; and in his manners he was singularly mild and courteous. Although he was a favourite at court, and indulged in free intercourse with three successive sovereigns, viz. Charles II. James II. and William III., he never disguised his sentiments with regard to public men and measures; but he took no active part in the politics of the eventful times in which he lived, preferring the pursuits of philosophy, and the retirement which best suited his infirm frame and religious temper. To the rank of a peerage he never aspired, but refused it whenever it was offered to him. One of the most prominent features of his character, was his sincere and unaffected piety. This was exemplified in all his writings, and in the whole course of his life. Of his firm attachment to Christianity, and of his solicitude for vindicating its truth, and extending the knowledge and influence of it, he exhibited many substantial proofs, both whilst he lived, and at his death. Besides the translation of the gospels and book of acts into the Malayan language, and of Grotius's treatise concerning the truth of the Christian religion into Arabic, which we have already mentioned, and which was conducted at his own expence, he proposed an impression of the New Testament in the Turkish language; and when the Turkey company undertook it, he liberally contributed towards accomplishing it. A translation and edition of the Bible in the Irish language cost him 700l.; and he defrayed a considerable part of the charge attending an impression of the Welsh Bible, and of the Irish Bible for Scotland. He gave, during his life 300l. towards propagating the Christian religion in America; and as soon as he heard that the East India company were projecting a similar design in the East, he sent a donation of 100l. by way of example and encouragement in the prosecution of the scheme. Of the impropriations belonging to his estates he ordered considerable sums to be given to the incumbents in these parishes, and even to the widows of those who had died before this distribution of his bounty. This he did twice during his life to the amount of 600l., and he ordered another distribution as far as his estate would bear, by his will. In other respects, his charities were so numerous and extensive, that they amounted, as bishop Burnet informs us, from his own knowledge, to upwards of 1000l. per annum. The annuity established by his will for providing a series of lectures in defence of Christianity, affords further evidence of the benevolence of his temper, and of his concern for promoting the interests of religion. See BOYLE'S *Lectures*. His zeal in the cause of religion, though it was

ardent and active, was free from the least tincture of bigotry and intolerance. Whilst he adhered to the established church, he entertained the most undissembled charity towards all who differed from him in opinion: nor did he ever express himself in stronger terms, and with a greater degree of indignation, than when he condemned every kind of severity and persecution in the province of religion. Burnet in his funeral eulogy informs us, that his knowledge comprehended Hebrew and the other Oriental languages, the writings of the most eminent fathers, commentaries on the scriptures, religious controversies, and the whole body of divinity. He represents him as being acquainted with the whole compass of the mathematical sciences, and as well versed even in the most abstruse parts of geometry. Geography, navigation, and books of travels he had recourse to for the relaxation of his mind, and the amusement of his intervals of leisure. Of his knowledge with regard to subjects of natural history, chemistry, and experimental philosophy, his various researches and discoveries, recorded in his numerous publications already recited, afford ample evidence. Mr. Boyle, indeed, possessed in an eminent degree those qualities, which justify his being ranked among the first philosophers of any age or country. He was distinguished by the comprehension of his views, and the extent and variety of his researches, by indefatigable diligence and invincible perseverance in his collection of facts and investigation of their causes, by a total freedom from any preconceived attachment to theories and systems, by candour in discussing the opinions of others, and by fidelity, modesty and perspicuity in the narration of his own performances. Mr. John Hughes might well say of him (*Spectator* N^o 554), after observing that he was born the same year in which lord Bacon died, that he was the person designed by nature to succeed to the labours and inquiries of that extraordinary genius. It would be endless to recount the testimonies in commendation of him, that might be collected from the writings of the most illustrious foreigners, and of the best judges of his merit in our own country. It will be sufficient to say, that he is uniformly ranked with Bacon and Newton; that his researches and experiments have led the way to many modern discoveries both in philosophy and chemistry: and that his writings will ever be held in high estimation by every friend of science. "They cannot be read," says one of his biographers, "without improvement; and in these alone, if no life of Boyle had ever been written, the reader would behold a man truly deserving of the affection, the esteem, and the admiration of succeeding ages." Boyle's account of himself, under the name of Philocetus. Birch's life of Boyle, prefixed to his works. Burnet's funeral sermon. Biog. Brit. Birch's Hist. of the Royal Society. Phil. Trans.

BOYLE, CHARLES, fourth earl of Orrery, and baron Marlton in England, was the second son of Roger, second earl of Orrery, and was born at Chelsea in 1676. At the age of 15 he was entered at Christ-church college in the university of Oxford, where his tutors were Dr. Atterbury afterwards bishop of Rochester, and Dr. Freind. His application and proficiency were so distinguished, that he was styled by Dr. Aldrich, the dean, "the great ornament of our college," and deputed to prepare an edition of some classic author, for his annual publication. The book recommended by the dean was the "epistles of Phalaris," of which a splendid edition appeared in 1695. This publication gave rise to a controversy, the particulars of which have been already detailed under the article *Bentley*. We shall here add, that from a letter of bishop Atterbury to Mr. Boyle, written in 1698, (see Epistolary Correspondence,

ence, &c. published by Mr. Nichols, vol. ii.) it appears, that the former laid the design of the celebrated book, in answer to Bentley's dissertation, wrote above half of it, revised a good part of the rest, and transcribed the whole. Upon the death of his father, Mr. Boyle quitted the university and entered into public life. He was chosen as a member of the house of commons in 1700; and when his brother Lionel died in 1703, he succeeded to the title of the earl of Orrery. For his services in the army, he was elected, in 1705, one of the knights' companions of the most ancient order of the thistle; and as a major-general, to which rank he was advanced in 1709, he distinguished himself at the battle of the Wood in Flanders. He afterwards resided for some time at Brussels, as the queen's envoy to the states of Brabant and Flanders; and for his faithful discharge of this trust, he was raised to the dignity of a British peer. On the accession of George I. he received additional honours; but during the absence of the king at Hanover in 1716, his regiment was taken from him: upon which he resigned his post of lord of the bed chamber, and withdrew from public affairs. When Lacy's plot broke out, he was suspected by the government, and committed to the Tower, whence, after being confined 6 months, he was first liberated by bail, and at length discharged. From this time he amused himself with his library and philosophical apparatus, till his death, which happened in August 1731. He was much esteemed for his domestic and social qualities; and respected for his talents and literary attainments. He was the author of a comedy, entitled "As you find it," and also of some songs and occasional poems; but his favourite studies were of a different kind. The astronomical instrument called an "orrery," and first invented by Rowley, whom he patronized, derived its name from his title. See ORRERY. Biog. Brit.

BOYLE, JOHN, earl of Cork and Orrery, only son of Charles, fourth earl of Orrery, by lady Cecil, daughter of the earl of Exeter, was born in 1707, and for his early education entrusted to the care of Mr. Fenton, the poet. From Westminster school, whither he had been sent at a proper age, he removed to Christ-church college, Oxford. As an instance of his filial piety, which does him honour, it is related, that when his father was committed to the Tower, he earnestly intreated to be confined with him; but this indulgence was refused. Soon after the completion of his 21st year, in 1728, he married lady Harriet Hamilton, the youngest daughter of George, earl of Orkney. A dissension which occurred between the two earls produced a temporary misunderstanding between the earl of Orrery and his son. This misunderstanding is said to have originated in lord Boyle's refusal to suffer his wife to sit at table with his father's mistress. However this be, the son's conduct on the occasion, and in a situation peculiarly delicate and trying, reflected great honour on his judgment and temper. Although a reconciliation had been effected between the father and the son, yet the latter found reason to regret their dissension: for under the influence of a prejudice hastily conceived, the earl had made his will, and bequeathed his valuable library, consisting of above 10,000 volumes, with the exception of the journals of the house of peers, and books relating to the English history and constitution, bequeathed to his son, and a fine collection of philosophical instruments, to the college of Christ-church. After their reconciliation, he determined to alter his will, and had sent for his attorney with this view; but the suddenness of his decease prevented the execution of his just design. The young lord, however, behaved on the occasion with a filial piety and generosity, which entail singular honour on his memory. For though his father had

died considerably in debt, and had left legacies to a large amount to persons who were no relations, he took his debts upon himself, paid the legacies, and sent the books and mathematical instruments, within the limited time, to Christ-church. The loss of his father, aggravated by the circumstances now recited, made a deep impression upon his mind, and was succeeded by a fit of illness, which endangered his life. Of the acuteness of his feelings we may form some judgment by the following lines addressed to a friend, in return for a consolatory letter received by him at Bath, and inclosing a copy of verses, which exhorted him to dispel his grief by poetry, and to shew that Bath could inspire as well as Tunbridge, where, in the preceding year, he had written some humorous verses.

"Nor Bath, nor Tunbridge, can my lays inspire,
Nor radiant beauty make me strike the lyre;
Far from the busy crowd I sit forlorn,
And sigh in secret, and in silence mourn:
Nor of my anguish ever find an end;
I weep a father, but I've lost a friend."

Upon the recovery of his health and spirits, he took his seat in the house of peers in January 1732, and distinguished himself by his opposition to sir Robert Walpole's administration, and particularly by his speech against the mutiny bill, and a standing army, which was much applauded. However the delicacy of his health, his love of retirement, and the necessity of occasional residence in Ireland, precluded him from a regular attendance on his parliamentary duty. During his residence in Ireland, he became acquainted with dean Swift, who professed a high regard for him, and introduced him to the friendship of Mr. Pope. Upon his return to England, in 1733, he retired to his seat at Marston in Somersetshire, and amused himself in building, planting, and improving both his estate and his library. In 1737 he took a house in town, for the convenience of superintending the education of his sons at Westminster school. Having lost his first lady in 1732, he married a second wife in 1738; and with both he enjoyed the most uninterrupted state of domestic felicity. In 1739 he published a new edition, in 2 volumes 8vo. of the dramatic works of his great grandfather, Roger, earl of Orrery, and, in 1742, his late letters in one volume folio. The first of his own performances, which was Imitations of the first and fifth odes of the first book of Horace, with remarks on the peculiar excellencies of this poet, and on the translations of Dacier and Sanadon, appeared in 1741, fol. In 1743 his lordship was presented, by the university of Oxford, with the honorary degree of doctor of civil law, and he was likewise elected a fellow of the Royal Society. In 1746 he removed to Caledon in Ireland, where he resided, with little intermission, till the year 1750; employing his intervals of leisure in laying out gardens and plantations, and in various substantial and ornamental improvements. On his return to Marston, he pursued those alterations and improvements which he had begun at a former period. In the mean while, the employment of his winter-evenings was his "Translation of the Letters of Pliny the Younger, with observations on each letter, and an essay on Pliny's life," which was published at London in 1751, in 2 volumes 4to. and since reprinted in 8vo. This work was well received, and established the reputation of the author as a polite scholar; and it would have still retained its character as a standard work of the kind, if it had not suffered by the superior elegance of Mr. Melmoth's translation. In the same year appeared his "Remarks on the life and writings of Dr. Swift;" in a series of Letters addressed to his second son; which, abounding with popular anecdotes, met with a very rapid sale, though it gave occasion to many strictures and attacks, on account

account of the freedom with which it represented the defects as well as the excellencies of the character of his old friend. The portrait it exhibits is, however, deemed more faithful than several others of a more flattering kind. In 1753 lord Orrery succeeded to the Irish titles of Richard the third earl of Burlington and fourth earl of Cork, who died without male issue. His lordship continued to amuse himself and the world by occasional writings; and communicated several papers, chiefly of the humorous kind, to the periodical publications, entitled, "The World," and "The Connoisseur;" the former conducted by Mr. Moore, and the latter by Mr. Thornton and Mr. Colman. In 1754, he set out on a tour to Italy, and resided nearly a year at Florence, where he acquired universal esteem, and where he collected materials for his history of Tuscany, which he proposed to publish in a series of letters; but of these he only finished twelve, which were published after his death in 1774. From Italy he returned to Marlton in 1755; but the last years of his life were rendered peculiarly distressing to him by the loss of his wife and his eldest son, and by frequent and severe paroxysms of the gout. These trials, however, he bore with a fortitude and resignation which did honour to his principles and character, both as a philosopher and a Christian. In his distress he sought refuge, like Pliny, in his studies; and amused himself by publishing, in 1759, an original MS. "Memoirs of the life of Robert Cary, earl of Monmouth," with a preface, explanatory notes, and a tender dedication to his youngest son. He also, in the same year, wrote a preface to Mrs. Lennox's translation of Brumoy's Greek theatre; and he translated "The Discourse upon the theatre of the Greeks," "The original of tragedy," and "The parallel of the theatres." Some smaller pieces, written by his lordship, are dispersed in the periodical publications of his time. His last work, which was posthumous, is his "Letters from Italy," written in the years 1754 and 1755, and published in 1774, by the Rev. John Duncombe, who hath prefixed a life of his lordship. In his last illness he is said to have burnt many MSS. and, among them, the continuation of his letters from Italy, on account of their not being corrected and fairly transcribed. It is also apprehended, that his Florentine history underwent the same fate. At length this truly accomplished and amiable nobleman fell a sacrifice to an hereditary gout, at a comparatively early period, in November 1762, in the 56th year of his age; and his remains were interred near to those of his second lady, in the burial place of his family in Frome church. He was succeeded as earl of Cork and Orrery by Hamilton, his second son by his first countess; and on his death the titles and estate of the family devolved on Edmund, his son by his second lady, who became the seventh earl of Cork and Orrery.

From the tribute of just respect paid to his memory by the writer of his life, we learn, among other particulars, that "in every domestic and social relation, in all the endearing connections of life, as a husband, a father, a friend, a master, he had few equals. The lustre which he received from rank and title, and from the personal merit of his family, he reflected back, unimpaired and undiminished; and though the post of honour, which he chose and preferred, was "a private station;" though he was neither a statesman nor a soldier, like the first lord Cork, the first lord Orrery, and his own father; the rival of Palladio, like the late lord Burlington; or the rival of Bacon, like Mr. Robert Boyle; yet, in a general taste for literature, and, as they are commonly called, polite studies, he was by no means inferior to his ancestors."—"He loved truth even to a degree of adoration. He was a real Christian; and, as such, constantly hoped for a better life; there trusting to know the real causes of those effects, which

here struck him with wonder, but not with doubt." Mr. Duncombe proceeds to exhibit, in several instances, the striking resemblance between the earl of Orrery and Pliny, his favourite Roman. With regard to religion, his sentiments were rational, and his moral conduct as irreproachable and exemplary, as his manners were elegant and accomplished. His political principles were those of a disinterested patriot, and an ardent lover of liberty. His sentiments and feelings on this latter subject are admirably displayed in the following lines, extracted from one of his pieces annexed to his "Translation of Pliny," and expressing the love of Britons for liberty:—

"With native freedom, as with courage blest,
Chains, and each mark of thralldom we detest.
'Tis heaven's high gift, 'tis nature's great decree,
That none be slaves, whom God himself made free.
Revere we ought those powers which we entrust,
But to ourselves be resolutely just:
Scorn base corruption, nor, like slaves, disown
The laws that fix'd our monarch in his throne:
For well we know, by Truth's eternal rules,
Where slaves are subjects, subjects must be fools.
Exert but reason, liberty will reign,
And tyranny exalt her impious head in vain."

Biog. Brit.

BOYLE, in *Geography*, a market and post town of the county of Roscommon, and province of Connaught, Ireland, sometimes, but improperly, called *Abbey-Boyle*. It is situated on the river Boyle over which it has two stone bridges. In 1786, it contained about 200 families, and has probably increased; its linen markets having of late become considerable from the improved state of the yarn and linen manufactures in its neighbourhood. This town had a castle, which was of great strength, having held out during the civil war of 1641. It was one of the new corporations in the reign of James I. and continued to send two members to parliament until the act of union deprived it of that privilege. In the neighbourhood, and at present inclosed within the demesne of lord Kingston, is the ruin of the abbey of Boyle, finely situated near Lough Key, from which the town derived its name, and probably its existence. It belonged to the Cistercian monks, and was founded in 1161, after three or four other places had been tried, and not found sufficiently argeeable. The monastic records mention several noble converts who took the habit of the order, and probably enriched it with considerable benefactions; and they also mention some instances of sacrilegious plunder, in the wars which for so long a time distracted Ireland. When the dissolution took place, the property of the abbey was found to be very considerable, and was granted to sir John King ancestor of the earl of Kingston, by James I. in 1603, in reward of his services. The remains of this ancient erection are sufficient to shew its former magnificence, and deserve the attention of the antiquarian. The architecture is Gothic, and the arches are esteemed for their noble elevation and grandeur; and are of so firm a texture as to have withstood the severest shocks. Boyle is 84 miles N. W. of Dublin. N. lat. 53° 58'. W. long. 8° 13'. Beaumont—Monasticon Hibernicum.

BOYLE, or BUELLE, the name of a river which, rising in the county of Mayo, flows into a romantic sheet of water called Lough Gaza; thence meandering through woods and dales, it enters Lough Kee, or Kingston lake, a beautiful piece of water, interspersed with several islands, some of which are adorned with old castles and ruins; others in the state of nature, wooded with lofty timber trees; and some highly improved without a tree to be seen, but the
more

more pleasing prospect of everlasting verdure. The river again emerges out of the eastern side of this lake, as it were by constraint, and then glides on to pay its tribute to the Shannon, which it joins a little above Carrick.

BOYLE's *Lectures*, a course of eight sermons, or lectures, preached annually, set on foot by the honourable Robert Boyle, esq. by a codicil annexed to his will in 1691; the design of which, as expressed by the institutor, is, to prove the truth of the Christian religion against infidels, without descending to any controversies among Christians; and to answer new difficulties, scruples, &c.

For the support of this lecture, he assigned the rent of his house in Crooked-lane to some learned divine within the bills of mortality, to be elected for a term not exceeding three years, by the late archbishop Tenison, and others. But the fund proving precarious, the salary was ill paid: to remedy which inconvenience, the said archbishop procured a yearly stipend of 50 pounds, for ever, to be paid quarterly; charged on a farm in the parish of Brill, in the county of Bucks.

To this appointment we are indebted for many elaborate defences both of natural and revealed religion. A collection of these sermons from the year 1691, to 1732, was printed in 1739, under the title of "A defence of natural and revealed religion," in 3 vols. fol.; and those of several of the preachers have been printed and published in distinct volumes. An abridgment of these lectures in 4 vols. 8vo. was published by the Rev. Mr. Gilbert Burnet, vicar of Coggeshall, in Essex, who died in 1746.

BOYLING. See BOILING.

BOYLSTON, in *Geography*, a township of Worcester county, in the state of Massachusetts, America, 7 miles N.E. of Worcester, and 42 N.W. of Boston. It was incorporated in 1786, and contains by survey 14,396 acres of land, of rich soil and well watered, and 1058 inhabitants.

BOYNE, the name of a considerable river in Ireland, supposed to be the *Bubinda* of Ptolemy. It takes its rise in the bog of Allen, in the county of Kildare, and having separated that county from the King's county, and the southern part of Meath for several miles, it enters the latter county at Clonard, and flowing N.W. divides it nearly into two equal parts, forming the general civil division of the county, and constituting a boundary to every barony touching its banks. The scenery of this river has been much celebrated, and there are few situations adapted to the purpose of mill machinery that are not occupied. In its course within the county of Meath alone, there are six extensive boulding mills, besides several grist and cloth mills; and one for the manufactory of cotton was erecting in 1802. The Boyne navigator, between Drogheda and Navan, runs along the course of the river, and has considerably increased the trade of both those towns. At Navan, it receives the Blackwater, and having passed by Slane and Drogheda, it flows into the Irish Sea, a few miles below the latter town, to which it is navigable. The fishery of this river is valuable, and the salmon in particular is highly esteemed. The Boyne, however, is not so noted for any circumstance as for the victory gained by William III. over that intemperate prince James II. on the 1st of July, 1690. The place where the battle was fought is between Drogheda and Slane, and is marked out by an obelisk, founded on a rock, which rises boldly from the river. The advantage of situation was in favour of James's army; and if he had not himself fled before the battle was decided, the event might have been very different. The brave duke Schomberg lost his life on this occasion, and William was

often in great danger. It was long customary to celebrate the anniversary of the day on which this battle was gained; but as it served no purpose but that of perpetuating party animosity, the observance begins to be neglected; and it is to be hoped that the different sects will become so united in attachment to their common country, as almost to forget that they were ever enemies. Thomson's Meath, &c.

BOYSE, a town of France, in the department of the Loiret, and chief place of a canton, in the district of Pithiviers; 2 leagues S. E. of Pithiviers, and 7 N. E. of Orleans.

BOYSE, or BOIS, JOHN, in *Biography*. See BOIS.

BOYSE, JOSEPH, a protestant dissenting minister, was born at Leeds in Yorkshire, in January, 1659-60. After early instruction under the care of his parents, he received the first part of his education for the ministry at the private academy of the Rev. Mr. Frankland, near Kendal, in Westmoreland, and completed it under the tuition of the Rev. Mr. Edward Veal, who kept a private academy at Stepney, near London. Having continued in these seminaries five years, and availed himself of the opportunities which he enjoyed in the latter situation of attending on the preaching of many able divines, both conformists and non-conformists, he entered on the exercise of his ministry about the year 1680. In 1683, finding that he could not discharge the duties of his function in England without molestation, he accepted an invitation to be joint-pastor with Mr. (afterwards Dr.) Daniel Williams, in Dublin; and had afterwards for his coadjutor the Rev. Mr. Thomas Emlyn, so well known for his writings and his sufferings. This connection subsisted for more than ten years with mutual friendship and uninterrupted harmony; but it was at length dissolved in consequence of Mr. Emlyn's sentiments concerning the doctrine of the Trinity. On this occasion the zeal of Mr. Boyse for the orthodox led him to take some steps that were thought injurious to his former colleague, and inconsistent with the friendship that had subsisted between them; though he disapproved the prosecution which Mr. Emlyn suffered, and behaved towards him with a greater degree of kindness than any of the other dissenting ministers of Dublin. The latter years of Mr. Boyse's life were embittered by bodily disorders and frightened circumstances. His funeral sermon was preached in December, 1728; but the precise time of his death is not known. He was considered as a pious, learned, and useful divine; assiduous in the exercise of his ministry, and in his conduct generally esteemed. He had a principal concern in promoting the act of toleration in Ireland. His works were published in 1728, in 2 vols. fol. The *first* contains 71 sermons, 6 dissertations on the doctrine of justification, and a paraphrase on those passages of the N. T. which chiefly relate to that doctrine. The *second* volume contains several pieces, of which the principal is a "Vindication of the true deity of our blessed Saviour," in answer to Mr. Emlyn's "Humble inquiry into the Scripture account of Jesus Christ, &c." As Mr. Boyse's answer was published at the time when Mr. Emlyn was under prosecution for his sentiments, his conduct did not escape censure; and was thought not to be candid, liberal, and ingenuous. Biog. Brit.

BOYSE, SAMUEL, the son of the former, was born in 1708, and having received the rudiments of his education in a private school at Dublin, was sent, at the age of 18 years, to the university of Glasgow, probably with a view to the office of a minister. Before he had attained his 20th year, he imprudently married; and this connection, in addition to the natural extravagance of his temper, involved him in pecuniary difficulties, which obliged him to quit the university

university before he had finished his studies, and to seek relief for himself, his wife, her sister, and family, from his father at Dublin. Notwithstanding the assistance he received, very much to the injury of his father's circumstances, his own conduct, which was marked by indolence and dissipation, and that of his wife, who was dissolute and vicious, contributed to increase his distress, and to accelerate his ruin. After the death of his father, all his resources failed, and he was under a necessity of repairing to Edinburgh, where his poetical talents procured for him a considerable degree of patronage. In 1731, he published a volume of poems, to which are annexed a translation of "The tablature of Cebes;" and "A letter upon liberty;" which had been printed in the Dublin journal, in 1726. This publication gained him reputation, and recommended him to the patronage of the counts of Eglington, to whom it was addressed. Upon the death of the viscountess Stormont, he wrote an elegy, entitled, "The tears of the muses," for which he received a handsome present from her husband, lord Stormont. These tokens of favour, on the part of his lordship, and of the counts of Eglington, served to procure for him the patronage of the dukes of Gordon, who employed her interest in obtaining a place for him in the customs at Edinburgh, but he lost the intended benefit by his own negligence. Having reduced himself by his own imprudence and indolence to extreme poverty and distress, he was under a necessity of leaving Edinburgh; and with recommendatory letters to Mr. Pope and sir Peter King, then lord chancellor of England, as well as to other persons of rank, fashion, and influence, obtained from the dukes of Gordon, and from lord Stormont, he removed to London. But his own indiscretion defeated the kind design of these recommendations, and he again experienced the distress of indigence, without making any attempt to extricate himself, besides writing a variety of mendicant letters. These served to procure him a temporary supply, which he soon expended by the most unaccountable and inexcusable extravagance. About the year 1740, his penury and wretchedness were so extreme, that he pawned his apparel, and even his bed-cloaths, and confined himself in his lodgings and his bed, with no other covering besides a blanket. Wrapped only with this covering he sat up in bed, having cut a hole through it large enough to receive his arm; and placing the paper on his knee, he scribbled in the best manner he could the verses he was obliged to make. When he was under a necessity of appearing abroad, he occasionally supplied the want of a shirt by slips of white paper round his wrists and neck. In this state he remained for several weeks, without any other subsistence except what he could obtain by writing verses for the magazines, and from benefactions procured by the most abject supplications, and by the meanest arts of deceit. When he was employed in translating from the French, it was his constant practice, after sending a sheet to the press, to pawn the original, and to repeat this as often as it was redeemed during the course of his work. After passing through various scenes of a wretchedness that is scarcely paralleled in the records of human misery, in the vicissitudes of spunging-houses, garrets, and ale-houses, he resided at Reading, in 1745, where, having lost his wife, he was employed in compiling an historical work, entitled, "An historical review of the transactions of Europe, from the commencement of the war with Spain in 1739, to the insurrection in Scotland in 1745, &c." and published in 1747, in 2 vols. 8vo. This work, for which the author was paid at a very low rate, is not destitute of merit, and contains much useful information respecting the history of that period. After his return from Reading, he married a second wife of

low condition, but he assumed a more decent behaviour, and some hopes were entertained of his reformation. He was employed by a bookseller to translate Fenelon's "Demonstration of the being of a God." At this time his appearance was very different from that to which he had been accustomed, and he seemed to pay some regard to his character. Towards the close of his life, and during a lingering illness which preceded his dissolution, the principles which he had imbibed, contracted against the licentiousness and profligacy of his conduct, produced a degree of remorse and self-reproach, which he could not evade or suppress. So deep, indeed, and so permanent were the impressions of his good education, that his whole life was a kind of conflict between his vicious inclinations, and his sober reason. It was, as it is said, from the experience of this mental struggle, that he wrote his poem, entitled, "The Recantation." He died in indigence and obscurity in London, in the month of May, 1749, and was buried at the expense of the parish. Few instances occur, in which distinguished talents have been more lamentably perverted, than in the case of Mr. Boyse. Besides his genius for poetry, he possessed a taste for painting, music, and heraldry; and if his powers had been diligently cultivated and exercised, he might have acquired a higher degree of excellence than he ever attained; and he would certainly have escaped the ignominy and wretchedness, which were the consequences of his misconduct. His poetical effusions, if they were collected from the periodical works in which they were inserted, would make several volumes. Two volumes were published in London during his life. The most celebrated of his poetical productions was his religious poem, entitled, "Deity," and published about the year 1741. This poem received the public commendation of two very different writers, viz. Hervey, in his "Meditations," and Fielding, in his "Tom Jones;" and it was so popular, as to have passed through three editions in 1752. Of this piece, Mr. Boyse said, that Mr. Pope, upon being asked if he was the author of it, disclaimed the work, but at the same time acknowledged, that there were many lines in it, of which he should not be ashamed. The best of Mr. Boyse's productions are admitted into Dr. Anderson's collection of the poets of Great Britain, printed at Edinburgh. In Ogle's Canterbury tales of Chaucer modernized, several appear under Mr. Boyse's name, and are executed with spirit. His ode, entitled "Albion's Triumph," was written on occasion of the battle of Dettingen in 1743, and published without his name. Cibber's Lives of the Poets, vol. v. Biog. Brit.

BOYSERSTEIG, in *Geography*, a calcareous mountain of Germany, near Stutgard, the capital of the duchy of Wurtemberg.

BOYUANA, in *Zoology*, the name of an American kind of serpent, of a long and slender form, the colour entirely black. It is related of the boyuana, that it has exactly the smell of a fox, but so strong, that no one can endure to be near it. The particular species, or even genus, is uncertain. Several of the serpent race have an offensive scent; that of some of the boa tribe is known to be intolerable, when they have seized upon their prey, and begin to anoint it with their saliva, preparatory to swallowing it.

BOZE, CLAUDE GROS DE, in *Biography*, an eminent antiquary, was born at Lyons, in 1680, and after first applying himself to jurisprudence, devoted his whole attention to antiquities and medals. In this study he was encouraged by the chancellor Pontchartrain, Bignon, Vaillant, and Hardouin, who became attached to him on account of both his amiable character and extensive erudition. In

1705, he was admitted into the academy of inscriptions and belles lettres, and in the following year appointed perpetual secretary. He became a member of the French academy in 1715; and in 1717, he was appointed keeper of the royal cabinet of medals, the treasures of which he augmented by his journey to Holland in the ensuing year. Upon his return to Paris, he devoted his full weekly to his academical and official duties, except that he contributed a few occasional papers to the "Journal des Sçavans." He died, much esteemed for the gentleness and politeness of his manners, in 1744.

His publications are, the 15 first volumes of the "Mémoires of the Academy of Inscriptions, &c." to which he added the historical eulogies of its members, published separately in 2 vols. 12mo., and much valued as elegant and judicious compositions, particularly the latter of them; the second edition of the "Mémoires history of Lewis XIV." brought down to that king's death, 1723, fol.; "The history of the emperor Titinius, illustrated by Medals;" and several dissertations on medals and other subjects of antiquity, in the academical memoirs. A catalogue of his valuable library was published in 1745, and is highly prized by biographers. Another was published after his death, Paris, 1753, 8vo. *Mémoires. Nouv. D.ét. Hist.*

BOZZE, in *Geography*, an island and river in the island of Sardinia. The town is on the south side of the river, which falls into the ocean on the west; and the island of this name lies off the west to the south, between the mouth of that river and another straits to the south of it.

BOZEN. See BOLZANO.

BOZENTIN, a town of Poland, in the palatinate of Cracow, seated at the foot of Kalebberg mountain, and surrounded with a wall and rampart.

BOZIN, BOSING, BASINECK, BAZINGA, or BAZINUM, a small, but handsome, free royal city of Lower Hungary, in the upper outward district, seated on a rising ground. The inhabitants are industriously employed in the cultivation of vineyards, trade, and handicrafts. In 1605, 1620, and 1655, this place was laid in ashes.

BOZOCK, or BZOWIK, a small town of Hungary, with a castle, in a district of the same name.

BOZOULS, a town of France, in the department of the Aveyron, and chief place of a canton, in the district of Rodez, or Rhodéz, and 10 miles N.E. of it. The town contains 2,306, and the canton 6,427 inhabitants; the territory comprehends 237½ kilometres, and 12 communes.

BOZRÄH, in *Ancient Geography*. See BOSTRA.

BOZRAH, in *Geography*, a town of America, in New-London county, and state of Connecticut; 36 miles E. from Hartford.

BOZZASOTRA, ANTHONY, in *Biography*, a celebrated professor of medicine in the university of Naples, his native country, flourished the early part of the 16th century. His works are "Quæstiones de calido innato," Neapoli, 1542, 4to. "De conceptione in utero gerenti, adversus negantes hujusmodi auxilium pro cautione abortû," Romæ, 1545, 4to. The author shews that the prohibition of Hippocrates to the bleeding of pregnant women, arose from the rude custom of bleeding ad deliquium; but that blood might be drawn in small quantities from women in that state, not only safely, but with advantage. "Tractatus quatuordecim medicamentosi, ex Galeno," Neapoli, 1549, 8vo. He died Jan. 15, 1557. Haller, Bib. Med. Eloy. D.ét. Hist.

BOZZOLO, in *Geography*, a town and small principality of Italy, in the duchy of Castella, adjoining to the Cremonese, formerly belonging to the duchy of Mantua, Vol. V.

from which it was separated. The town was fortified in 1734. It is situate 15 miles W. of Mantua, and 20 E. of Cremona.

BRA, HENRY DE, in *Biography*, commonly called *Henry a Bra*, a physician of considerable eminence, born at Deckem, in West Friesland, the 25th of September, 1555, was initiated into the study of medicine by his father, who was pensionary physician to the town. To improve him in knowledge his father sent him to visit the different universities in France, Italy, and Germany. After spending eight years, he returned by B. de, where he took his degree of doctor in medicine, under J. de Bommene, the elder. He now went to Kempen, where he practised about eight years, but was at length invited to Zutphen, and made pensionary physician, and there continued to the end of his days. His works, which were in request in his time, are "Medicamentorum simplicium et facie parabilium ad iustum, et hydropem, catalogus, et quomodo eis utendum," Leid. 1590, 8vo. "De curandis venenis per medicamenta simplicia, et facie parabilia," Arnhem, 1603, 8vo. with others of a similar kind. "De novo quodam a ortu genere, Frictis et Westphaliæ peculiari," published in the works of Peter Forestus. Haller, B. Med. Eloy. D.ét. Hist.

BRA, in *Geography*, a town of Italy, in the principality of Piedmont, including 3 parish churches; 10 miles S.E. of Carmagnola, and 2 N.W. of Cherasco.

BRAAN, a river of Scotland, which runs into the Tay, near Dunkeld, in the county of Perth.

BRAAWICKEN, or BRAVICKEN, a gulf of East Gothland, on the west side of the Baltic sea, about 30 leagues S.W. from Stockholm, into which the river Motala discharges itself near the town of Nordkiooning.

BRABANCIONES, in *Middle Age Writers*, a kind of Netherlands soldiery, infamous for rapine, being little better than commissioned banditti, who hired themselves to fight for any that could pay them best.

The word is variously written by the historians of those days; all given them from the country of Brabant, which was the chief nursery of those troops. They are also frequently confounded with the *Routiers, Returiers, Ruftarii, Ruterarii, Coleraux*, &c. Daniel. Hist. de la Mil. Franc. liv. iii. chap. 8.

Towards the close of the 12th century, when the government in all the states of Europe was relaxed, and it was almost impossible to enforce any general execution of the laws, troops of banditti under these denominations were emboldened to disturb the public peace, to infect the highways, to pillage the open country, and to brave all the efforts of the civil magistrate, and even the excommunications of the church, which were culminated against them. Some of these troops were occasionally enlisted in the service of one prince or baron, and others in that of another; they often acted in an independent manner, under leaders of their own; the peaceable and industrious inhabitants, reduced to poverty by their ravages, were frequently obliged to betake themselves to a like disorderly course of life; and a continual intestine war, pernicious to industry, as well as to the execution of justice, was thus carried on in the bowels of every kingdom. These mercenary ruffians formed a kind of society or government among themselves, which set at defiance the rest of mankind. The greatest monarchs were not ashamed, on urgent occasions, to have recourse to their assistance; and as their habits of war and depredation had given them experience, hardness, and courage, they generally composed the most formidable part of those armies, which decided the political quarrels of princes. Accordingly Henry II. raised numerous troops of them in his service; and the situation of

his affairs was such as to render even such banditti the only forces on whose fidelity he could repose any confidence. We read also of foldiers under this and similar denominations in the subsequent reigns of Richard I. and John. Hume's Hist. vol. i. and vol. ii.

BRABANCON, in *Geography*, a town, with the title of principality, in the county of Hainaut; 4 leagues E. of Maubeuge.

BRABANDERKOEK, a small island of Denmark, in the duchy of Sleswick, and prefecture of Husum, called also Nordstrand, which see.

BRABANT, **DUCHY OF**, a province of the Netherlands, bounded on the north by Holland and Guelderland, on the east by Guelderland and the principality of Liege, on the south by Namur and Hainaut, and on the west by Flanders and Zealand. The circumference is estimated at about 80 leagues, and it contains twenty-six walled towns, besides several others of inferior importance; the principal cities are Louvain, Antwerp, and Brussels. It was first erected into a duchy in the 7th century, and formerly belonged to the Frankish monarchy; but it afterwards became a fief of the German empire. The last duke of Brabant, of the race of Charlemagne, was Otto, on whose death, in 1005, it came to Lambert I. count of Louvain, who married the sister and heiress of Otto. By his posterity it descended to Philip II. duke of Burgundy; and from him in the line of his family to the emperor Charles V., and by him to Philip II. king of Spain. In the 17th century the republic of the United Netherlands took possession of the northern part of the duchy of Brabant, which it retained at the peace of Westphalia. This comprehended the quarter of Bois-le-Duc, (which see,) and a part of the quarter of Antwerp, and was called Dutch Brabant. Charles III. afterwards known by the title of the emperor Charles VI. after the battle of Ramillies, in 1706, took possession of the Austrian part of this duchy, consisting of the town and quarter of Louvain, those of Brussels and those of Antwerp. A small part towards the south was known by the name of Walloon Brabant. When the French passed the Rhine they established themselves in Brabant; and by the new partition of their territories and conquests, in consequence of the third article of the treaty of Campo Formio, in 1797, and the second of the treaty of Luneville, in 1801, which ceded the Austrian Netherlands to the French, the eastern part of Brabant was formed into the department of Deux Nethe, and the southern part into that of Dyle. The air of Brabant is good, and its soil is fertile. It produces a great quantity of flax, and is watered by several rivers, of which the chief are the Dommel and the Demer, which, after receiving the smaller rivers of Ghute, Dyle, Seine, and Nethe, takes the name of Rupel, and discharges itself into the Scheld. The religion of this country is the Roman catholic. Mr. George Foster, who travelled through this country in 1790, gives a very unfavourable account of it. See his Travels, vol. iii. In no place, he says, has ignorance ever established her dominion so firmly, nor diffused so palpable a darkness, as over the minds of the Brabanters; and no where has the iron yoke of implicit faith so deeply degraded the human understanding. Never, he adds, since they were deluged with blood by Philip and Alva, have these provinces attracted the notice of mankind, except when foreign armies made them the theatre of war, or when, like an absolute property, they were transferred from one princely family to another. Nothing can be a greater proof of the stupidity and insensibility to which the people were sunk, than the indifference shewn by the Brabanters, and the opposition made by the Flemings, to the design of the emperor

Joseph II. to open the navigation of the Scheld. Indeed the picture which he gives of the decayed state of their manufactures, of the wealth and power of the church, of the insolent spirit of the nobles, and of the superstition which prevails among all ranks, is sufficient to convince us that the inhabitants of these countries were so exceedingly degraded by civil and religious tyranny, that they were become totally insensible to every thing that can dignify human nature. Of the people, however, he observes, that their good qualities are their own, but that their faults are derived from their teachers. They are remarkably phlegmatic, but humane, good natured, and friendly; even amid the violence of passion, they are neither cruel nor implacable. The measures which Joseph II. concerted, however arbitrary in their first appearance, imprudent in their arrangement, and precipitate in their execution, were designed for restraining the power of the insolent priests, and for abolishing the grosser absurdities of popery. But the insurrections occasioned by them, and the revolution in which they terminated, were attended with consequences which the people had reason to lament. By throwing off their allegiance to the emperor, they fell under a heavier yoke, and groaned under the most intolerable of all despotism, that of an absolute aristocracy. How far their condition has been improved since their country has been made a part of Belgium, by the extension of the French conquests, time must determine, and their own experience may already in some measure be able to testify. See NETHERLANDS.

BRABEUM, in *Botany*, from *βραβειον*, a sceptre, Lin. gen. 160. Reich. 1262. Schreb. 1580. Mant. 137, 332. Jussieu 79. Clats, *polygamia monacia*. Species plantarum & systema naturæ. Ed. 12. *tetrandria monogynia*. Nat. Order not determined by Linæus. *Protea* Jussieu. Gen. Char. Cal. ament pubescent, with ovate, obtuse, three-flowered scales. Cor. monopetalous, deeply divided into four oblong, obtuse segments, rolled back at top. Stam. filaments four, inserted into the base of the segments; anthers oblong, attached to the inner side of each filament, so as scarcely to reach its summit. Pist. germ very small, villose, styte filiform, longer than the filaments; Stigma simple, Martyn (two upright and oblong, Lin. La Mark, and Bosc.) Per. a dry drupe, somewhat pear-shaped, villose. The male flowers on the same tree agree with the above, with the exception of an abortive pistil. Seed, nut globular.

Essen. Char. Scale of the ament. Cor. with four revolute segments. Stam. four. Pist. one. Drupe, somewhat pear shaped. Seed globular.

Species. B. *stellatifolium*, (Syst. Nat.) *stellatifolium*, (sp. plant.) Breyn. Cent. 1. pl. 1. Pluk. 47. pl. 265. La Mark, pl. 847. African almond. A native of the country about the Cape of Good Hope, where it grows to a tree of a moderate size, but in Europe it seldom grows above eight or nine feet high. Stem straight, soft, full of pith, covered with a brown bark, throwing out horizontal branches at each joint, which gradually diminish from the bottom to the top so as to form a sort of pyramid. Leaves lanceolate, of a deep green on their upper, and a pale russet colour on their under side, reticularly veined, with a few blunt serratures at their edges, and growing in whorls on short peduncles, round the joints or knots of the branches, from five to seven in a whorl. Aments axillary, growing also in whorls, a little shorter than the leaves. The fruit is called, at the Cape of Good Hope, the wild chestnut, and is greedily eaten by the wild boars.

The foregoing generic character and description have been drawn up from a careful comparison of Linæus, Martyn, La Mark, and Bosc, who all agree in calling the bra-

b-lum an amentaceous tree. But Linnæus must have used the term in a lax and improper sense; he would otherwise have placed the genus in his natural order of amentaceæ, and not among those whose natural character he deemed dubious. When La Mark wrote his description in the *Encyclopédie Méthodique*, he had in his possession only a dried specimen without flowers, brought to Europe by Sonnerat; he consequently described the fructification from preceding authors. Where he obtained the figure published afterwards, and how he would now describe the plant, is not known, the letter-press to that part of the work not being yet published; but certain it is that the fructification, as it is there delineated, has not the appearance of an ament. It corresponds much better with the following natural character by Jussieu. (The corolla of other authors.) *Cal.* small, four-cleft, at first concave, afterwards revolute, the segments bearing the filaments at their base. *Stamens*, four, anthers oblong, attached to the inner part of the filaments. *Stigma*, one or two. *Drupa*, villose, one-seeded. *Leaves* (of the *Theophrasta*) nearly in whorls; flowers in axillary spikes, fascicled, the fascicles consisting of three or more flowers connected with a single bractea. (the scale of the ament, of other authors.) The calyx sometimes five-cleft, with five filaments, and a greater number of masculine flowers.

Whether what Jussieu calls *B. theophrasta* be a new species, we have not at present the means of ascertaining; but the inflorescence in La Mark's figure we should rather call a raceme than a spike.

The *Lesyla capensis*, Martini, 1.137, is judged by professor Martyn to be probably the same tree bearing hermaphrodite flowers. La Mark pronounces it to be so without hesitation. Bosc makes no mention of it, either under brabeium, or in a separate article. Linnæus says, that though it resembles the brabeium, its fructification is altogether different. His description of it in Mant. 1. is as follows: *Branches*, rigid, purplish, striated, subvillose. *Leaves*, seven in a whorl, petioled, lanceolate, rather rigid, a hand's breadth long, smooth above, reticulated underneath. *Petioles*, erect, pubescent. *Aments*, oblong, cylindric, petioled, round, erect, lateral, often two within each leaf, shorter than the leaves, rather rigid, two inches long, imbricate. *Scales*, ovate, acute, pubescent, many-flowered. *Corollule*, funnel shaped, five-cleft. *Stamens*, five. *Style*, one.

Propagation and Culture. This tree is propagated in Europe only by layers, and that with difficulty. The layers should be made of the former year's shoots, and slit at a joint, as is practised in laying carnations. The best time is in April, when the plants are beginning to shoot; but they will often be two years before they produce roots strong enough to be taken from the old plants. They must have little water given them, especially in winter. The plants must be placed in a green-house in winter, but in summer should be set abroad in a sheltered situation. See Martyn's Miller's Dict. The brabeium does not occur in the *Hortus Kewensis*.

BRABUTES, or BRABUTA, formed from *Brabus*, prize, or reward, in *Antiquity*, an officer who presided at the public games, and decreed the prizes to the victors. The Latins called him *designator*, and *munerarius*. The generality of writers confound the brabutes with the agonotheta, between whom there however appears to have been this difference, that the former presided at the gymnastic combats, the latter at the sacred ones. The number of brabutes was not fixed; sometimes there was only one, but more commonly there were nine or ten.

BRABONACUM, in *Ancient Geography*, a place of Britain, mentioned in the *Notitia Imperii*, and supposed by Mr. Horsley to be the same with Bremetonacis.

BRABORG, in *Geography*, a town of Sweden, in East Gothland; 24 miles E. of Nordkiöping.

BRABYLA, in *Botany*. See BRABLIUM.

BRAC, or CALAO D'ARRIQUE, of Bullon, in *Ornithology*, the African Hornbill; *Buceros Africanus* of Gmelin.

BRACARA AUGUSTA, in *Ancient Geography*, Braga, a town of Spain, in the territory of the Celæci, situate above Nebris, and occupying the rank of "Conventus." See BRAGA.

BRACCAS, in *Geography*, an island of America, near that of Cuba; one of those called Caymans.

BRACCATA, in *Entomology*, a species of *VESPA*, of a black colour: the thorax without spots; lip silvery; base of the antennæ in front, and the fore legs yellow; thighs above black. Linn. Inhabits Europe.

BRACCATA, a species of *TENTHredo*, of a black colour; thighs rufous; base of the four posterior flanks, and three ant joints but one of the antennæ white. Linn. A native of Europe.

BRACCATUS, an European species of *ICHNEUMON*, of a black colour, with the mouth, antennæ, and thighs at the base yellow; abdomen ferruginous, and black at the base; four anterior legs yellow. Linn. &c.

BRACCIANO, in *Geography*, a small town of Italy, in the state of the church, and patrimony of St. Peter, and capital of a duchy of the same name, in which are warm medicinal baths. The duchy surrounds a lake, called "Lago di Bracciano." The town is situated at the distance of 2 leagues from the Mediterranean, and 15 miles N.W. from Rome.

BRACCIO, *Ital.* the arm, in *Music* at V. is a *braccio*, a tenor-viol, that rests on the shoulder, to distinguish it from the base-viol, which rests on the leg. See VIOL DI GAMBA.

BRACCIO DI MANIA, called also *Tzakonia*, in *Geography*, a district of the Morea in European Turkey, comprehending the ancient Arcadia and Lacedæmonia.

BRACCIOLINI, FRANCIS, in *Biography*, an Italian poet of noble extraction, was born at Pistoia, in 1566, and admitted into the academy of Florence, where he devoted himself to the pursuits of literature. Having accompanied the cardinal Maffeo Barberini to France, he returned after the death of Clement VIII. to his own country; but upon the accession of Barberini to the papedom, under the title of Urban VIII. he re-visited Rome, and became joint secretary with the pope's brother, cardinal Antonio. He was also allowed the honour of taking a surname from the arms of the Barberini family, which were "Bees," and from this circumstance was denominated Bracciolini dell' Api. During his continuance at Rome, he frequented the most illustrious academies, and obtained great reputation for his literature, but was reproached for his sordid avarice. After the death of Urban VIII. he retired to his native country, where he died in 1645. Bracciolini was a copious writer in various kinds of poetry, epic, dramatic, pastoral, lyric, and burlesque. The most noted of his poems is his mock-heroic, entitled "Scherzo degli Dei," ridiculing the heathen mythology; which, though confessedly inferior to Tasso's "Secchia rapita," disputes with it priority of date. Of his heroic poems, the most celebrated is the "Croce Racquistata," Paris, 1605, 12mo. ranked by some next to the great works of Ariosto and Tasso. He celebrated the elevation of his patron Urban VIII. in 23 books, and he must therefore have written verse with great facility. His dramatic pastoral, entitled "L'Amoroso sdegno," is esteemed one of the best productions of that age; and some of his tragedies gained applause; particularly his "Evandro." Tiraboschi. Gen. Biog.

BRACCIOLINI, POGGIO, one of the revivers of literature in Italy in the 15th century, was the son of Guccio Bracciolini,

ciolini, and born in 1380, at Terranuova, a small town of the republic of Florence, not far from Arezzo. Deriving from his father no hereditary advantages of rank or fortune, he sought emolument and distinction in the course of literary pursuits. Having acquired a competent knowledge of the Latin and Greek languages at Florence, where his studies were directed by Manuel Crisoloras, he removed to Rome about the year 1402; and here his literary reputation introduced him to the notice of Boniface IX. who took him into his service, and promoted him to the office of writer of the apostolic letters. At the period immediately preceding the admission of Poggio into the pontifical chancery, the Italian states had been convulsed by war and faction; but a treaty having been concluded, just before his arrival, between Boniface and the Florentine republic, the Roman court, relieved from its distraction and anxiety, was become a scene of luxury and dissipation. Poggio, however, resisted the temptations which presented themselves to his lively fancy and ardent constitution; and as the emoluments of his office afforded only scanty means of gratification, he devoted himself the more assiduously to the prosecution of his studies, and to the cultivation of an acquaintance with those whose conversation might lead to the improvement of his mind. Literary pursuits were now become fashionable, and the character of the scholar was often found united with that of the man of the world. To this circumstance it is natural to ascribe the union of learning, politeness, and knowledge of the human heart, which shines so conspicuously in the writings of Poggio. In 1404 he sustained a considerable loss by the death of his patron, Boniface; but his distinguished merit recommended him to the favourable notice of the successor to the papal see, Innocent VII.; who continued him in his office, and treated him with particular kindness and respect. During the distractions of the Roman court, which succeeded the death of Innocent in 1406, Poggio exchanged the intrigues and dissensions of the pontifical palace for the tranquil delights of friendship, which he enjoyed at Florence in the society of his literary acquaintance, and particularly in the patronage and cordial esteem of the celebrated Niccolò Niccoli. He seems, however, to have retained his situation in the pontifical chancery; and having acted as apostolical scribe to Alexander V. he occupied the same office in the household of John XXII. that pontiff's successor. At the council of Constance, in 1415, the death of Manuel Crisoloras, the instructor of his youth, afforded him an opportunity of celebrating his praises in a funeral oration, and of dedicating to his memory an appropriate and elegant Latin epitaph. Upon the deposition of John at this council, and the consequent dispersion of the pontifical household, Poggio remained at Constance, and employed his intervals of leisure in studying the Hebrew language, under the direction of a Jew who had been converted to the Christian faith. But in this language he seems to have made no great progress; nor, indeed, was he desirous of providing himself, by a knowledge of the oriental tongues, with the weapons of religious controversy. As he was not disposed to call in question the prevailing creed, he was inclined to think that St. Jerome's translation of the Jewish Scriptures was amply sufficient for all the purposes of his Christian faith. Biblical studies seem not to have suited his taste and inclination; and therefore his proficiency in them was not very considerable. The vigour of his mind might likewise have suffered some relaxation from the precariousness of his situation, and the gloomy and discouraging prospects which presented themselves with regard to his future preferment. Finding no amusement in varying or extending his literary pursuits, he altogether suspended his studies; and in

the spring of the year 1416, he availed himself of the leisure afforded him, by the termination of his functions as secretary to the deposed pontiff, to make an excursion to the baths of Baden. On his return to Constance he was present at the trial of Jerome of Prague; and of this trial and the last end of Jerome he gave a very circumstantial and interesting account, in a letter to his friend Leonardo Aretius. "He stood undaunted and intrepid," says Poggio, "not merely contemning, but, like another Cato, longing for death. He was a man worthy to be had in everlasting remembrance. I do not commend him for entertaining sentiments hostile to the constitution of the church; but I admire his learning, his extensive knowledge, the suavity of his eloquence, and his ability in reply. But I am afraid that all these endowments were bestowed on him by nature, in order to effect his destruction." He thus concludes; "He may have been heretical in his notions, and obstinate in persevering in them, but he certainly died like a philosopher. I have rehearsed a long story, as I wished to employ my leisure, in relating a transaction which surpasses the events of ancient history. For neither did Mutius suffer his hand to be burnt so patiently as Jerome endured the burning of his whole body; nor did Socrates drink the hemlock as cheerfully as Jerome submitted to the fire." The feeling manner in which he describes the trial and execution of Jerome, evinces a heart, which daily intercourse with bigoted believers and licentious hypocrites could not deaden to the impulses of humanity. The manifest interest which he took in the fate of a man, who was held up by the church as an object of unqualified abhorrence, awakened the fears of Leonardo on his account; and he advised him to exercise a greater degree of caution.

During the vacancy of the pontifical throne, Poggio improved his leisure by an expedition of no small importance to the interests of literature. Having received information that many ancient MSS. of classic authors were scattered in various monasteries, and other repositories in the neighbourhood of Constance, he determined to rescue them from the hands of those who, ignorant of their value, were suffering them to perish. In the monastery of St. Gall he found, among other MSS., a complete copy of Quintilian, buried in rubbish and dust; and also the three first and one half of the fourth books of the Argonautics of Valerius Flaccus, and Asconius Pedianus's comment on eight of Cicero's orations. In a monastery of the monks of Clugny, in the town of Langres, he found a copy of Cicero's oration for Cæcina; and in his other researches he discovered the following orations of the same author, the loss of which had been long deplored by the learned: viz. "De lege Agraria contra Rullum, lib. i. et lib. ii." "Contra legem Agrariam ad populum;" and "In L. Pisonem." A copy of these orations is preserved in the abbey of Sta. Maria at Florence, with a memorandum ascribing the discovery of this and also of three others, viz. "Pro C. Rabirio Pisone;" "Pro C. Rabirio perduellionis reo;" and "Pro Roscio comædo," to Poggio; but the three last are torn from the volume. To him also, in concurrence with Bartolomeo di Montepelciano, we are indebted for restoring to light the poem of Silius Italicus, Lactantius's treatise, "De ira Dei et officio hominis," Vegetius "De Re militari," Nonius Marcellus, Ammianus Marcellinus, Lucretius, Columella, and Tertullian. Poggio likewise added to the eight comedies of Plautus, known before his time, twelve more; and by the assiduity of his own researches, and those of others employed by him, he discovered a fragment of Aulus Gellius, a copy of Julius Frontinus, "De aqueductis," and eight books of Firmicus's treatise on the mathematics. From Cologne he procured the fifteenth book of Petronius Arbiter; and to his exertions we owe

owe the entire work of Columella, the preservation of Calpurnius's *Bucolic*, and the recovery of the works of Manilius, Lucius Septimius, Caper, Erychius, and Probus.

After the deposition of John XXII. Poggio remained for some time in suspense with regard to his future destination; and it does not appear that he held any office under Martin V. who was elected to the papal see, although, after the dissolution of the council of Constance in 1418, he travelled in the suite of the new pontiff to Mantua. At this time he paid a visit to England, in consequence of an invitation from Beaufort, bishop of Winchester; but disappointed in his expectations of preferment, adequate to his views and wishes, he impatiently waited a favourable opportunity of returning to his native country.

At length, viz. in 1420, when the dissensions respecting the pontificate were finally settled, and Martin V. was recognized as the true successor to the papal throne, Poggio arrived at Rome, and accepted the office of secretary, to which he was recommended by the cardinal St. Eusebius. A quarrel having taken place between his two friends Leonardo Arstino and Niccolò Niccoli, he interposed as mediator, and succeeded in accomplishing a reconciliation. In 1429 he availed himself of an interval of tranquillity, in presenting to public notice his first literary production, which was a "Dialogue on Avarice," and which seems to have possessed considerable merit. In this dialogue he took occasion very severely to satirize those Franciscan friars, who were distinguished by the title of "Fratres Observantie," a new order founded by Bernardo of Siena. This was followed, at a more advanced period of life, by a "Dialogue on Hypocrisy," a composition which abounds in the keen sarcasms of polished wit, and in acute observations on the human character. In both these dialogues he boldly expresses the contempt he entertained for those ecclesiastics, who adopted the religious habit as a convenient cloak for the concealment of indolence or luxury; and who, by the mere appearance of extraordinary sanctity, endeavoured to attain that worldly honour which at the same time they affected to despise. The freedom with which he exposed the vices not merely of individuals; but of whole classes of religious hypocrites, manifested a great degree of virtuous resolution, and merited no mean praise. After the accession of Eugenius IV. to the papal throne, a contest occurred between him and the council of Basel, which terminated in the deposition of the pontiff, and his flight to Florence; and Poggio, in attempting to follow him thither, was captured, and for some time detained in confinement. However, by the payment of a ransom, which his pecuniary circumstances rendered very oppressive, he was set free, and finally accompanied his retreat to Florence. During his residence in this city, he had an opportunity of testifying his ardent attachment to the house of Medici, by entering into a literary contest, or rather a kind of lampoon war, with Puelle, an avowed enemy of that family, in which they seem to have vied with each other in inventing falsehoods of the most atrocious kind, and in disgracing their pages by the most malicious and indecent calumnies. This contest between two of the most learned men of the age was conducted in a manner, which, however it might have contributed to the amusement of their contemporaries, entails lasting disgrace on both parties, in the judgment of posterity. Poggio, soon after the termination of this contest, determined to fix his permanent residence in the Tuscan territory, and with this view he purchased a villa in the pleasant district of Valdarno. The Tuscan government favoured his purposes of retirement, and passed a public act, which exempted him and his children from the payment of all public taxes.

Poggio's fortune was inconsiderable; but he contrived to render his humble mansion an object of attention to the lovers of the liberal arts, by the treasures of his library, and by a small collection of statues, which he disposed in such a manner as to constitute a principal ornament of his garden, and the appropriate furniture of an apartment which he intended to dedicate to literary conversation. His attention seems to have been long engaged by the study of ancient sculpture; nor was he less assiduous in refusing its relics from obscurity, than in searching for the best writers of antiquity. With this view he made a diligent survey of the ruins of ancient Rome, and inserted in the premiss to his dialogue, "*De Varietate Fortunæ*," a catalogue of the relics of Roman architecture, which has been introduced by Mr. Gibbon in the 7th chapter of his "*Decline and Fall of the Roman Empire*." Poggio's researches extended beyond the precincts of Rome, and his zeal for the restoration of the monuments of ancient sculpture induced him to visit Crypta, Ferrara, Tusculum, Ferentinum, Alba, Arpinum, Alatrium, and Tiburtum; and by means of friends he directed his researches to Rhodes, Greece, and other countries. Whilst he was occupied in collecting ornaments for his rural residence, he was employed at the request of a friend, Scipio of Ferrara, in composing a dissertation on the comparative merits of Cæsar and Scipio; which he closes with the following general statement of his opinion, "that the youth of Scipio was distinguished by the purest morals, whilst the early years of Cæsar were rendered infamous by his vices; that the former, inspired with the spirit of patriotism, by his splendid military achievements rescued his country from destruction; and that the latter, prompted by ambition, too successfully exerted his extraordinary talents to effect the subversion of the commonwealth: that consequently, whilst Scipio was by no means inferior to Cæsar in the fame of his military exploits, he was greatly his superior in virtue, which alone constitutes the character of a truly great man." Soon after the termination of a controversy which this publication occasioned, an event occurred which, in all the circumstances that attended it, reflects no great honour on the character of Poggio. At the age of 55, he married a young lady of a wealthy and honourable family in her 18th year; and to this alliance he sacrificed a mistress, by whom he had had 12 sons and 2 daughters, and, moreover, set aside a bill of legitimacy which he had procured for them, in order that they might be enabled to inherit his fortune. Not long after this event, in 1437, his friend Niccolò Niccoli died, and Poggio composed and published his funeral eulogium, in which are several traces of eloquence and pathos. Although Poggio devoted much of his attention to domestic duties, and to the improvement of his Tuscan villa, he found leisure to renew his disgraceful literary contest with Puelle; and to compose a work, which redounded much more to his honour, entitled "*A Dialogue on Nobility*," and published in 1440. This was followed by his "*Dialogue on the unhappinesses of Princes*," in which he dwells with so much energy on the vices of exalted rank, as to afford room for suspicion, that resentment and indignation had at least as much influence in its composition as the suggestions of philosophy. However the effusions or moralens that occur in this dialogue are interspersed with precepts of sound morality, and the historic details with which it abounds are both entertaining and instructive.

In 1444 he lost Leonardo, the sole surviving companion of his youthful years; and on this occasion he published a funeral oration, which was at once dignified and pathetic.

Poggio, though he had held the office of apostolic secretary

tary under seven pontiffs, had never been promoted to any of the superior departments of the Roman chancery. But when Nicolas V. ascended the pontifical throne, his prospects were brightened; and he indulged the hope of spending the remainder of his days in a state of independence, if not of affluence. With a view of improving his interest with the new pontiff, he addressed to him a congratulatory oration, which was recompensed by very liberal presents. This was succeeded by a dedicatory epistle, introducing to his patronage a dialogue "On the vicissitudes of fortune," the most interesting of Poggio's works, and inculcating maxims of sublime philosophy, enforced by a detail of splendid and striking events. Confiding in the pontiff, he also published the dialogue "On hypocrisy," already mentioned. At the request, and under the patronage of Nicolas, he also contributed to the illustration of Grecian literature, by a Latin translation of the works of Diodorus Siculus, and the *Cyropædia* of Xenophon. During the plague, which raged in various parts of Italy in 1450, Poggio visited the place of his nativity; and availing himself of this interval of relaxation from the duties of his office, he published his "*Liber Facetiarum*," or collection of jocular tales, containing anecdotes of several eminent persons who flourished during the 14th and 15th centuries. This work acquired a considerable degree of popularity, and was read, not only in the native country of its author, but also in France, Spain, Germany, and Britain. In 1451 he dedicated to the cardinal, Prospero Colonna, his "*Historia disceptativa convivialis*." In 1453 Poggio was elevated to the chancellorship of Florence; and, at the same time, he was chosen one of the "*Priori degli arti*," or presidents of the trading companies. These offices he held till his death, which happened on the 30th of October, 1459. Notwithstanding the multiplicity of his business, and the advances of age, he prosecuted his studies with his accustomed ardour; and published a dialogue "*De miseriâ humanæ conditionis*," and a version of Lucian's "*Alcibiades*," with a view of establishing a point of literary history, which seems to have been till that time unknown, namely, that Apuleius was indebted to Lucian for the stamina of his "*Asinus aureus*." The last literary work in which he engaged, was his "*History of Florence*," divided into eight books, and comprehending the events in which the Florentines were concerned from the year 1350, to the peace of Naples in 1455. This history was translated into Italian by Jacopo, the son of Poggio; but the original was published by Recanatì, and has been republished in the collections of Grævius and Muratori. Poggio concluded his career in the possession of universal respect, and in the tranquil enjoyment of social and domestic comforts. His remains were interred with solemn magnificence in the church of Santa Croce at Florence; and his fellow citizens testified their respect for his talents and virtues, by erecting a statue to his memory on the front of the church of Santa Maria del Fiore. As the citizen of a free state, which he deemed a high honour, he improved every opportunity that occurred for increasing and displaying the glory of the Tuscan republic. Although he was honoured by the favour of the great, he never sacrificed his independence at the shrine of power, but uniformly maintained the ingenuous sentiments of freedom. The licentiousness which disgraced the early period of his life, and the indecent levity which occurs in some of his writings, were rather the vices of the times than of the man; nor did they deprive him of the countenance of the greatest ecclesiastical dignitaries, or cause him to forfeit the favour of the pious Eugenius, or of the moral and accomplished Nicolas V. To those with whom he maintained a personal intercourse, he recommended himself by

the urbanity of his manners, the strength of his judgment, and the sportiveness of his wit. As a scholar, Poggio is entitled to distinguished praise. By assiduous study, he became a considerable proficient in the Greek language, and intimately conversant with the works of the Roman classic authors. In selecting as his exemplar in Latin composition, the style of Cicero, he manifested the discernment of true taste. When compared with the works of his immediate predecessors, the writings of Poggio are truly astonishing. "Rising to a degree of elegance, to be sought for in vain in the rugged Latinity of Petrarca and Coluccio Salutati, he prepared the way for the correctness of Politiano, and of the other eminent scholars whose gratitude has reflected such splendid lustre on the character of Lorenzo de' Medici." *Shepherd's life of Poggio Bracciolini*. 4to. 1802.

BRACE is commonly taken for a couple, or pair; and in this sense is applied by huntsmen to several beasts of game, as a brace of bucks, foxes, hares, &c.—They also say, a brace of greyhounds.

BRACE, in *Architecture*, denotes a piece of timber framed in with bevel-joints; serving to keep the building from swerving either way. When a brace is framed into a king-piece, or principal rafter, it is called by some a *strut*.

BRACE, BRACCHIO, or BRASSE, in *Mensuration*, denotes a foreign long measure, answering to our FATHOM.

BRACE is also used for a measure taken from the length of the arm when extended, and is used in divers cities of Italy, in lieu of the foot or yard. Its length is various; the brace of Bergamo, according to Scamozzi, is nineteen Paris royal inches, and a half; according to M. Petit, sixteen inches two-thirds; the brace of Bologna is fourteen inches; that of Bresse, seventeen inches seven lines and a half, according to Scamozzi; and according to M. Petit, seventeen inches five lines; the Mantuan brace is seventeen inches four lines; that of Milan, twenty-two inches; those of Parma, twenty inches one-third; of Sienna, twenty-one inches two-thirds; of Florence, twenty inches two-thirds, according to Maggi; twenty-one inches four lines and a half, according to Lorini; twenty-two inches two thirds, according to Scamozzi, and twenty-one inches one-third, according to Picart.

BRACE, in *Writing*, a term used to signify a crooked line, (as }) made at the end of two or more articles in an account, the amount of which is usually placed in the centre of the brace. It is also used in printing, to enclose an entire passage, as in a triplet, &c.

BRACE *the yards, to*, in *Sea-Language*, signifies to move them, by means of the braces, to any direction required. To *brace about*, is to brace the yards round for a contrary tack. To *brace sharp* is to brace the yards in a position, in which they will make the least possible angle with the keel, for the ship to have head-way. To *brace to*, is to ease off the lee-braces, and round in the weather braces, to assist the motion of the ship's head in tacking. See the next article.

BRACE, a rope at each extremity of all the yards of a ship, except the mizen yard, which is provided with ropes called *vangs*, for the purpose of bringing the yard in a proper position, that the sail may be full, whether the ship is sailing by, or large. All braces ought, if possible, to lead aft, for the greater security of the masts; in ships, therefore, the braces of the yards belonging to the fore and main-masts, lead aft; but in square rigged vessels with two masts, those, only, of the yards belonging to the fore-mast, lead aft. The braces of the yards of the after-mast of a square rigged vessel, lead forward. The braces of the principal yards are double, being reeved through blocks.

blocks, at the ends of the yards, or at pendants seized to the yard-arm. The braces of the top-gallant, and spirit-sail top-sail yards, are single.

BRACED, in *Heraldry*, is used in speaking of chevrons which are intermingled. He bears azure a chief or, and three chevrons *braced*, in the base of the escutcheon, by the name of *Fitz Hugh*. See *BRAZED*.

BRACELET, an ornament usually worn round the wrist. The word is French, *bracelet*; which Menage derives further from *bracellum*, a diminutive of *bracile*, a word occurring in writers of the Justinian age; all formed from the Latin *brachium*, arm. It amounts to the same with what was called by the ancients, *armilla*, *brachiale*, *oculus*; in the middle age, *baga*, *bauga*, *armispatha*.

Among the ancient Romans, the men as well as the women, wore bracelets; but the latter, it is to be observed, never wore them till they were betrothed.

In the times to which the Scripture history refers us, the bracelet seems to have been an ensign of royalty; and this accounts for Saul's wearing this ornament at the time of his death, and also for the Amalekite's bringing the bracelet which he found on Saul's arm, together with his crown, to David, 2 Sam. i. 10. It is well known, that the bracelet has been in much later times used in the East as a badge of power. D'Herbelot informs us, that when the caliph Caiem Benrillah granted the investiture of certain dominions to an eastern prince, which his predecessors had possessed, and among the rest of the city of Bagdad itself, this ceremony of investiture was performed by the caliph's sending him letters patent, a crown, a chain, and bracelets. Although Grotius, referring to Num. xxxi. 50. observes, that the bracelet was an ornament used by the men as well as women of those nations; yet it does not seem to have been so common as some writers have supposed; for though the word bracelet frequently occurs in our translation, the original word in this text is found only in two other places; and as the children of Israel found one or more of these bracelets among the spoils of Midian, so they killed, at the same time, five of their kings. Num. xxxi. 8. In the other passage, II. iii. 20. mention is made of female ornaments; but allowing the word to be the same, might not the women of that age wear an ornament which, from its likeness to one of the ensigns of royalty, might be called by the same name. We read in Gen. xxiv. 22. that the bracelets of Rebekah weighed ten shekels, or about five ounces; a weight which some have thought to be very extraordinary. But Sir John Chardin assures us, that ornaments as heavy, and even heavier, were worn by women of the East when he was there. He says, with a reference to the ornaments of Rebekah, that "the women wear rings and bracelets of as great weight, through all Asia, and such as are much heavier. They are rather manacles than bracelets. There are some as large as the finger; the women wear several of them, one above the other, in such a manner as sometimes to have the arm covered with them from the wrist to the elbow. Poor people wear as many of glass, or horn. They hardly ever take them off; they are their riches."

Bracelets were at first properly military ornaments, or rewards, frequently conferred among the ancients, by generals and princes, on those who behaved gallantly in fight. They became afterwards arbitrary decorations, assumed at pleasure; and are sometimes said to have been worn for health as well as ornament; and particularly as amulets, to break the force of charms and fascinations. Among the Romans we meet with divers species and denominations of bracelets; as the *brachiale*, which covered the whole length of the arm; the *dextrale*, or *dextrocherium*, only the wrist, and that only

of the right arm; *viria*, or *viriola*, peculiar to the male sex; *spinther*, to the women, being worn on the left arm; *verua*, used as an amulet; *amphidien*, worn either on the arm, or about the neck; *calbeum*, or *galbeum*, worn by generals in their triumphs. Pitisc. Lex. Ant. tom. i. & ii. Du Cange. Gloss. Lat. tom. i. & ii. Kennet. Rom. Ant. Not. P. II. lib. iv. cap. 16.

Bartholin has a treatise on the bracelets of the ancients. The northern people used also to swear on their bracelets, to render contracts more inviolable.

Bracelets are still much used by the savages of Africa and America, made of metal, glass-beads, shells, and the like. In civilized countries they form a common part of the ornament of the ladies.

BRACELET is also used, in *Anatomy*, to denote the circular ligament which invests the *carpus*, called also *ligamentum annulare*.

BRACELETS, in some *Ancient Law Books*, denote beagles, or hounds of the smaller kind.

BRACES, in *Geography* are two sand-banks lying across the entrance into the channels for the river Hughly, at the bottom of the bay of Bengal.

BRACES, in *Ship-building*, that security to the rudder which is fixed to the stern-post, and bottom of the ship, and to which the rudder is hung.

BRACES of a *coach*, denote the thick and strong straps of leather on which it hangs.

BRACHERIUM, or BRACHERIOLUM, a kind of steel bandage worn about the hips, and used for the retention and cure of ruptures. Du-Cange Gloss. Lat.

BRACHIALIS, or BRACHIALIS, *internus, musculus*, in *Anatomy*, is the deeper situated flexor of the elbow joint. It arises fleshy from the middle of the os brachii, and from all the lower and fore part of the bone. It passes over the joint, and adheres firmly to the ligament. It is inserted by a strong short tendon into the coronoid process of the ulna. Its use is to bend the fore arm, and to prevent the capsule of the joint from being pinched.

BRACHIAL *nerves*. See *NERVES*.

BRACHIALIS, *coraco*. See *CORACO-BRACHIALIS*.

BRACHIATE, in *Botany*, a term applied to branches when they grow opposite to each other, one on each side of the stem, and when each pair points in a different direction, so as to make a right angle with the pair above or below it.

BRACHIOBOLUS, a name given by Allioni to a genus of plants forced for such species of silymbrium as have a short stipe. It corresponds with Haller's *radicula*. See *SISYMBRIUM*.

BRACHION, in *Ancient Geography*, *Gerba*, an island in the Mediterranean sea, situate on the coast of Africa, 11 leagues S. E. of Tacapé. See *Seylax*.

BRACHIONUS, in *Zoology*, a genus of *Vermes infusoriae*, having the body contractile, covered with a shell, and furnished with ciliate rotatory organs at the head. The species of this genus Linnaeus includes in his genus *Vorticella*, from which they are distinguished by modern naturalists by the shelly covering of the body; the vorticellæ being destitute of a shell.

The species of this genus are *uvicularis*, *patella*, *striatus*, *cirratus*, *tripus*, *uncinatus*, *mucronatus*, *cernuus*, *calycillozus*, *tubifex*, *quadridentatus*, and *patira*.

BRACHITÆ, in *Ecclesiastical History*, a branch of MANICHEES, who appeared in the third century.

BRACHIUM, the arm, in *Anatomy*, is that part of the upper extremity which intervenes between the joints of the shoulder and elbow.

BRACHIUM,

BRACHIUM, in *Botany*, a term employed by Linnaeus as a measure of plants. It denotes the distance from the armpit to the base of the middle finger in a middle sized man, and is about 24 inches.

BRACHIUM, moventium secundus, in *Anatomy*, a name given by Vesalius, and other of the old writers, to the muscle now generally called *deltoideus*.

BRACHIUM movens quartus, the name by which Vesalius calls the muscle now generally known under the name of *latissimus dorsi*. Fallopius, and many others, have also called it *quartus humeri*.

BRACHIUM tertius, a name given by Vesalius and others to a muscle since called, from its shape, *teres major*, and *rotundus major*.

BRACHIURE, in *Zoology*, an epithet given by the French naturalists to many animals that have short wings, the word being derived from the Greek as in *Brachytera*, &c.

BRACHLERCHE, FRISCH, in *Ornithology*, **ALAUDE CAMPESTRIS**, the meadow lark.

BRACHMANS, a branch of the ancient Gymnosophists, or philosophers of India, remarkable for the severity of their lives and manners. See **GYMNOSOPHISTS**.

The Greeks usually give them the name *Gymnosophists*; but among ancient authors, both Greek and Latin, we find different accounts of these Indian sages. Ptolemy considers them as distinct from the *Gymnosophists*; and he places the *Brachmans*, whom he calls *Magi*, in a southern district of India, between the rivers *Solenus* and *Chaberus*, not far from the sea; whereas he assigns to the *Gymnosophists* a situation in the north-eastern part of that country, near the western bank of the *Ganges*. On the other hand, *Megasthenes*, cited by *Strabo*, (*Geog. tom. ii. p. 1038.*) asserts, that the *Gymnosophists* were divided into two branches or sects, viz. the *Brachmans* and the *Germanes*. *Diodorus Siculus*, in one place, represents the philosophers of India, who were the *Brachmans* of *Megasthenes*, as equivalent to the priests of other nations; but, in another passage, he considers them as a separate nation, sect, or body of men, settled in one particular part of India. *Arrian* (*De Exped. Alexand.*) fixes the *Brachmans* among the *Malli* and the *Muscani*; and *Pliny* (*Nat. Hist. l. 6. c. 17.*) says the appellation *Brachman* was applied to many nations, and intimates, that it did not denote a distinct class or order in society. *Porphyrus* (*De abst. l. 4.*) affirms, that the *Gymnosophists* were divided into two sects, the *Brachmans* and the *Samanians*; and that of the *Brachmans*, some lived in a mountainous tract, and others about the *Ganges*. *Arrian*, *Apuleius*, *Clemens Alexandrinus*, and *Plutarch*, differ in several particulars relating to these Indian sages; though they all seem to agree in celebrating their love of divine wisdom, their knowledge, their abstemious way of life, their singular temperance, and their contempt of all the good, as well as evil things of this world, so much desired or dreaded by the bulk of mankind. Upon the whole, it seems to be evident from various records, concerning the ancient *Brachmans*, that they were not so much a distinct nation, or particular class of philosophers, as a tribe or body of men, or rather a numerous family, descended from one common ancestor, who existed at some remote period, and who was different from the progenitors of the people among whom they lived. They deduced their origin from *Brahma*, the first of the three beings whom God created, and whom he afterwards employed as his agents in forming the world. Some have supposed that this *Brahma* was the supreme being: but others have rejected this supposition as absurd and incredible. It has been a generally received

opinion among some of the best Jewish writers, adopted by *Sharcflani*, an Arabian author of great repute, and sanctioned by the authority of the learned *Dr. Hyde* (*De rel. vet. Persarum, p. 31, 32.*), who has offered some ingenious conjectures in defence of this notion, that the progenitor of the *Brachmans* was the patriarch *Abraham*, whom in their language they call *brachma*, or *brama*.

Possellus (*In comment. ad Jezir.*) takes these *Brachmans* to have been descended from *Abraham* by his wife *Keturah*, whence he calls them *Abrahamans*; and believes that the true religion prevailed long among them; and, indeed, from the accounts given of them by the ancients, it seems to appear, that they acknowledged one supreme being, and a future state of rewards and punishments. It also farther appears, that some of them worshipped this supreme being with great fervency and adoration, spending the greatest part of the day and night in singing hymns in honour of the deity, praying and fasting almost incessantly, and despising every thing in this world for his sake. Hence, some have derived their name from the Hebrew *brach*, to *bless* or *pray*, because this was their principal occupation. Most of them lived in solitude, without marrying, or possessing any estates; and from this circumstance of their retiring into the country and living in deserts, *F. Thomassin* deduces the original of the appellation by which they are distinguished; supposing it to have been derived from the Hebrew *brach*, to *fly* or *escape*. These *Brachmans*, according to the accounts of *Arrian* and *Porphyrus*, were held in great veneration in their own country, enjoying perfect liberty and total exemption from taxes, and officiating, not only as the priests of the Indians, but likewise as the principal counsellors of their princes. Thus they served their country, both in a civil and religious capacity, as the *Magi* did among the Persians. They assisted at the public sacrifices; and if any person desired to sacrifice in private, one of them must be present, otherwise the Indians were persuaded they would not be acceptable to the Gods. It was their peculiar province to consult the stars, and to practise divination. According to *Strabo's* account, they believed that the world had a beginning, and that it will have an end; that its form is circular; that it was created by God, who presides over, and fills it with his majesty; and that water is the principle of all things. With regard to the immortality of the soul, and the future punishment of the wicked, they followed the doctrine of *Plato*; intermixing it, like that philosopher, with some fictions, in order to express or describe those punishments. The *Brachmans* are celebrated all over the ancient world for their wisdom, the austerity of their lives, and their invincible fortitude and patience. Their food consisted altogether of herbs, roots and fruits, and their drink was water. They wholly abstained from the flesh of animals, and thought themselves defiled by touching them: they thought it highly criminal to deprive the most inconsiderable animal of life; and as they held the doctrine of the *Metempsychosis*, they supposed that the souls of men transmigrated into those of brute animals. *Pythagoras* is said to have studied their doctrine and manners, and to have received his notion of the transmigration of souls, or *Metempsychosis*, from them. Persuaded that it is below the dignity of a man to wait calmly for death, when he finds himself oppressed by age or sickness, they earnestly wish for the moment when the soul shall leave the body, and hold it to be glorious and laudable to preclude the approach of their last hour, and to burn themselves alive. Among them, no honours were paid to those who died merely of old age; and they conceived, that their funeral pile, and the fire that was to reduce them to ashes, would

BRACHMANS.

would be polluted if they did not move to it with a firm and quick step, and ascend it with fortitude and animation. Cicero, in his *Tusculan Questions*, (l. v. n. 78.) expresses his admiration of the invincible patience, not only of the Indian sages, but also of the women of that country, who used to contend for the honour of dying with their common husband. This privilege was reserved for that wife to whom the husband was most affectionately attached; and it was decided in her favour by the sentence of persons appointed for that purpose, who never pronounced judgment till they had made a strict examination, and heard the allegations on all sides. The wife, who was ultimately preferred, ran to meet death, and ascended the funeral pile with incredible firmness and joy: whilst the surviving wives withdrew with the most depressing regret and sorrow, and with their eyes bathed in tears. Some of the Brachmans, however, lived in cities, and associated with their own species; and so far from considering suicide, or a premature surrender of themselves to death, as a virtuous and brave action, they looked upon it as a weakness in man not to wait patiently the stroke of death, and as a crime to anticipate the will of the Gods. The Brachmans were all of one tribe; and in this respect, they differed from the Gymnosophists, and particularly from the Samanians, who might have belonged to any family or Indian tribe. They formed the first and principal of the four casts that subsisted from time immemorial among the Hindoos, and that were supposed to be derived from Brama. See CAST.

In ancient times it should seem, that the Brachmans were not hereditary, or a distinct Levitical tribe; but that any member of the other casts might enter into this order, which was of course deemed inferior to the chief secular or military cast. But in latter times the case has been very different; for the meanest Bramin will not now condescend to eat with his sovereign. The Brachmans from the time of their birth were put under guardians; and as they grew up, had a succession of instructors. They were in a state of pupillage till 30 years of age; after which they were allowed to live more at large, to wear fine linen and gold rings, to live upon the flesh of animals not employed in labour, and to marry as many wives as they pleased. Others of them submitted, through their whole lives, to a stricter discipline, and passed their days upon the banks of the Ganges, with no other food besides fruits, herbs, and milk. The rigours practised by the Brachmans are almost incredible, and would hardly be believed, if they were not attested by the best authority, and by the reports of modern travellers concerning the cruelties, penalties, and even tortures, which are commonly practised without scruple by the Indian Bramins. Pliny relates, (N. H. l. vii. c. 2.) that some have stood with their eyes steadfastly fixed upon the sun from morning to night, and that others have remained, in one and the same painful posture, upon the burning sands, for whole days. For a further account of the tenets and practices of the ancient Brachmans, see GYMNOPIHISTS and SAMANMANS.

Among those Brachmans, that are mentioned with particular respect by the Greek writers, who treat of the time when Alexander visited India, and particularly by Strabo, (Geog. l. xv.) are Mandanis and Calanus. The former is celebrated for the boldness with which he censured the intemperance and licentiousness of Alexander and his army, in a conference which he held with Onesicritus. The latter, when he saw Alexander's messengers clothed with fine linen garments and elegantly adorned, laughed at their effeminacy, and requested them, if they wished to hold any conference with the Brachmans, to lay aside their ornaments, and, like them, recline naked upon the rocks. Of him, it

is also related, that when he found the infirmities of age coming upon him, he devoted himself to voluntary death, and ascending the funeral pile, said, "Happy hour of departure from life, in which, as it happened to Hercules, after the mortal body is burned, the soul shall go forth into light!"

The modern Bramins of Hindoostan derive their name from the ancient Brachmans, and pretend to derive their doctrine and practice from the same origin. In several particulars, the resemblance is manifest; and although much inferior, both as philosophers and men of learning, to the reputation of their ancestors, as priests their religious doctrines are still followed by the whole nation, and as preceptors they are the source of the greatest part of the knowledge which exists in Hindoostan. However, sir William Jones, and several other intelligent authors on that subject, caution us against confounding the ancient Brachmans with the modern Bramins. The religion of Bouddha, (see BOODH and BIRMAN empire,) still retained by the Bramans and other adjacent nations, it is said, was the real ancient system of Hindoostan; but the artful Bramins have introduced into it many innovations, in order to increase their own power and influence. If the conjectures of sir William Jones, relative to the inscriptions found at Mongueer, and on the pillar at Budda, (Asiat. Researches, vol. i. p. 123, &c. 8vo.) be well founded, it appears that the governing power on the banks of the Ganges, as late as about the time of the birth of Christ, belonged to the sect of Bouddha. Although the Bramins had then introduced themselves into Hindoostan, and had obtained lands and even the rank of prime minister to the great Rajah; they had not persuaded him to change his religion, a change which, when accomplished (says Dr. Buchanan, Asiatic Res. vol. v. p. 165.) proved equally destructive to the prince, and to the people. He adds, "however idle and ridiculous the legends and notions of the worshippers of Bouddha may be, they have been in a great measure adopted by the Brahmins, but with all their defects monstrously aggravated; rajahs and heroes are converted into gods, and impossibilities are heaped upon improbabilities. No useful science have the Brahmins diffused among their followers; history they have totally abolished; morality they have depressed to the utmost; and the dignity and power of the altar they have erected on the ruins of the state, and the rights of the subject. Even the laws attributed to Menu, which, under the form in use among the Burmas, are not ill suited for the purpose of an absolute monarchy, under the hands of the Brahmins have become the most abominable and degrading system of oppression, ever invented by the craft of designing men." From the account which Mr. William Chambers has given of the sculpture and ruins at Malapouram, (Asiat. Res. vol. i. p. 160, 161.) we have very good reason for believing, that the worship of Bouddha once extended over all India, and that it was not rooted out by the Bramins in the Decan so late as the 9th, or even the 12th century of the christian era. Dr. Buchanan observes, (As. Res. vol. vi. p. 163.) that this opinion of the late introduction of the superstition now prevailing in Hindoostan is not contradicted by the almost singular remain of the Hindoo history; the only one which has escaped the destructive research of the cunning Bramins; i. e. the history of Cashmere, presented to the sultan Akber on his first entrance into that kingdom. We are told, (Ayeen Akbery, ii. 173.) that the Sultan caused this book to be translated, and of this translation Abul Fazil has given an abridgment. This informs us, that when Cashmere was freed from an inundation, by which it had been covered, a certain Kushup brought the Bramins to inhabit the new land; that, after a long time, a general

assembly of the inhabitants was called, who elected a man celebrated for his virtue to be their king; and that from thenceforward monarchy was established in that delightful region. The name of the first successor to this king, that is mentioned, is Owngund, contemporary with Kishen; referred by Dr. Buchanan to the year before Mahommed 870, or B. C. 248. These Bramins, whom Kushup brought to Cashmere, could not, our author apprehends, be the Bramin sect of priests, as they cultivated the earth, and were the only inhabitants of the country; but they must have been one of the Brachman nations, several of which, according to Pliny, were dispersed over India; and these again, he conjectures, are the same with the Biamma of the Rāhāns, supposed by them to have been the first inhabitants of the earth. "That this must be the meaning of the history of Cashmere (he says) seems plain; as we are told, rajah Jennek, the 45th prince, and who, according to my theory, must have lived about the year of Christ 202, established in his reign the Brahmeny rites. His successor Jelowk, the most powerful of the princes of Cashmere, tolerated the doctrine of Bowdh; and in that delightful valley it was not till the reign of Nerkh, the 59th prince, A. D. 342, that the Brahmins got the better of the followers of Bowdh, and burned down their temples." In process of time, as the Rāhāns, or priests of Godama in the Birman empire, were entirely prohibited the study of astrology, and as the people were much addicted to all kinds of divination, the Bramins availed themselves of their credulity, and established themselves in considerable numbers all over India, beyond the Ganges. It does not seem, however, that they have any concern in the religion of these countries; but they are merely employed about the courts, and in the houses of the great, as the Chaldeans were about the kings of Persia, as sooth-sayers and wise men. They annually compose almanacks; they perform incantations, under the throne of the king, before an audience is given on solemn occasions; they are consulted in all matters of importance, for determining the fortunate hour or season in which these ought to be undertaken; and they bestow on their protectors, amulets, charms, and such trifles. By such means the Bramins have rendered themselves important and useful in the Birman empire, and have obtained many privileges, confirmed even by the written law of the kingdom. However, their introduction into the Birman kingdom is a very recent event. The knowledge of the Birman Bramins is chiefly confined to astrology, and it is said, that they are very ignorant of astronomy; in so much that, when they attempt to calculate eclipses, they do not pretend to ascertain either the hour of their commencement, or the extent of the obscuration. It is also asserted that the Bramins of Hindooſtan are not much farther advanced in science than those of Amrapura, notwithstanding the improvements they have introduced from time to time, as they were able to procure information from their conquerors, Mahommedans and Christians. The lunar zodiac, in use among the Bramins, has been exhibited by sir William Jones, (*As. Res.* vol. ii. 291, &c.) and is supposed by him to have been communicated to the Birmans from Chaldæa by the intervention of the Bramins; nor is it unreasonable to imagine that the Bramins have derived astronomical knowledge from the Greeks and Arabs.

The religion of the Bramins, according to the opinions maintained by Paulinus and sir William Jones, is essentially the same with that of the Egyptians; and M. Anquetil du Perron concurs with the latter in supposing that Egypt was the source from whence the Bramin worship has been spread over a great part of the Eastern world. The Bramin priests

in India adopted and extended it, and, as we have already observed, gained a superiority over the priests of Bouddha about the time of Christ; and about 900 years afterwards they totally overthrew his doctrine in its native country. The Vedas, which are the oldest books of the Bramins, are inferior in antiquity to the time of Bouddha, because they mention the name of that personage. Against the Egyptian origin of the Braminical worship, the cosmography of the Bramins has been adduced: this is nearly the same with that of the Rāhāns, and seems to have been framed in the north of Hindooſtan. However, we may reasonably suppose the Bramins to have been a colony of Egyptians, who formed their first establishment in the vicinity of Bombay; as the images in the cave at Elephanta (which see) seem to be those of the gods of the Bramins. By degrees they engrafted their superstition on the ignorance of the Hindoos, adapting the African deities and mystical philosophy to the Asiatic fables and heroes, and carefully introducing the Egyptian cast and ceremonies, with all their dreadful consequences. Some have supposed, that the religion of the Bramins was introduced from Egypt into India as early as the time of Sesostris; but to this opinion it has been objected, that the object of his military expeditions, if indeed we allow their reality (see *SESOSTRIS*), appears to have been plunder, and the capture of slaves, rather than the propagation of religion or philosophy. The persecution of the Egyptian priests by Cambyſes is an event more likely to have produced an extensive migration into India; nor is it improbable that the Egyptians, who before this time traded to India, might have communicated some knowledge of their science to the Hindoos.

Whatever was the precise æra of the introduction of the Bramins into India, it seems to be unquestionable, that, in the usual course of human affairs, a contest arose, at some period or other after their settlement, between the regal and ecclesiastical powers. The latter, instead of being subdued, as in China and Japan, acquired the superiority, as in Thibet. But in Hindooſtan, from a most refined and cunning policy, the priesthood asserted the divine institution of the several casts (see *CAST*), and, in the natural progress of their power, pronounced their own to be the supreme, and possessed of innate and hereditary sanctity. It seems to be allowed that Bouddha was a deified philosopher; and it is also probable, that Brahma was the sophist who invented the new casts, and was not only deified, but placed in the first rank of the gods, by the grateful priesthood, which assumed the sole direction of the national mythology. The chief modern deities of the Bramins are Brahma, Vishnu, and Siva, *i. e.* the creator, the preserver, and the destroyer, corresponding to the three characters under which the Greeks represented their Zeus or Jupiter. But the fundamental principle of the whole fabric of Indian mythology, conformable to the universal system of the East, was the belief in a supreme creator, too ineffable and sublime for human adoration, which was therefore addressed to inferior, but great and powerful divinities. The names and attributes of the gods and goddesses (for the voluptuous Hindoos delight in female divinities), are very numerous, and, as human ideas and wants are almost universally the same, correspond in many instances with the Greek and Roman polytheism. The chief divinities of the Hindoos are well represented in Sonnerat's decorated publication: and we have an elaborate account of them in a tract "On the Gods of Greece, Italy, and India," published in the first volume of the Asiatic Researches, p. 221—275.

The Bramins of Hindooſtan constitute the first and chief of the four orders or casts (see *CAST*) into which the whole body of the people is distributed. Their order is deemed the

the most sacred; and to them belongs the province of studying the principles of religion, performing its functions, and cultivating the sciences. They have been for a long time, whatsoever be their origin, and whether it be more ancient or more modern, the priests, the instructors, and the philosophers of the nation. Such is the superiority of their cast or order, even to that of the monarchs of India, with regard both to rank and sanctity, that they would deem it degradation and pollution, if they were to eat of the same food with their sovereign. Their persons are sacred, and even for the most heinous crimes they cannot be capitally punished; their blood must never be shed. On important occasions, it is the duty of sovereigns to consult them, and to be directed by their advice, as was the case with respect to the ancient Brachmans. Their admonitions, and even their censures, must be received with submissive respect. From some accounts preserved in India of the events which have happened in their own country, we find, that princes, who violated the privileges of the casts, and disregarded the remonstrances of the Bramins, have been deposed by their authority, and put to death. The discoveries of modern times, procured and furnished by those who have visited India during the course of the three last centuries, afford us a considerable degree of authentic information concerning the state of science among the Bramins. The distinction between matter and spirit appears to have been known at an early period by the philosophers of India; nor can any description of the human soul be more suited to the dignity of its nature than that given by the author of the "Mahabarat," an epic poem, in high estimation among the Hindoos, composed, according to their account, by Kreeethna Dwypayen Veias, the most eminent of all their Bramins, above 3000 years before the Christian era. This poem consists of more than four hundred thousand lines. Mr. Wilkins has translated above a third part of it; but only a short episode, entitled "Baghvat-Geeta," is published. "Some," says the author, "regard the soul as a wonder; others hear of it with astonishment; but no one knoweth it. The weapon divideth it not; the fire burneth it not; the water corrupteth it not; the wind drieth it not away; for it is indivisible, inconsumable, incorruptible; it is eternal, universal, permanent, immovable; it is indivisible, inconceivable, and unalterable." With regard to the knowledge of logic and metaphysics, for which the Bramins have been celebrated, we learn from Abul Fazil's compendium of the philosophy of the Hindoos in the Ayeen Akbery (vol. iii. p. 95, &c.); from the specimen of their logical discussions contained in that portion of the SHASTER, published by colonel Dow (Dissertation, p. 39, &c.); and from many passages in the Baghvat-Geeta; that the same speculations which occupied the philosophers of Greece had engaged the attention of the Indian Bramins; and the theories of the former, either concerning the qualities of external objects, or the nature of our own ideas, were not more ingenious than those of the latter. That sceptical philosophy, which denies the existence of the material world, and asserts nothing to be real but our own ideas, seems to have been known in India as well as in Europe; and the sages of the East, as they were indebted to philosophy for the knowledge of many truths, and were able to define with accuracy, to distinguish with acuteness, and to reason with subtlety, were not more exempt than those of the West from its delusions and errors. To the subject of ethics the Bramins had directed particular attention; and their sentiments seem to have been various; so that, like the philosophers of Greece, they were divided into sects, distinguished by maxims and tenets often diametrically opposite. From several passages that occur in the Baghvat-Geeta we may infer, that

the distinguishing doctrines of the Stoical school were taught in India many ages before the birth of Zeno, and inculcated with a persuasive earnestness nearly resembling that of Epicurus. From India the western world derived their knowledge of the modern mode of notation by 10 cyphers or figures, which have been universally adopted, and found so convenient for performing every operation in arithmetic with the greatest facility and expedition. (See ARITHMETIC.) The astronomy of the Indians affords a proof still more conspicuous of their extraordinary progress in science. To M. de la Loubere, on his return from an embassy to Siam, A. D. 1687, we are indebted for an extract from a Siamese MS. which contained tables and rules for calculating the places of the sun and moon. The epoch of these tables corresponds to the 21st of March, A. D. 638. Another set of tables was transmitted from Chiribabouram, in the Carnatic, the epoch of which answers to the 10th of March, A. D. 1491. A third set was brought from Narsapour, the epoch of which is between the 17th and 18th of March, A. D. 1569. The fourth, and most curious set of tables was published by M. Le Gentil, who received them from a learned Brahmin of Trivalore, on the Coromandel coast. The epoch of these last tables is very ancient, and coincides with the beginning of the celebrated era of the Collee Jogue, which, according to the Indian account, commenced 3102 years before the birth of Christ. The calculations of M. Bailly, founded on these four sets of tables, have been verified by Mr. Playfair, who has also illustrated and extended his reasonings, in a learned dissertation published in the Transactions of the Royal Society of Edinburgh, vol. ii. p. 135. From the inquiries, reasonings and calculations that relate to Indian astronomy, it has been inferred, that the motion of the heavenly bodies, and more particularly their situation at the commencement of the different epochs to which the four sets of tables refer, are ascertained with great accuracy; and that many of the elements of their calculations, especially for very remote ages, are verified by a surprising coincidence with the tables of the modern astronomy of Europe, when improved by the latest and most nice deductions from the theory of gravitation. The Indian Bramins annually circulate a kind of almanack, which contains astronomical predictions of some of the most remarkable phenomena in the heavens, such as new and full moons, the eclipses of the sun and moon; and they seem to possess certain methods of calculation, that involve a very extensive system of astronomical knowledge. M. Le Gentil, while in India, had an opportunity of observing two eclipses of the moon, which had been calculated by a Bramin; and he found the error in either to be very inconsiderable. The method of calculating eclipses, adopted by the Bramins, is very different from that which was practised among rude nations in the infancy of astronomy, and founded on an analysis of the motions of the sun and moon, which indicate a considerable acquaintance with these motions. Indeed, the modern Bramins, though they are guided in their calculations by scientific principles, do not understand them; nor are they acquainted with the method of constructing the tables, to which they recur in their computations. Of course the ancient Bramins, who constructed the tables and rules now in use, must have possessed an extensive and tolerably accurate acquaintance with the elements of geometry, and also with the principles of plain and spherical trigonometry. See BENARES.

With regard to the religious institutions of the Bramins, they seem to be artfully contrived with a view of extending their own authority, and maintaining their influence over the people. They form, indeed, a regular and complete system of superstition, strengthened and upheld by every circumstance that can excite the veneration, and secure the attachment

ment of the multitude. The temples consecrated to their deities (see PAGODA) are magnificent, and highly ornamented with the most exquisite works in painting and sculpture; the rites of their worship are pompous and splendid, and the performance of them constitute an essential part of the more momentous transactions of common life; and the Bramins themselves, who are the ministers of religion, and preside in all its functions, are of an order elevated above all others, acknowledged to be sacred, and, by a gradation of rank among themselves, adapted to maintain subordination in their own class, and to give them a more absolute dominion over the minds of the people. This dominion they are enabled to support by having a command of the immense revenues, with which the liberality of princes, and the zeal of pilgrims and devotees, have enriched their pagodas. The number of their deities, the attributes and characters they ascribed to them, and the various rites by which they celebrated their worship, are such as indicate their origin in the ruder ages of society, and such as are adapted, in their nature and design, to answer the purposes of their introduction and establishment. The manners of the Indians, though distinguished, from the time when they became known to the people of the West, for mildness, seem, in a remoter period, to have resembled those of other nations. Accordingly, several of their deities were fierce and awful in their nature, and were represented in their temples under the most terrific forms. By the known influence of superstition we shall be able to account for the establishment of a ritual of worship suited to the character of such deities, among a gentle people. Every act of religion, performed in honour of some of their gods, seems to have been prescribed by fear; and a variety of mortifications and penances was introduced among them, the recital of which is accompanied with horror. Although it is repugnant to the feelings of an Hindoo to shed the blood of any creature that has life, many different animals, not excepting the most useful, such as the horse and the cow, were offered up as victims upon the altars of some of their gods; and their pagodas were even polluted with human sacrifices, as well as the temples of the West. But religious institutions and ceremonies of a less severe kind were more adapted to the genius of a people, formed, by the extreme sensibility of their mental and corporeal frame, to an immoderate love of pleasure. Accordingly there is no part of the earth, in which a connection between the gratification of sensual desires and the rites of public religion is displayed with more shameful indecency than in India. In every pagoda a band of women was set apart for the service of the idol honoured there, and devoted from their youth to a life of pleasure, for which the Bramins prepared them by an education, which added so many elegant accomplishments to their natural charms, that what they gained by their profligacy often brought no inconsiderable accession to the revenue of the temple. It is the office of these women, in every service performed in the pagoda, and in every public procession, to dance before the idol, and to sing hymns in his praise; and it is difficult to say, whether they trespass most against decency by the gesture which they exhibit, or by the verses which they recite. The walls of the pagoda are covered with paintings in a style no less indelicate; and in the innermost recesses of the temple is placed the "Lingam," an emblem of productive power, which it would be improper to explain.

If we advert to the theology of the Bramins, we shall find that, amid all their polytheism and superstition, they acknowledge and reverence one Supreme Being, the creator of all things, and from whom all things proceed. "They all," says Abul Fazil (Ayeen Akbery, vol. iii. p. 3.) "believe in the unity of the godhead; and although they hold

images in high veneration, it is only because they represent celestial beings, and prevent the thoughts of those who worship them from wandering." To the same purpose, the Pundits who translated the "Code of Gentoo laws," declare, that "it was the Supreme Being, who by his power formed all creatures of the animal, vegetable, and material world, from the four elements of fire, water, air, and earth, to be an ornament to the magazine of creation; and whose comprehensive benevolence selected man, the centre of knowledge, to have dominion and authority over the rest; and having bestowed upon this favourite object judgment and understanding, gave him supremacy over the corners of the world." These refined sentiments the modern Bramins derive from the writings of their ancient Pundits, to which they are also indebted for the wisdom which the most learned members of their order now possess. The most profound mysteries of the Hindoo theology, which had been long carefully concealed by the art of the modern Bramins from the body of the people, have been unveiled by the translations from the Sanscrit, or SHASSCRIT language lately published. The principal design of the Baghvat-Geeta, already cited, seems to have been to establish the doctrine of the unity of the godhead, and, from a just view of the divine nature, to deduce an idea of that kind of worship which will be most acceptable to a perfect being; and we find in this poem descriptions of the Supreme Being, equal in sublimity to any which we derive from the Greek philosophers. Dow, in his "Dissertation," (p. 40.) quotes a passage from one of the sacred books of the Hindoos, from which we may infer what were the general sentiments of the learned Bramins concerning the divine nature and perfections: "As God is immaterial, he is above all conception; as he is invisible, he can have no form; but from what we behold of his works, we may conclude that he is eternal, omnipotent, knowing all things, and present every where." To men capable of forming such ideas of the deity, the public service in the pagodas must have appeared to be an idolatrous worship of images, by a superstitious multiplication of frivolous or immoral rites; and they must have perceived, that it was only by sanctity of heart, and purity of manners, men could hope to gain the approbation of a Being perfect in goodness. This truth is sedulously inculcated in the "Mahabarat;" but, at the same time, with the prudent reserve and artful precautions natural to a Bramin, studious neither to offend his countrymen, nor to diminish the influence of his own order. We find, however, a very lamentable mixture of ignorance and error in all the theories of the Bramins, in common with the fables of other countries, concerning the perfections and operations of the Supreme Being. As they held that the system of nature was not only originally arranged by the power and wisdom of God, but that every event which happened was brought about by his immediate interposition; and as they could not comprehend how a being could act in any place in which it was not present, they supposed the deity to be a vivifying principle diffused through the whole creation, an universal soul that animated each part of it. Every intelligent nature, particularly the souls of men, they conceived to be portions separated from this great spirit, to which, after fulfilling their destiny on earth, and attaining a proper degree of purity, they would again be re-united. In order to efface the stains with which a soul, during its residence on earth, has been defiled, by the indulgence of sensual and corrupt appetites, they taught that it must pass, in a long succession of transmigrations, through the bodies of different animals, until, by what it suffers and what it learns in the various forms of its existence, it shall be so thoroughly refined from all pollution, as to be rendered meet for being absorbed into the divine essence, and returns like a drop into that unbounded

bounded ocean, from which it originally issued. These doctrines of the Bramins concerning the deity, as the soul which pervades all nature, giving activity and vigour to every part of it, as well as the final re-union of all intelligent creatures to their primæval source, coincide with the tenets of the Stoical school. In the errors also of their theological speculations we may discover a great similarity. As it was maintained by many among the Greek and Roman philosophers, that the vulgar and unlearned had no right to truth, the Bramins of India adopted similar ideas, and they regulated their conduct in the same manner with respect to the great body of the people. To their order belonged the exclusive right of reading the sacred books, as well as of cultivating and teaching science; and therefore they had it in their power more effectually to prevent all who were not members of the order from acquiring any information beyond what they were pleased to impart. Hence it happened, that, like many of the sages of Greece, the Bramins of India, carried on, with studied artifice, a scheme of deceit, and, according to an emphatical expression of an inspired writer (Rom. 1. 18.), they *detained the truth in unrighteousness*. What they themselves knew and approved what was true, they laboured among the rest of mankind to support and perpetuate what was false.

The Bramins of Hindoostan have a language peculiar to themselves, which they call *Sanserit*, or *Shanserit* (which see); and in this language they have ancient books written, as they allege, by their great prophet and founder *Brahma*; such as the *Beda*, or *Vedam*, delivered, as they say, to their lawgiver, *Brahma*, by the Deity; the *Shaster*, or *Shastah*, which is their bible; and *Puran*, or *Pourane*, a history which they deem sacred, and which they pretend to have been dictated by God himself, containing also the explanation of the *Shaster*. For an account of these books see each of these terms. These sacred books are kept in close custody by the Bramins; nor do they suffer their contents to be communicated to their own laity, much less to strangers. The *Shaster* contains a summary of their moral and ceremonial laws, together with the distribution of mankind into tribes and classes, and an account of the rules of conduct appropriated to each. (See *SHASTAN*.) From this book, on the precepts of which the Bramins profess to found their practice, it appears, that their religion and particularly the ceremonial part of it, consists in frequent ablutions in their rivers, and more especially in the Ganges, muttering over divers prayers under green trees, and in their temples, accompanied with processions, tinkling of bells, offerings to images, unctions, and similar rites, the observance of fasts and festivals, pilgrimages, invocations of saints, and divers strange and unaccountable penances. From their *Vedam* they pretend to derive several privileges, peculiar to their own order; such as those of celebrating the feast called "*Jagam*," at which they kill animals, and eat flesh, and offer a heaf for sacrifice, which they strangle, in order to avoid shedding its blood; of teaching the *Kutteries* the manner of celebrating this feast; of reading the *Vedam*, and of teaching it to their own tribe, and that of the *Kutteries*; of demanding but not of giving alms; and of never being punished with death, even for the most enormous crimes. Their office is to teach others not only reading, writing, and arithmetic, but the principles of their religion. As a recompence for their time and labour, the kings, or *rajahs*, assign for their support the revenues of certain villages, and they also receive contributions from the inhabitants of the several countries in which they reside. They are also allowed to officiate as merchants, and to practise physic, but are strictly forbidden to employ themselves in tillage, or any handicraft trade; or to perform any

servile office, even for the king. An offence of this kind would incur degradation and expulsion from their tribe; however, they are permitted to act as secretaries, ambassadors, or counsellors to their sovereigns, and, indeed, they almost wholly engross these honourable offices to themselves. The birth, baptism, and education of the Bramins are attended with circumstances and ceremonies peculiar to themselves. At their baptism, they are not only washed with water, but anointed with oil, which rites are accompanied with prayers and benedictions. At an early age, they are invested with a small cord, which is hung on the left shoulder, and descends low on the right side; and which they retain as an essential article of their attire. The Bramins never contract marriage out of their own tribe, and that they do at a very early period of life. On this occasion they receive a second little cord, resembling the first, and to this also they usually annex a third, which serves instead of an upper garment. When the Bramins arrive at maturer and more advanced age, they are allowed to take wives out of the other tribes; but they never marry their children to near relations, as incest is deemed by them one of the five mortal sins which is scarcely ever to be forgiven. Among the Bramins polygamy is indulged to great excess; and as an apology for it, they allege, that the *Vedam* has not forbidden it. For concubinage and adultery they have no punishment; but a Bramin who finds his wife to be inconstant, confines her and supplies her with food while she lives; and if he is much attached to her, he requires her to serve at a feast, to which he invites several of his tribe, and after the guests have received victuals from her hand, she is regarded as an honest woman. Their diet, like that of the ancient Brachmans, is simple and temperate, and consists solely of rice, roots, fruits, and herbs, and their drink is water and milk. They never use any intoxicating liquor; for they abhor drunkenness and reckon it among their mortal sins. Although the Bramins decline eating flesh, because they deem the slaughter of animals for this purpose to be a great sin; they are, however, charged with inconsistency by the *Kutteries* and *Soudras*, who eat fish and flesh, as they dislodge many souls from their bodies by plucking up roots and plants, which, upon their system of transmigration, are endued with souls as well as animals.

The Bramins, as we have already observed, are priests both secular and regular, and have amongst them an established hierarchy, composed of several orders, that are variously distinguished in the several provinces of Hindoostan. The learned Bramins constitute two classes; the first of which is called "*Kuru*," and belongs to the priesthood; the second, denominated "*Satiriar*," or "*Shatiriar*," comprehends the professors of the different systems of theology. Besides these two classes of learned Bramins, there are many others, not much inferior to them in wisdom and erudition, whose chief business is to instruct youth in those points which relate to the ceremonies used in public worship, and solemn festivals. The ministerial function of the Bramins consists in praying with the people, and reading their law. To them it also belongs to educate the young persons of the same tribe, who advance by various gradations to the priestly office. When they are set apart to this office, they are enjoined not to change their tribe; to observe all things contained in the law of the Bramins; and not to communicate the mysteries of their religion to any of a different persuasion.

The Bramins are divided into six sects; *viz.* *Weistnouwa*, *Sivia*, or *Aradhya*, *Smarta*, *Shauvokka*, *Pafenda*, and *Chekta*, who are distinguished by certain differences in their tenets, and ceremonial practices. For a further account of

the doctrines, worship, character, customs, &c. of the Bramins, we may refer to the *La Porte Ouverte* of M. Roger, chaplain to the Dutch factory at Poolicat on the coast of Coromandel; the travels of Bernier and Sonnerat; the *Dissertations* of Orme, Dow, sir William Jones, &c. &c.; the *Code of Gentoo Laws*; the *Asiatic Researches*; Robertson's *Disquisition concerning India*, &c. See also the articles above referred to, and also BENARES, HINDOOS, HINDOOSTAN, &c. in this dictionary.

Robert de Nobili, an Italian Jesuit, and one of the Indian missionaries, in the beginning of the seventeenth century, in order to secure success to his mission, assumed the title and appearance of a Brachman, and at length persuaded the credulous people, that he was, in reality, a member of that venerable order. He forged a deed in the ancient Indian characters, shewing that the Brachmans of Rome were older than those of India, and that the Jesuits of Rome descended in a direct line from the god *Brahma*. He farther declared on oath, that he derived his origin from this Indian deity. By this imposture he profelyted twelve eminent Brachmans, whose influence proved very favourable to his mission. After his death, the Portuguese Jesuits carried on the imposture with very considerable success. These missions, however, were suspended and abandoned, in consequence of a papal mandate, issued out in the year 1744, by Benedict XIV. who declared his disapprobation of the artifices that had been used in the conversion of the Indians. Mosheim's *Ecccl. Hist.* vol. iv. p. 211, &c. 8vo. edit.

BRACHMANUS, in *Ancient Geography*, a river of India, on the other side of the Ganges, between this river and Catabeda.

BRACHME, CANJE-VARAM, a town of India, in the peninsula on this side of the Ganges, according to Ptolemy. It was situated in the interior of the country, at an equal distance from the eastern coast of the peninsula and the town called Arcatis, and occupied by the people denominated by Ptolemy "Brachmani Magi."

BRACHODES, the name of a promontory in the Mediterranean, on the coast of Africa. Ptolemy. Strabo calls it "Ammonis promontorium," and Procopius "Caput-Vada."

BRACHSEN, in *Ichthyology*. See BRAMA CYPRI-VUS.

BRACHVOGEL, in *Ornithology*, the name given by Frisch to the *scelopax arquata*, or common curlew.

BRACHURI, in *Zoology*, a term applied by Dr. Hill to a genus of animalcules of a roundish figure, with tails shorter than the body. The vermes of this description have undergone of late years much accurate investigation, especially by Müller, the result of which is, that the genus of *brachuri* is exploded by modern writers on the *animalcula infusoria*.

BRACHYACANTHUS, in *Entomology*, an insect of the ICHNEUMON genus found in Europe. The colour is black; spots on the head and thorax; small line on the scutell, and tip of the abdomen white; sting very short; shanks fuscous, whitish at the base. Linn. &c.

BRACHYACANTHUS, a species of ICHNEUMON, the colour of which is black; antennæ fuscous; abdomen and legs yellow; sting very short. Linn. Inhabits Europe.

BRACHYCOLON, from βραχυς, *short*, and κολον, *member*, is when one member of a period is shorter than another.

In which sense, the word stands contradistinguished from *isocolon*, where the members are equal, or consist of the same number of syllables.

BRACHYGLOTTIS, in *Botany*, (from βραχυς, *short*,

and γλωττα, *a tongue*.) Forster Nov. gen. Jussieu 181. La Marck pl. 677. Clafs, *syngenesia polygamia superflua*. Nat. Ord. *Composita radiata*. *Corymbifera*. Jussieu. Gen. Char. *Calyx* common, oblong, cylindric, simple; scales linear, equal, cottony. *Cor.* compound radiate. *Corollules* of the disk, hermaphrodite, funnel-shaped, a little longer than the calyx, with a five-cleft upright border; of the ray, ligulate, few, very short. *Seeds* oblong; down sessile, plumose. *Recept.* naked.

Ess. Char. *Flowers* radiate. *Corollules* of the ray few, short, recurved, three-toothed. *Calyx* polyphyllous, connivent, cylindric, equal. *Down* plumose.

Species, 1. *B. repanda*. Leaves ovate, repando-sinuate. 2. *B. rotundifolia*. Leaves nearly round, very entire. Forster.

BRACHYGLOTTIS. See CINERARIA.

BRACHYGRAPHY, (from βραχυς, *short*, and γραφω, *scribo*, *I write*.) denotes the art of short-hand writing, called also TACHYGRAPHY. See SHORT-HAND.

BRACHYLOGY, from βραχυς, *short*, and λογος, *expression*, in *Rhetoric*, brevity, the expressing any thing in the most concise manner. This, so far as consistent with perspicuity, is a virtue and beauty of style; but if obscurity be the consequence, which is often the case, it becomes a blemish and inexcusable defect. Quintilian gives us an instance of brachylogy from Sallust: *Mithridates, corpore ingenti perinde armatus*: Mithridates, as it were armed with the hugeness of his stature. Inst. Or. lib. viii. cap. iii.

BRACHYOTOS, in *Ornithology*, a species of STRIX, or OWL, of the horned kind. It is specifically distinguished by having the horn-feather or tuft very short; the body is fuscous above; feathers edged with yellow; beneath pale yellow, longitudinally streaked. Forst. Penn.—Donov. Brit. Birds, &c.—Buffon calls this kind of owl *chouette*, or *grande chevêche*. It is the short-eared owl of English ornithologists. The length is fourteen inches. Found in America as well as Europe.

BRACHYPNŒA, in *Medicine*, a term expressing short breathing, a symptom which occurs in various affections of the lungs, both acute and chronic, from βραχυς, *short*, and πνία, *I breathe*. See DYSPNŒA.

BRACHYPOTÆ, a term applied to persons labouring under acute diseases, who drink but little, and with difficulty; from βραχυς, *short*, and πότης, *a drinker*. This term has been applied by some modern physicians to persons labouring under hydrophobia.

BRACHYPTERA, in *Entomology*, a species of MANTIS, found by Pallas in Russia. The colour is cinereous, thorax dentated; wings half the length of the abdomen. Haunts sandy deserts.

BRACHYPTERA, in *Ornithology*, the name of a genus of birds of the rapacious kind, in Willughby's System. The birds of this genus he distinguishes by the shortness of the wings, the word being derived from βραχυς, *short*, and πτερον, *a wing*; these, when folded, not reaching so far down as the extremity of the tail. Of this genus were the *goshawuk*, *sparrow hawk* and three kinds of *butcher-bird*. Neither the general term, nor the discriminating character laid down for it are recognized by modern ornithologists.

BRACHYPTERUS, in *Entomology*, a species of CIMEX, described by Linnæus, the colour of which is pale; body linear; wing-cases a third part the length of the abdomen. Inhabits Europe.

BRACHYPTERUS, a species of GRYPHUS (*Tettigonia*, Fab: *Locusta*, Gmel.) Inhabits the north of Europe. This kind feeds upon the grass; it is of a greyish fuscous colour, and is distinguished further by having the wings, and wing-

cases half the length of the body, a circumstance to which its specific name alludes.

BRACHYPYRENIA, from *βραχυς*, *short*, and *πυρ, nucleus*, in *Natural History*, a genus of fossils of the class of *SEPTARIAE*. The brachypyrenia have a short, roundish nucleus, inclosed by, and contained within, the body of the mass.

BRACHYTELOSTYLA, the name of a genus of crystals.

The word is derived from *βραχυς*, *short*, and *τελος, perfect*, and *στυλος, a column*, and expresses a perfect crystal, with a short intermediate column.

The bodies of this genus are crystals composed of a short hexangular column, terminated at each end by an hexangular pyramid. Of this genus there are six known species. *Hist. Fossils*, p. 163.

BRACHYURA, in *Ornithology*, a species of *FRINGILLA*, that inhabits Italy. It is briefly described as being entirely yellowish.

This is the short-tailed sparrow, and short-tailed Italian sparrow of English writers. Brisson names it *passerculus italicus*.

BRACHYURUS, in *Entomology*, a species of *ICHNEUMON*, that inhabits Germany. The colour is fulvous: scutell fulvous; thorax, eyes, and abdomen, (which is linear at the base,) black. Schrank.—Abdomen and head testaceous; legs yellow.

BRACHYURUS, in *Ornithology*, a species of *LANIUS*, described by Pallas. The head above is ferruginous grey; eye-brows whitish; a black band from between the eyes to the ears; body above greyish, cinereous; beneath yellowish white; tail rounded.—This is the *short-tailed shrike* of Latham. Found but rarely in Hungary.

BRACHYURUS, the short-tailed crow, a species of *CORVUS*, of a green colour; beneath tawnyish, and lineated on the head with the same colour; wings with a white spot.

This bird inhabits the islands of the Indian ocean. The species admits of no less than seven distinct varieties, according to some writers, of which number Gmelin describes three, *corvus Philippinensis*, *corvus Bengalensis*, and *corvus Madagascarensis*.

BRACIEUX, in *Geography*, a town of France, in the department of the Loire and Cher, and chief place of a canton, in the district of Blois, 3 leagues N. E. of Blois. The place contains 700, and the canton 10,250 inhabitants; the extent of the territory comprehends 345 kilometres and 14 communes.

BRACKE, a town of Germany, in the circle of Westphalia, and county of Oldenburgh; 18 miles N. N. E. of Oldenburg.

BRACKE, or **BRAKE**, a town of Germany, in the circle of Westphalia, and county of Lippe; one mile S. E. of Lemgow.

BRACKEN, a county of Kentucky in America, containing 2382 inhabitants.

BRACKENWITZ, a town of Germany, in the circle of Upper Saxony, and middle mark of Brandenburg; 5 miles S. of Treuenbrietzen.

BRACKET, in *Building*, denotes a kind of wooden stay, in form of a knee or shoulder, serving for the support of shelves, &c. or a cramping-iron, which serves as a stay in timber work. The word is also written *braget*, and seems derived from the Italian *bracketto*, a diminutive of *braccio, arm*. Modillions are a sort of *brackets* to the *corona* of an entablature.

BRACKETS, in *Artillery*. See *CHEEKS of a Mortar*.

BRACKETS, in *Ship-building*, small knees serving to support the galleries, and commonly ornamented with carving.

Also, the timbers fixed under the galleries and frame of a ship's head to support the gratings.

BRACKISH water, a mixture of fresh and salt water.

BRACKLEY, in *Geography*, an ancient borough town of Northamptonshire, England, consists of the two parishes of St. James's and St. Peter's, and a hamlet called Old Brackley. Leland states, that this place consisted of many streets, in his time, and that it was a flourishing town during part of the Saxon dynasty, till the Danes "raided it." Edward the III. made it a wool-staple, and gave it a corporation; but it was not invested with borough privileges till the last parliament of Henry VIII., when two members were returned. "There was a fair cattle," says Leland, "in the south-west end; the site and hull where it stood is evidently seen, and beareth the name of the Cattle Hill, but not any piece of wall standing." Here were also three ancient catholic crosses, one of which, says this respectable antiquary, "was decorated with divers tabernacles, with ladies and men armed. Some say the staplers of the town made it; but I rather think some nobleman, lord of the town." This cross, 28 feet high, was taken down in 1706, by the duke of Bridgewater, to build the handsome town-house in its place. Robert Boffu, earl of Leicester, founded an hospital here in the time of Henry III. John, son of lord chancellor Ellesmere, was created viscount Brackley 14th James I., earl of Bridgewater the following year, and marquis, afterwards duke of Bridgewater, 6 George I. On Bayard's Green, between Brackley and Mixty, was held a famous tournament in 1249; and another was held here about the same time. The river Ouse rises near this town, and supplies it with water. Here are a weekly market on Wednesday, and five fairs annually. It is 13 miles from Northampton, and 63 N. W. from London. The two parishes and hamlet contain 183 houses, and 1495 inhabitants, of whom 533 are employed in manufactures. Gough's edition of Camden's Britannia; Bridge's history of Northamptonshire, folio.

BRACKWADE, a town of Germany, in the circle of Westphalia, and county of Ravensberg; 4 miles S. E. of Bielefeld.

BRACLAW, or **BRACKLAU**, a city of Poland, and capital of a palatinate of the same name, called also Lower Podolia, seated on the river Bog.

BRACTEA, a thin flake or spangle of any substance; it is used by many authors in the same sense with the word *lamina*, but usually in a sort of diminutive sense, expressing a small plate.

BRACTEA, **BRACTE**, in *Botany*, a name given by the Latins to very thin plates of gold, silver, or other metal, and applied by Linnaeus to the floral leaves of a plant, first distinguished and described by himself. They consist of scales, or of small leaves, which differ from the other leaves of the plant generally in figure, and often in colour. They are placed sometimes on the peduncle, and always near the flower, so that in some cases they are liable to be mistaken for a perianth: they may, however, be distinguished from it by their continuing as long as the proper leaves; whereas the perianth withers as soon as the fruit becomes ripe. Good examples of bractæ may be found in tilia (linden or lime-tree), melampyrum (cow-wheat), monarda (oswego balm), &c.

According to the physiology of Linnaeus, and his immediate pupils, they are formed in the bud, by a kind of anticipation, and become proper leaves of the new shoot or branch in the second year, if the state of inflorescence be not hastened on by the force of the medullary principle: but when that takes place, as in certain circumstances it

natu-

naturally does, part of the nourishment which they would otherwise have received, being diverted to the use of the fructification, they do not acquire their full vigour, and in consequence, dwindle into floral leaves. In proof of this theory, it is alledged, that if the fructification be prematurely destroyed by insects, or purposely cut off, they regain sufficient sustenance, and assume the form and size of perfect leaves. See the introduction to the second volume of the *Systema Naturæ*, and two dissertations, entitled *Prolepsis Plantarum*, published in the *Amœnitates Academicæ*.

The bractæ are placed by Linnæus under the head of what he fancifully calls fulcra, props, or supports, from an idea that they sustain or strengthen either the whole plant, or some of its parts. In the *Systema Naturæ* they are distinguished according to their duration, into *caducous*, falling off before the end of the summer; *deciduous*, falling off at the end of the summer; and *persistant*, remaining beyond the end of the summer; but it does not appear how the criterion laid down in the *Philosophia Botanica*, to discriminate a bractæ from a perianth, is to be applied to those that are caducous. They are styled *comæse*, when they shelter the flowers in the form of a crown, tuft, or coma, (head of hair) as in the *fritillaria imperialis* (crown imperial), *brameia ananas* (pine-apple), &c.: but in this case they do not very happily correspond with the generic appellation fulcrum. They have the character of *imbricate*, when they are placed among the flowers so close to them and to one another, as to form a kind of spike or head, as in *prunella* (self-heal), and *origanum* (marjoram).

Bractæ not only afford excellent specific differences, but are sometimes admitted into the generic character, as in many genera of the natural order, umbellifera, and in some of the class didymia; and are there said by Linnæus to constitute an involucre; one of his species of calyx. They are, however, truly bractes; and would, doubtless, have been so considered by him, if, under that denomination, they had not interfered with the established principle, that generic characters are to be taken solely from the parts of fructification.

BRACTEA, in *Entomology*, a species of *PHALÆNA* of the noctua family, the wings of which are variegated, and in the middle of each of the anterior pair is a large shining golden spot. Fabr. &c. Found in England, though very rarely: more common in the south of Europe.

BRACTEARIA, in *Natural History*, the name of a genus of fossils of the talc class; the characters of which are, that they are composed of small plates in form of spangles, and each of these, naturally very thin or fissile, into very thin ones.

The word is derived from the Latin *bractea*, a spangle, or small and thin glittering particle of any thing.

There are many species of this genus denominated from the variety of their colours; as *MICA aurea*, or gold glimmer, and *MICA argentea*, silver-glimmer, cat's-silver, &c.

BRACTEATA, in *Entomology*, a species of *CICADA*, (*membracis*, Fabr.) of a small size, that inhabits Cayenne, the thorax of which is green, and without spots.

BRACTEATED, among *Antiquaries*, denotes a coin covered over with a thin plate, or leaf of some richer metal. See MEDAL.

Bracteated coins, or medals, *nummi bracteati*, are usually made of iron, copper, or brass, plated over, and edged with gold or silver leaf, and then stamped with the hammer or mill.

Medallists find some bracteated pieces even among the truly ancient coins. The French call them *fourrées*.

BRACTEATUS, in *Entomology*, a species of *MONOCULUS*, the shell of which is orbicular and unarmed. Müll. The shell of this kind is very pellucid; antennæ and legs

furnished with bristles: eyes not conspicuous. Inhabits pure fresh water.

BRACTON, HENRY DE, in *Biography*, a celebrated English lawyer and judge of the 13th century, was, according to Prince (Worthies of Devon), a native of Devonshire; and having gained distinguished reputation by his study of both the canon and civil law at Oxford, he was appointed by King Henry III. one of his judges itinerant about the year 1244, and afterwards, as some say, lord chief justice of England. In the exercise of this office he conducted himself with exemplary integrity; but his fame is principally owing to his excellent treatise on the laws of England, generally entitled "*De legibus et consuetudinibus Angliæ*;" though he himself gave it the title of "*Brito*," whence many mistakes have occurred in writing his name. This work has always been esteemed one of the most accurate and methodical treatises on our laws. It was first printed at London, in 1569, in folio; and reprinted in 1640, in 4to., from a collection of various manuscripts for the amendment of the text. Some inconsistencies have been charged on Bracton from the citation of different passages in his book; in some he seems to discover too great an attachment to the authority of the pope; and in others he gives such various representations of the regal authority in this kingdom, as seem to favour sometimes the extension, and at other times the restraint and limitation, of the royal prerogative. These inconsistencies, however, have been ascribed by candid writers to the unsettled times wherein he lived, in which the power of the king, and that of the barons were alternately prevalent, and charters of liberty were no sooner signed than violated. The time of his death is not precisely ascertained: but he probably survived his master, and died in the reign of Edward I. *Biog. Brit.*

BRAD, in *Geography*, a town and capital of a district of the same name, in the county of Weissenburg, in Transylvania.

BRADDOCK'S *field*, a place in America, situate on Turtle creek, on the N. E. bank of Monongahela river, 6 miles E. S. E. from Pittsburg, and rendered memorable by the defeat of general Braddock, who with 1400 men, the first division of his army, fell into an ambuscade of 400 Indians, by whom he was defeated and mortally wounded, July 9th, 1755. The American militia, disdainfully placed in the rear, continued unbroken, and served as a rear-guard; and under col. Washington, afterwards president of the United States, preserved the regulars from being entirely cut off.

BRADDOCK'S *bay* lies on the south side of lake Ontario, at the mouth of Genesee river.

BRADFIELD, a market town of England, in the county of Essex.

BRADFORD, JOHN, in *Biography*, a protestant martyr, who flourished in the reign of queen Mary, was born at Manchester, in the early part of the reign of king Henry VIII. Having received a good education, not only in the Latin tongue, but particularly in writing and accounts, he was recommended to sir John Harrington, treasurer, pay-master of the forces, and principal engineer at Boulogne, and was employed by him as his clerk. In this employment, for which his education had eminently qualified him, he continued many years, approving himself to his principals, and deriving from his office considerable emolument as well as honour. In the discharge of his trust, however, he seems to have availed himself of his acuteness and dexterity, as an accountant, in a manner that rendered him uneasy in his own mind, more especially after he had heard a sermon from Latimer on the subject of "Restitution;" and he immediately determined to procure an adjustment of his accounts with the crown, and to apply to his master, fir

for John Harrington, for this purpose; sir John demurred and delayed, and thought Bradford conscientiously precise and scrupulous. This incident gave a new direction to his views and pursuits; and though for some time he pursued the study of the law at the Inner Temple, he resolved to remove to Cambridge, and to devote himself to the profession of a divine. In this new situation he applied to his studies with singular diligence, and first took his degree of M.A.; and was afterwards elected fellow of Pembroke hall. During this time the recollection of his former misconduct oppressed his spirits, nor was he able to recover the tranquillity of his mind till, by successive payments, as his circumstances would allow, he had discharged the full sum of 520*l.* 10*s.* as a restitution to the king. By this act of just reparation, performed voluntarily on his own part before the king and council knew of the offence, did he give the most unequivocal proof of the sincerity of his repentance, and lay the surest foundation of that reputation and usefulness for which he was afterwards distinguished. Having thus pacified the accusations of his conscience, he proceeded in his studies with unabated vigour; and his character for piety was likewise in eminent, that bishop Ridley, in 1550, sent for him to London, induced him to receive deacon's orders, gave him a licence to preach, and soon after appointed him one of his own chaplains. Mr. Bradford acquired great popularity as a preacher, both at St. Paul's Cross in London, and in his native county; and continued the exercise of his ministry with unintermitting ardour and singular success until the close of king Edward's reign, and after the commencement of that of queen Mary. But with the change that took place on this occasion, he, as well as many others, suffered the severity of persecution. His undaunted resolution and zeal exposed him to peculiar danger; and his popularity as a preacher, which afforded him an opportunity of preserving the life of a popish priest, who by a furious declamation against the late king, and in favour of popery, had incensed the multitude that formed his auditory at St. Paul's Cross, was interpreted by his enemies in an occasion of offence; and in consequence of the act of humanity and kindness, for which he merited recompence even from the powers that then prevailed, he was arrested by order of the queen's council and bishops, and committed to prison under a charge of sedition and heresy. During his close confinement, for about a year and a half, in various prisons, he manifested an invincible attachment to the principles of the reformation; and exerted himself by private admonitions and epistolary addresses, for which he availed himself of every opportunity that occurred, in representing the delusions of popery, and in confirming those who were wavering in their adherence to the protestant faith. Many of his letters and discourses are extant; and they abound with expressions of the most fervent piety and unshaken constancy. In the beginning of the year 1554, he was brought before a commission specially appointed for his examination; but as he persisted in an undimmed avowal of his opinion, he was finally condemned. After his condemnation, he was remanded to prison, where he remained near half a year longer; manfully resisting every attempt that was made with a view of inducing him to abandon the cause to which he was devoted, and recommending himself to mild treatment on the part of those who had the custody of him, by the gentleness of his temper and manners. During the successive intervals of his confinement, he preached constantly, and was allowed to receive the visits of his friends, who resorted in great numbers to enjoy the benefit of his discourses. So irreproachable and exemplary, indeed, was his conduct, and to such a degree did he attach the esteem, and interest the humanity of those who had access to him,

that many papists were induced to express their wishes for the preservation of his life. To his fellow prisoners he communicated salutary counsel, and pecuniary assistance, as their several circumstances required; and he was eminently useful in reclaiming the erroneous, and in reforming the vicious and profligate. At length, however, the day of his execution arrived; and when it was announced to him, he lifted up his eyes to heaven, and said, "I thank God for it; I have looked for it a long time; therefore it comes not suddenly, but as a thing waited for every day and hour; the Lord make me worthy of it." On the 18th of July, 1555, he was brought to the stake at Smithfield, in company with a Yorkshire youth, named John Lyese, then an apprentice in London, whom he animated to constancy by his example of calm and undaunted fortitude; and having kissed a faggot and the stake, he pulled off his cloaths, and prepared for the last tremendous scene. At the stake, he exclaimed aloud, with his hands and face lifted up towards heaven, "O England, England, repent thee of thy sins; beware of idolatry, beware of Antichrists, lest they deceive you;" and then forgiving and entreating forgiveness of all the world, he comforted his companion, and embracing the flaming reeds that were near him, uttered these words, the last which were distinctly heard; "Strait is the way, and narrow is the gate," &c. and thus expired. Biog. Brit.

BRADFORD, *East and West*, in *Geography*, townships of America, in the county of Chester, and state of Pennsylvania.

BRADFORD, a township of Essex county in the Massachusetts, seated on the south side of Merrimack river, opposite to Haverhill, and 10 miles west of Newbury port. It has two parishes, and contains 1420 inhabitants. In this place is a manufacture of leather shoes for exportation, and some vessels are built in the lower parish. Several streams fall into the Merrimack river from this town, which support a number of mills of various kinds.—Also, a township in Hillsborough county, New-Hampshire, incorporated in 1760; 20 miles E. of Charlestown.—Also, a township in Orange county, Vermont, on the west bank of Connecticut river, about 20 miles above Dartmouth college. In this township is a remarkable ledge of rocks, about 200 feet high, which appears to threaten the passing traveller; the interval between it and the river is scarcely wide enough for a road.

BRADFORD, a market and manufacturing town in Wiltshire, in England, 100 miles W. from London, and 7 N. E. from Bath. Its name appears to have been derived from the Saxon term *Bradenford*; so called from the broad ford which formerly crossed the river at this place. Though not a town of large extent, it has acquired considerable importance from the great quantities of fine broad cloth manufactured here, as from ten to twelve hundred pieces are sent away annually. One manufactory alone employs nearly fifteen hundred persons, and the number of clothiers is between sixty and seventy. Its situation is peculiarly romantic, being principally built on the declivity of a hill, and consists of three streets rising one above the other. These are narrow and irregular, yet many good houses present themselves to the eye of the passenger. The church, a plain stone building, with a square tower and small steeple, is situated at the foot of the hill, and consists of a nave, N. aisle, chancel, and a small chapel on the S. side. In the chancel are several large and handsome monuments, and the church is ornamented with two windows of modern stained glass, which were given by John Ferrott, esq. a native of Bradford; who also left a donation of ten pounds to be laid out in bread, and distributed among the poor monthly. Near the church is a free-school for boys, and in the town are two charitable

establishments for old men and women. The river, distinguished by the name of the Lower Avon, passes through, and divides the town into two parts, respectively termed the New and Old Town. These are connected by two stone bridges, one of nine arches, the other of four. The markets, which are on Mondays and Saturdays, are well supplied with meat and vegetables. It has also two fairs for cattle, &c. Bradford formerly sent two members to parliament, who were summoned the twenty-third year of Edw. I. but discontinued the next year. The town was greatly damaged by fire on the 30th of April 1742. The houses are 1288, and the inhabitants 7302, of which number 4648 are employed in the manufactory. By a notice in the Saxon chronicle, it appears that a battle was fought near this town in 652, between Kenewalch, a west Saxon king, and the Britons, who were defending the counties of Somerset, Devon, and Cornwall from Saxon dominion; but their efforts proved unsuccessful, and Kenewalch drove them farther westward. A nunnery was founded here by Aldhelm, bishop of Sherborne, about the year 706, which was totally destroyed in the Danish wars, and never afterwards restored. This lordship, with the parsonage, were given to the nunnery of Shaftsbury by king Ethelred in the year 1010. About 2 miles N.E. from Bradford is the village of Holt, noted for a medicinal spring which was discovered in the year 1718. Four miles N.W. is Monkton Farley, the seat of the duke of Somerset. About 3 miles S.W. are the mouldering ruins of Farley castle, formerly one of the residences of the Hungerfords.

BRADFORD, an ancient and considerable market and manufacturing town in the West Riding of Yorkshire, in England; is situated between Leeds and Halifax; 10 miles from the former, 8 from the latter, and 196 N.W. from London. It is an extensive parish, containing several subordinate hamlets, scattered cottages and farms. The prosperous state of the clothing trade, and the augmentation of its manufactures since the general application of machinery, have conspired to increase considerably the buildings and population of this part of the country. In 1801 the houses of this town were estimated at 1368, and its inhabitants at 6593, about 1300 of whom were directly employed in manufactures. Though worsted stuffs are the staple trade of the place, yet some broad and narrow cloths, wool cards, combs, and leather boxes are also made here. For the convenience and accommodation of the tradesmen of the town, a public structure has been erected, called the Piece-hall, wherein various manufactured articles are exhibited and sold. In the vicinity of Bradford is a spacious iron foundry, with forge, &c., which is advantageously supplied with its coal and iron ore, on the spot: here have lately been cast some pieces of cannon for government. Three large iron-foundries are also established in this town; also a very spacious still-house, for the distillation of aquafortis and spirits of vitriol. By a cut from the Leeds and Liverpool canal, the manufactures of the place are cheaply conveyed to the great marts of commerce; and other merchandizes and materials are brought back in return. Bradford has a weekly market (Monday), and two principal fairs annually. The church is a large well proportioned structure, dedicated to St. Peter; and has under it the chapels of Thornton, Wibsey, and Haworth. The adjacent land is all inclosed, possessed by small proprietors, and mostly occupied by the manufacturers of the town. It is chiefly kept in pasture for the support of cows; but a small portion is ploughed, and appropriated to oats. At the commencement of the civil war in 1641, Bradford was besieged and ransacked by the earl of Newcastle's army.

At Pudsey, 4 miles from Bradford, is a large religious house, belonging to the Moravians; and consists of a chapel, refectory, dormitory, school, &c. See MORAVIANS. Aikin's Description of the country round Manchester, 4to.

BRADING BAY, lies in the Isle of Wight, at the east end of the island, almost opposite to Portsmouth, and not far from St. Helen's road. It is generally dry at low-water, and when the tide is in, has only a narrow channel for small vessels, on account of a bar at the entrance.

BRADLEJA, in Botany. (in honour of Richard Bradley, F. R. S. the first professor of botany at Cambridge.) Schreb. 1474. Gærtner, 632. Glochidion, Forster. Clafs, *monocia monadelphia*, (Schreb.) *Monocia hexandria*, (La Marck.) Nat. Order, *Euphorbia*.

Male Flowers.

Calyx, none, (Schreb.) five or six leaves, persisling (Gærtner.) *Corol* petals six, ovate, concave, spreading, nearly equal. (Schreb.) none, (Gært.) *Stam.* filaments three, very minute; anther cylindric, erect, consisting of three united, didymous anthers, tipped with a sharp-pointed appendage. (Schreb.) six, (Gært.)

Female Flowers.

Cal. none. *Cor.* one-petalled, six parted, inferior, three of the segments interior, (Schreb.) *Cal.* and *Cor.* as in the male, (Gært.) *Pist.* germ globose, six-furrowed, superior; style none; stigmas, from six to eight, very small, converging, (Schreb.) style thick, six-parted above, stigmas simple, obtuse, (Gært. from the papers of Solander.) *Perianth.* capsule depressed with twelve furrows, six cells, and six valves, dehiscent. *Seeds*, solitary, roundish, (Schreb.) two in each cell, (Gært.)

Species 1. *B. finica*, (La Marck illust. pl. 772. a branch in fruit,) a shrub. *Leaves*, alternate, lanceolate, veined. *Flowers*, axillary, single, peduncled. 2. *B. zeylanica*. A shrub. *Calyx*, monophyllous, six-parted, (Gært.) *Flowers* more than one on a peduncle, (La Marck.) 3. *B. Glochidion*, (Philippica, Cavanilles, pl. 371.) A tree. *Leaves*, alternate, lanceolate, smooth, axillary, very small and numerous.

Bradleja is nearly allied to phyllanthus; but the structure of the seeds is so singular, that it ought to be made a distinct genus.

BRADLEY, JAMES, in Biography, an eminent astronomer, was born at Shireborn, in Gloucestershire, in the year 1692, and received the first rudiments of education at a grammar school in North-leach. He was admitted a commoner of Baliol college, in the University of Oxford, March the 15th, 1710-11; and took the degree of B. A. October the 24th, 1714, and that of M. A. January the 21st, 1716-17. In 1719, he was ordained deacon and priest; and preferred in the same year by the bishop of Hereford, who had made him his chaplain, to the vicarage of Bridstow in Herefordshire. The sinecure rectory of Landewy Welfry in Pembrokeshire was also procured for him soon after by the honourable Mr. Molyneux. With such patronage he might have indulged reasonable expectations of more considerable preferments, and of attaining to eminence in the church; but his predilection for mathematical and astronomical studies gave a different direction to his views and pursuits. In these he was assisted and encouraged by his uncle, Dr. James Pound, who then resided at Wanstead in Essex, where our astronomer was curate, and where he commenced those observations that laid the foundation of his future fame.

On the 31st of October, 1721, he succeeded Dr. John Keil, as Savilian professor of astronomy at Oxford; and determining to devote himself to astronomy, so congenial to his

his taste and talents, he resigned his preferments in the church. In 1724, he communicated to the Royal Society his observations on a comet, which had appeared towards the close of the preceding year; and in 1726, he communicated to the same body, of which he had become a member, a paper containing a comparison of some observations made at Lisbon, with those made by himself at Wrenthead, on the eclipses of the first satellite of Jupiter, and published in the *Philosophical Transactions*, N^o 396. (See *Abr.* vol. vi. pt. i. p. 412.) These communications were followed by his celebrated theory of the aberration of the fixed stars, the discovery of which was announced in 1728, and published in the *Philosophical Transactions*, No. 406. (See *Abr.* vol. vi. pt. i. p. 129.) For a particular account and illustration of this theory, of the principles on which it is founded, and of the important purposes to which it is applicable, see the articles *ABERRATION*, *LIGHT*, and *STAR*.

Our author's theory, established by the most accurate observations, was approved by the most eminent mathematicians; and whilst the publication of it served in a very high degree to advance his reputation, it was the means of introducing him to the acquaintance and friendship of the earl of Macclesfield, sir Isaac Newton, Dr. Halley, and several other persons of the most distinguished character.

In 1730, Mr. Bradley was appointed lecturer of astronomy and experimental philosophy in the university of Oxford; the duties of which office, he performed till within a few years of his death. His observations on the comet that appeared in the beginning of the year 1737, were published in the *Philosophical Transactions*, N^o 446, and an abstract of them may be found in the *Abridgment*, vol. viii. pt. i. p. 210. About this time Dr. Halley, who was then the astronomer royal, and who had conceived a very high opinion of Mr. Bradley's talents and attainments, formed a design of resigning in his favour; but his death prevented the accomplishment of his purpose. However, after that event, he obtained the appointment in February 1741-2; and was, at the same time, honoured with the degree of doctor of divinity by a diploma from Oxford. He was now in a situation peculiarly favourable for the prosecution of his favourite science; and he lost no opportunity of cultivating it by the number and accuracy of his observations. Accordingly, in 1747, he announced to the Royal Society his important discovery of the nutation of the earth's axis; which was published in the *Philosophical Transactions*, No. 485; and is preserved in the *Abridgment*, vol. x. pt. i. p. 32. For a particular account of this discovery, see *UTATION*. The Royal Society, duly apprized of its value, conferred on Dr. Bradley their annual prize medal. By means of the excellent instruments, contrived by Mr. George Graham, Dr. Bradley who knew how to use them, and what allowance ought to be made for the errors to which they were subject, was enabled to observe celestial phenomena, which had escaped the notice of former astronomers; and to the vigilance and accuracy of his observations we are indebted for the above-mentioned discovery. Sensible, however, of the importance and utility of good instruments, our excellent astronomer availed himself of the yearly visit of the Royal Society to the Royal Observatory at Greenwich, to recommend an attention to this business; and he succeeded in obtaining, by the interposition of the society, in 1748, a grant of 1000*l.* from his majesty George II. to be laid out under his direction for the improvement of the astronomical apparatus. Mr. Graham and Mr. John Bird assisted him in the accomplishment of this object. To him the world is peculiarly indebted for the new naval quadrant, as well as for those other instruments which were set up in the Royal Observatory.

What use he made of them will further appear in the sequel of this article.

In 1748, Dr. Bradley was chosen a foreign member of the Royal Academy of Sciences at Paris; and about the same time he became entitled to bishop Crew's benefaction of 30*l.* a year to the lecturer in experimental philosophy at Oxford. In the year 1751, on occasion of a vacancy in the valuable living of Greenwich, it was thought to be conveniently situated for the Royal Observatory, and offered, on the part of the king, to Dr. Bradley. But he alleged that the duty of a pastor was incompatible with his other studies, and necessary engagements; and from the most conscientious and laudable motives declined accepting this valuable preferment. The king, however, determining that he should not lose by his integrity, granted him a yearly pension of 250*l.* (Feb. 15, 1752); which was continued till his death by his present majesty, and has since been regularly paid to the astronomer royal.

In 1752, Dr. Bradley was elected one of the council of the Royal Society; in 1754, he was appointed a member of the Academy of Sciences at Peterburg, by diploma from the whole body; and in 1757, he was admitted into the Academy of Sciences at Bologna; and he was also a member of the Prussian Academy of Sciences and Belles Lettres at Berlin. His observations on the comet of 1757, were published in the *Philosophical Transactions*, vol. i. part 1. p. 408.

Dr. Bradley prosecuted his studies and observations with unabated vigour and assiduity till within about two years of his death; when, probably, as the effect of his intense and little varied application, his spirits began to be depressed, and he was disquieted by an apprehension that he should survive his rational faculties; a calamity, however, which he never experienced. Nevertheless, in 1760, his bodily strength declined; and about the end of June, 1762, he was attacked with a total suppression of urine, in consequence of an inflammation of the kidneys, which terminated his life, at Chalford in Gloucestershire, on the 13th of July, in the 70th year of his age. He was interred at Mitchin Hampton, in that county, in the same grave with his mother, and his wife, whom he married in 1744, and by whom he had one daughter, who survived him.

"The public character of Dr. Bradley," says one of his biographers, "as a man of science and discernment, is well established by his works. His private character was, in every respect estimable. Temperate in his enjoyments, mild and benevolent in his disposition, insensible to the calls of wealth, distinction, and even of fame; he was indebted to his uncommon merit alone for the friendship and regard of the most eminent men of his time. His manner was engaging and communicative, and his language in conversation clear, impressive, and fluent, though he was rather more disposed to listen than to speak. That he published so little may perhaps be ascribed to his scrupulous accuracy which rendered him diffident, or more probably to the calm and placid temper of his mind, which did not strongly urge him to solicit that attention he could at pleasure command." His observations made at the Royal Observatory during 20 years, comprized in 13 fol. and two quarto volumes, unfortunately for the interests of science, were taken away at his death by his representatives, who, upon preparations being made by government for recovering them by process of law, (and an actual commencement of a suit for that purpose,) presented them to lord North, by whom they were transferred, in 1776, to the university of Oxford, of which he was chancellor, on condition of their printing and publishing them. In June, 1791, fifteen years after the Obser-

vations had been given to the university on this condition, and nearly thirty years after the death of Dr. Bradley, the Board of Longitude, seeing no prospect of their being published, passed several spirited resolutions, respecting the public right to these Observations, and the importance of the publication of them, which were transmitted to the vice-chancellor of the university; after considerable delay, in March 1792, the Board was informed that the delegates of the press in the university were proceeding with the work. About the same time in the following year the Board renewed its application to professor Hornsby, under whose direction the Observations were to be published; and, he in reply, engaged that the first volume should appear on or before March 23, in the following year. At length, however, after long delay and renewed application, and successive interruptions occasioned by the ill health of Dr. Hornsby, the first volume was published in 1798, in a splendid form, more worthy indeed the magnificence of a great university, than suitable to the use of the practical astronomer; under the title of "Astronomical Observations made at the Royal Observatory at Greenwich, from the year 1750, to the year 1762," folio: the price in sheets being five guineas. Dr. Hornsby, after having stated in a preface the causes of the delay attending the publication, proceeds to give some account of the instruments used by Dr. Bradley. The tables contained in this volume are "Observed transits of the sun, planets, and fixed stars over the meridian;" "Meridional distances of the sun, planets, and fixed stars from the zenith, southward;" "Meridional distances of the fixed stars from the zenith northward;" "With zenith sector;" and likewise "Apparent right ascensions;" the whole comprising 757 pages. Biog. Brit. Gen. Biog. Proceedings of the Board of Longitude in regard to the recovery of the late Dr. Bradley's Observations, &c. 1795, folio.

BRADLEY, RICHARD, professor of botany, in the university of Cambridge, fellow of the Royal Society of London, and foreign associate of the Academy of Sciences at Paris. He appears to have been indefatigable in his researches, and to have possessed no less ingenuity than zeal for the promotion of his favourite study; yet no memoirs have been published of his life, and we only know the time in which he lived from the date of his several publications. "*Historia plantarum succulentarum*," published in five parts, in 1716, 1717, 1725, 1727, and 1728, 4to.; they were afterwards published together in 1734, with figures. "A new improvement of planting and gardening, both philosophical and practical," first also in parts, and then collectively in 1731, 8vo. In this he gives the anatomy of plants, and their sexes. He demonstrates the circulation of the sap, from the progress of a disease of the branch, downward to the root. He also brings, as a further proof, an experiment on the lime-tree, which being planted inverted, with the branches downward, produced leaves and flowers from the roots. "The virtues and use of coffee, with regard to the plague and contagious diseases," 1721, 8vo. with an engraved figure of the plant. "Philosophical account of the works of nature." He here also contends for the double-sexes in plants. He gives an historical account of the principal gardens in Europe, and gives the preference to the public garden at Amsterdam. "New experiments relative to the generation of plants," 1724, 8vo. "Treatise concerning the manner of following ground, raising of grass seeds, and training of line and hemp," 1724, 4to. "Survey of ancient husbandry and gardening, collected from the Greeks and Romans," 1725, 8vo. with many other similar works; also "*Dictionarium botanicum*," 8vo. 1728, in

which he gives the medical properties and the countries from which the plants were originally brought. See Haller Bib. Botan. for a complete catalogue and account of his works.

BRADNINCH, in *Geography*, an ancient corporate and market town in Devonshire, England, is situated on the banks of the river Colymb, in the great road from Exeter to Bath, 8 miles from the former, 2 from Collumpton, and 163 W. from London. This barony belonged, in the time of Edward the Confessor to Brictnoel, a Saxon: and at present it is vested in his royal highness the prince of Wales. Bradninch sent members to a parliament holden at Westminster, the sixth year of Edward II. and likewise to another at Windsor in the following reign; but on account of the trouble and expence, the members were excused from further attendance.

The original charter of incorporation was granted by Reginald, earl of Cornwall, (natural son of king Henry I.), who gave his seal to be used by them, which is still continued; the corporation consists of a mayor, recorder, twelve masters, a town-clerk, and two sergeants at mace.

The town consists principally of one irregular street, nearly a mile in length; the houses, in general, indifferently built, and covered with thatch, are estimated at 253, and the inhabitants 1187, who are nearly equally employed in agriculture and manufactures; of the latter, paper-making is the chief, there being, within two miles of the town, five mills constantly at work.

Here are a market on Thursdays, and two fairs. The church dedicated to St. Denis, is an ancient edifice; the body and south aisle appear to have been built in the end of Edward III.'s reign, or early in that of Richard II. On the breaking out of a rebellion in the north of England, in the 28th year of Henry VIII., this town was appointed the head-quarters for the troops under the command of the marquis of Exeter, who was employed to act against the rebels.

BRADS, in *Carpentry*, a slender kind of nail, used in building, having no spreading heads as other nails have.

Of these, some are called *joiners' brads*, and are for hard wainscots; others, *batten-brads*, for soft wainscots; and some *bill-brads*, or *quarter-heads*, used when a floor is laid in haste, or for shallow joists subject to warp to.

BRADSBERG, *Lebn*, or *fief*, in *Geography*, a district of Norway, in the diocese of Christiania, containing the district of Tillemarken. The inhabitants are distinguished for their hardiness and valour, and have been always accounted the most warlike people of Norway. In this district are several iron founderies.

BRADWARDINE, THOMAS, in *Biography*, denominated the "profound doctor," was born at Hatfield, in Suffolk, (according to Godwin), or at Hartfield, in Sussex, (according to Bale,) towards the beginning of the 14th century, and educated at Merton college, in the university of Oxford, of which he was proctor, in 1325, and where he took the degree of doctor in divinity. He was introduced to court under the patronage of Stratford archbishop of Canterbury, and became confessor to Edward III. canon of Lincoln, and chancellor of St. Paul's cathedral in London. He accompanied the king in his warlike expeditions to France, and to his sanctity and prayers the superstition of the age ascribed the victories of this monarch more than to the bravery of the soldiers, or the skill of their general. In 1348, he was elected by the chapter of Canterbury, to succeed Stratford as metropolitan; but, in deference to the king and pope, who preferred John Uisford, he surrendered to him the archiepiscopal chair, but upon his death he was again

again elected, and confirmed by the king and pope. His consecration took place at Avignon, but his premature death prevented his being enthroned. As a theologian, and also as a mathematician and philosopher, he gained great reputation, and his character for an attention to the duties of his elevated station is highly commended. His works are lectures delivered at Merton college, and entitled "De causa Dei, et de veritate causarum contra Pelagium," libri iii. published by Henry Savile, in London, in 1618, fol.; "Geometrica Speculativa," and "Arithmetica Speculativa," printed together at Paris, in 1512; and "Tractatus Proportionum," Venet. 1555. Mosheim, probably referring to the first of the works above recited, says, "the learned Bradwardine, an English divine, advanced many pertinent and ingenious things towards the confirmation of Christianity, in a book upon Providence." Cave, Hist. Lit. t. ii. p. 429. Mosheim's Eccl. Hist. vol. iii. p. 367.

BRADY, ROBERT, a learned English historian and physician, was a native of Norfolk, and admitted, in 1643, into Caius college, at Cambridge, where he took his degree of bachelor of physic, in 1653, and that of doctor in the same faculty, by royal mandate in 1660. By the same mandate he was also elected master of his college. About the year 1670 he was appointed keeper of the records in the Tower of London, and some time after he was chosen regius professor of physic in the University of Cambridge. A letter to Dr. Sydenham, written in 1679, and proposing certain questions, which were answered in Sydenham's "Epistolæ responsoriæ dæ," is his only performance in the line of his profession. His practice was probably inconsiderable, as he employed himself chiefly in historical investigation, and was one of the representatives for the University, in the Oxford parliament of 1681, and in that of James II. in 1685. He was, however, physician in ordinary to the king. He, among others, attested the birth of the prince of Wales in 1688. He died in 1700. His principal historical works are, "An introduction to the old English history," and "A complete history of England, from the first entrance of the Romans unto the end of the reign of king Richard II." in 3 vols. fol. The first work was printed in one volume in 1684, and the substance of it may be comprised in the three following propositions, viz. 1. That the representatives of the commons in parliament were not introduced till the 49th of Henry III. 2. That William duke of Normandy made an absolute conquest of the nation. 3. That the succession to the crown of England is hereditary, and not elective. The second work was printed in two volumes; the first in 1685, and the second in 1700. The principal aim of Mr. Brady is to shew, that all the English liberties are derived from the crown by way of concession from the princes; and he adduces a collection of copious materials, chiefly epitomised from Matthew Paris, in order to prove that the Normans imposed on the English nation their own system of laws and customs. The system adopted by Brady, in consequence of some bias resulting from his obligations to the crown, and his personal attachments, and ably supported, is the basis of the general doctrine maintained in Hume's history. To this purpose it is observed by the learned Dr. Gilbert Stuart, (View of Society in Europe, p. 327,) that "Mr. Hume, struck with the talents of Dr. Brady, deceived by his ability, disposed to pay adulation to government, and willing to profit by a system formed with art, and ready for adoption, has executed his history upon the tenets of this writer. Yet, of Dr. Brady it ought to be remembered, that he was a slave of a faction, and that he meanly prostituted an excellent understanding, and admirable quickness to vindicate tyranny, and to destroy the rights of his nation." Besides his three volumes of history, Dr.

Brady also wrote, "A treatise on Burghs," in a thin folio: Biog. Brit.

BRADY, NICOLAS, an episcopalian divine, was lineally descended from Hugh Brady, the first protestant bishop of Meath in Ireland, and born at Bandon in the county of Cork, in 1659. At the age of 12 years he was removed from Ireland to Westminster school, and from thence elected student of Christ-church at Oxford. After remaining in the University about four years, he went to Dublin, where his father resided; and in the University of that city he obtained the degrees of B. A. and M. A. and afterwards, in a manner peculiarly honourable, he received the degree of D. D. His first ecclesiastical preferment was to a prebend in the cathedral of St. Barry, at Cork, and to the parish of Kinaglarchy, in the county of Cork, to which he was collated by bishop Wettenhall, to whom he was domestic chaplain. His attachment to the revolution, and his zeal in promoting it, exposed him to much suffering; and, such was his interest with Mr. Carty, king James's general, that in 1690, when the troubles broke out in Ireland, he thrice prevented the burning of his native town. Having been deputed by the people of Bandon to come over to England, for the purpose of petitioning parliament for a redress of some grievances which they had suffered, while king James was in Ireland, he resigned his Irish preferments, and settled in London. In this country he was much esteemed for his pulpit talents, and obtained several preferments, amounting in the whole to 600l. per annum; the last of which was the rectory of Clapham in Surrey, which he held, together with Richmond, to the time of his death. He was also chaplain to their majesties king William and queen Mary, and afterwards to queen Anne. He died May 20, 1729, in the 67th year of his age. His works are a translation of the "Æneids of Virgil," published by subscription in 4 vols. 8vo.; "Three volumes of sermons, published by himself;" and "Three other volumes," published by his son, in 1730; and "A new version of the psalms," in which he was assisted by Mr. Tate. This version was licensed in 1696; and is now used in most churches of England and Ireland, instead of the old and obsolete version by Thomas Sternhold and John Hopkins, made in the reign of king Edward VI. Biog. Brit.

BRADYPE, in Zoology, (in French) synonymous with BRADYPUS, the sloth.

BRADYPEPSIA, in Medicine, a term signifying slow digestion, from βραδύς, slow, and πepsis, concoction. See DYSPEPSIA.

BRADYPUS, in Zoology, the first genus of animals in the order bruta, the character of which stands thus in Gmelin: no fore-teeth; grinders in each jaw six, obliquely truncated, cylindrical, the two anterior ones longest, and far distant: body covered with hair. The species are tridactylus and didactylus, which see.

Dr. Shaw defines the generical character of the sloth, or bradypus genus, in a manner somewhat different from the preceding. He observes that there are no cutting-teeth in either jaw; that the canine teeth are obtuse, single, longer than the grinders, and placed opposite; grinders, five on each side, which are obtuse; fore-legs much longer than the hind; and the claws very long. The two species tridactylus and didactylus are retained by this writer, under their old Linnean names; a third species is also added, the urfine sloth, bradypus urinus, the uriform sloth of Pennant, and petre sloth of Catton.

It should be observed, that the immense fossil skeleton, of which Mons. Cuivier has given an accurate description under the name of Megatherium, in the opinion of that writer, must have belonged to an animal much more nearly allied to the

genus *bradypus*, or sloth, than to any other at present known. The skeleton alluded to was found in the vicinity of the river La Plata in a fossil state, a hundred feet beneath the surface of a sandy soil. It is 12 French feet long, and six in height. The original is at Madrid.

BRAE-MAR, in *Geography*, a mountainous district of Scotland, in Aberdeenshire, 27 miles N.W. from Aberdeen. In this territory the last earl of Mar began to raise a rebellion in 1715.

BRAE-Murray, a mountainous and woody tract of land, lying on the shores of Elgin and Nairn in Scotland.

BRAG, a name given to a game at cards, from the nature of it; the principal stake being won by him who brags with most confidence and address; *i. e.* who challenges the other gamesters to produce cards equal to his. In this game a pair of aces is the best brag, a pair of kings the next, and so on; and a pair of any sort wins the stake from the most valuable single card. The knave of clubs pairs with any other card in hand: but a hand of cards of less value in this game has sometimes gained the stake from one of superior value, by the confidence and art of bragging: the contest being given up on the part of the latter through fear of losing. One stake is gained by the highest card that is turned up in dealing, three cards being dealt round to each person, and the last turned up; the highest card is the ace of diamonds: the other stake is won by the person who first makes up the cards in his hands one and thirty; each dignified card passing for ten, and drawing from the pack. Each gamester deposits three stakes, one for each card.

BRAGA, in *Geography, the *Bragara* of Antonin's Itinerary, a city of Portugal, and capital of the province of Entre-Duero-e-Minho, is situated in a broad open vale, cultivated and shaded by trees, near the small river Cavado. It is subject to the archbishop of the place, who has a revenue of above 100,000 crusades, and appoints judges and two tribuna's, the one spiritual and the other temporal; so that this is the only city where the king does not appoint a corregidor, or a juiz de fora. In the coutos, or privileged places round the town, his sentence is final in criminal affairs, but not on the inhabitants of the town. Braga contains about 13,000 inhabitants, 5 parishes, and 7 monasteries. Several of the streets are wide and open, but most of the houses are small. Among the objects of curiosity in this town, we may reckon the large old Gothic cathedral, with its antiquities and treasures; and also the church and monastery of St. Fructuoso, with its treasures and relics, and standing very conspicuously on a hill without the town. Braga claims a very ancient origin. The Romans called it *Augusta Braccara*, and Roman coins are often found in the neighbourhood. Although it has much declined from its former importance, it has a hat-manufacture, which supplies a great part of Portugal with hats for the common people; and it has also an inconsiderable manufacture of knives. It exhibits signs of industry and activity; and the women are every where seen knitting, sewing, or making linen. The rich inhabitants are reckoned more reserved and unsocial than their neighbours in the other towns of Minho; and they are accused of being quarrelsome, fond of scandal, and of disagreeable manners. N. lat. 41° 26'. W. long. 8° 9'.*

BRAGA, HA, is now called Fort Dauphin, in the island of Cuba.

BRAGA, the name of a liquor brewed in Russia from wheat, which, as well as the buse, that is brewed only from millet, is turbid, foaming, affecting the head, and drank only by the common people. On the Terek, a sort of beer is brewed, called "terkaia-braga," by soaking millet in warm

water; and when it is swoln like malt, it is bruised, boiled soft, and so poured upon malted-rye and barley. By the malt the brewage is tepid, and in this state oats are added; it is then left to ferment, and the husks being strained from the drink, it is fit for use. It is of good colour, always turbid, rather clammy, disgusting to the taste and smell, and very intoxicating.

BRAGANTIA, in *Botany*. Loureiro. Flor. Coch. Cl. *gynandria hexandria*.

Gen. Ch. *Calyx* none. *Corol.* one-petalled; tube globular, with ten furrows; border divided into three, equal, obtuse, recurved segments. *Stam.* anthers six, sessile, oblong, adhering to the middle of the style. *Pist.* style thick; stigma concave; germ linear, inferior. *Pericarp.* long, quadrangular, four-celled, four-valved. *Seeds*, many.

There is only one known species, a shrub about five feet high. *Leaves* large, alternate, lanceolate, very entire, veined. *Flowers* in racemes, axillary, brown red. It grows on the mountains of Cochin China.

BRAGANZA, in *Geography, a city of Portugal, and capital of a duchy of the same name, in the province of Tra-os-Montes, seated on a spacious plain near the river Fervença. It consists of a city, fortified with towers and a castle; and a town, defended by a fort. Braganza contains two parish churches, two hospitals, four convents, and about 2700 inhabitants. It is one of the most ancient towns in the kingdom, and is said to have been built by Augustus. Its manufactures consist of silk stuffs, velvets, and program. It was erected into a duchy by Alphonso V. in 1542. John II. its eighth duke, was crowned king of Portugal by the name and style of John IV.; and it confers the ducal title on the present reigning family. N. lat. 41° 57'. W. long. 6° 48'.*

BRAGANZA, a small town on the frontiers of the marche of Trevisano, in the territory of the republic of Venice.

BRAGGOT, derived from the old British word *brag*, which signifies *malt*, and *gets*, *a honey comb*, a sort of drink made in some parts of England, of malt, with honey, spices, and other ingredients.

BRAGNAS, or **BRÆGNETZ**, in *Geography, a town of Norway, in a district of the same name, in the diocese of Christiania, seated on the side of the river Dramme, opposite to Stromsøe and Tanger. These three towns lie in a fertile vale, at small distances from each other, at the bottom of some rugged rocks, and on the margin of a bay. They are distinguished by the general name of Dramme, because they are situated on that river. Each of them has its own church, and separate jurisdiction. The inhabitants are industrious, and carry on a considerable trade. The principal exports are timber and planks. The imports are chiefly corn, and lead from England for smelting the silver ore at Kongberg. In the district of Bragnas-lehn are several iron-works, and also a glass-house. N. lat. 59° 45'. E. long. 10° 22'.*

BRAGOS, a river of Spain, in Catalonia, which runs into the Segre, 6 leagues N.E. of Balaguer.

BRAGU POINT, lies at the mouth of the great river Ava (see *AVA*); and is supposed by M. Gosselin (*Geography of the Greeks analysed*) to be the "Magnum Promontorium," which M. d'Anville concludes to be cape Romanla, at the extremity of the peninsula of Malacca.

BRAGUZ, a town of Germany, in the county of Tyrol; 27 miles W. of Trent.

BRAHE, **TYCHO**, in *Biography*, a celebrated astronomer, was the descendant of a noble family of Sweden, settled in Denmark, and born December the 19th, 1546, at Knudstorp, a small lordship near Helsingborg in Scania or Schonen. His father,

father, Otto Brahe, having a large family, the charge of his education was undertaken by his uncle, George Brahe, who adopted him as his heir. This was a fortunate circumstance for Tycho, as his father thought literature inglorious, and wished all his sons to follow the military profession. After a course of private instruction in the Latin language, his uncle sent him, in 1559, to study philosophy and rhetoric at the academy of Copenhagen; where he was casually incited to the study of astronomy by an eclipse of the sun, which happened August 21st 1560, at the precise time predicted by astronomers. Hence he was led to regard that science as divine, which accurately described the motions of the celestial bodies, and predetermined their relative positions. From this time he devoted himself to the study of astronomy, and by means of the tables of Stadius, which he purchased, he acquired a knowledge of the theory of the planets. In 1562 he was sent to study the civil law at Leipzig, in which he made a very considerable proficiency; but, notwithstanding the remonstrances of his tutor, and the application with which he was required to prosecute the study of the law, his predominant inclination led him to perfect himself in astronomy. With this view he expended the money that was allowed him for his private expenses, in the purchase of books, the difficult passages of which were explained to him by his private tutor Scultens; and by means of a small celestial globe, and nightly observations of the heavens while his preceptor was in bed, he became acquainted, in the course of a month, with the names and positions of the constellations, and the apparent motions of the celestial bodies. Inspired with the same ardent zeal in the prosecution of his favourite science, he acquired a competent knowledge of mathematics, without the assistance of a master, and invented several mathematical instruments. Having passed three years at Leipzig, it was his intention to have pursued his travels through Germany; but the death of his uncle in 1565, and the estate which was bequeathed him, required his return to his native country. Disheartened, however, in his favourite pursuits by his relations, he made the necessary arrangement of his affairs; and before the expiration of a year, he abandoned his country, and set out on his travels. Accordingly he first went to Wittenberg, and on occasion of the plague, which broke out in this town, he removed, in 1567, to Rostock, where an accident occurred that endangered his life. At a wedding-feast to which he was invited, a dispute arose between him and a Danish nobleman, on some subject of mathematics, which terminated in a duel; and having lost his nose in the conflict, he contrived to supply the defect so completely, by an artificial composition of gold, silver, and wax, that it could hardly be distinguished from the natural organ. From Rostock, Tycho continued his travels through the principal towns of Germany and Italy, and in 1569 he repaired to Augsborg, where he formed an acquaintance with the celebrated Peter Ramus, who admired his skill in the science of astronomy. After his return to Copenhagen, in 1571, he was favoured by his maternal uncle, Steno Billes, with a convenient retreat from the ceremonies of the court, and the intrusive visits of the capital, at his castle of Herritzvold near Knudstorp; which also afforded him a commodious situation for the construction of an astronomical observatory, and a chemical laboratory. During his residence with his uncle, Tycho, besides his astronomical researches, prosecuted, with his natural ardour, the study of chemistry, or rather of alchemy, to which he seems to have had an early inclination, with the chimerical view of obtaining the philosopher's stone, that he might amass wealth sufficient to enable him to settle in some foreign country. At Herritzvold he observed, in 1572, a new star in the constellation Cassiopeia. Soon after

this period he incurred the resentment of his relations by marrying a beautiful country girl, whose name was Christina, and who was the daughter of a neighbouring peasant. Although he offered various reasons in justification of his choice, the connection with a person so far below his rank alienated his family from him; and they refused to hold any intercourse with him, until Frederic II. interposed, and authoritatively effected a reconciliation. Tycho himself seems not to have repented of his choice; but found in his Christina, to whom affection had attached him, a grateful companion, and an obedient wife. In 1574, he commenced his lectures at Copenhagen, by the express desire of the king; and in these lectures he took occasion to explain the theory of the planets, introducing his explanation by a learned oration on the history and excellency of astronomy and the sister-sciences, with some remarks in favour of judicial astrology, a study no less congenial to the times than to the inclinations of Tycho himself. Disgusted by the conduct of his relations, and with his countrymen in general, our philosopher determined to quit Denmark and settle abroad. After travelling through Germany and Italy, he at length formed a purpose of fixing his residence at Basle, to which he was induced by the salubrity of the air, the cheapness of living, the celebrity of the university, and the opportunity this situation would afford him of maintaining a correspondence with the astronomers of France, Germany, and Italy. With this view he returned to Denmark; but whilst he was preparing for his removal, he received an unexpected message from the king. Frederic, secretly apprised of his intentions, was unwilling that Denmark should be deprived of so great an ornament; and in order to retain him in his dominions, offered him protection, and, with a liberality which did honour to the monarch as well as to the philosopher, presented him with the island of Huen, and promised to erect the buildings and to provide the apparatus necessary for his scientific pursuits. He also settled on him a pension of 2000 crowns a year, and gave him a fee in Norway, and a canonry of Roschild, which produced a thousand more.

This liberal offer Tycho gratefully accepted; and repairing to Huen, he was present, on the 8th of August, 1576, at the laying of the first stone of a magnificent house, which he afterwards called Uraniburg, or the Castle of the Heavens. This was a building 60 feet square, containing a spacious suit of apartments, an observatory, and a subterraneous laboratory; for the erection of which the king supplied 100,000 rix-dollars (20,000*l.*), and Tycho himself expended no less a sum. He afterwards constructed a detached building for his observatory, which he called Stiernberg, or the Mountain of the Stars. In this retreat he passed 20 years, and, by his observations and study, greatly contributed to the improvement of the science of astronomy. He maintained ten or twelve scholars, whom he instructed in mathematics and astronomy, and whom he employed as his assistants in his observations. His retreat was not, however, that of an hermit, who secluded himself from society; but he lived in a sumptuous and hospitable manner, affording free access and liberal entertainment to all visitors. Among these were persons of the highest rank, such as Ulric, duke of Mecklenburgh, with his daughter Sophia, queen of Denmark; William, landgrave of Hesse-Cassel; and James VI. king of Scotland, and afterwards James I. of England, on occasion of his repairing to Copenhagen in 1590 for the purpose of concluding his marriage with the princess Anne. James remained with Tycho eight days; and, on leaving him, made him a handsome present, granted him a royal licence for the publication of his works, accompanied with an honourable testimony to his talents and learning, and composed

some Latin verses in his praise, more expressive of esteem and admiration, than remarkable for classic elegance. In 1592 Tycho had the honour of a visit from his own sovereign, Christian IV., then in the 15th year of his age; who expressed great satisfaction in examining his astronomical and chemical apparatus, and proposed to him several questions on various points of mathematics and mechanics, and particularly on the principles of fortification, and the construction of ships. He was also highly delighted with a gilt tin globe, which represented the face of the heavens, and being turned on its axis, exhibited the rising and setting of the sun, together with the motions of the planets and heavenly bodies. The king, upon being presented with this curious machine, acknowledged the favour by the donation of a gold chain, and by an assurance of inviolable protection and encouragement. Notwithstanding these assurances, the enemies of Tycho, jealous of his merit, or offended by the violence of his temper, and the severity of his satire, contrived, in 1596, under various pretences, to divert the young king's attachment, and to induce him to deprive the astronomer of his pension, his fee, and the canonry of Roschild. Thus deprived of the means of supporting his expensive establishment at Uraniburg, Tycho was reduced to the necessity of quitting his favourite residence, and repairing to Copenhagen, where for a short time he continued his observations. But the malevolence of his enemies pursued him; and therefore, after having transported from Uraniburg all those parts of his apparatus which could be removed, he departed from Copenhagen with his wife and family, landed at Rostock, and remained a year at Wansbeck, with his learned friend Henry Rantzau.

About this time he published his astronomical treatise, intitled "*Astronomia instaurata mechanica*," and having dedicated it to the emperor Rodolphus II., who had a taste for mechanics and chemistry, he received from him an invitation to settle at Prague, whither he removed, towards the close of the year 1598. The emperor granted him a magnificent house, assigned him a pension of 3000 crowns, and promised him a fee for himself and his descendants. Here he seemed to have obtained a fixed settlement for himself, and his sons, and his scholars, among whom was the famous Kepler; but he did not long enjoy the advantages of this situation. About a year before his death, he felt symptoms of declining health, occasioned, probably, by his intense application, and by the chagrin he had suffered on his removal from Uraniburg; to these he was himself conscious, though he concealed them as much as possible from his friends. But the immediate cause of his decease was a strangury, brought on by drinking more than he was accustomed to do, at the table of a lord named Rosenbergh, and by an imprudent retention of urine; and attended with excruciating torments, which occasioned a violent fever, and a temporary delirium; in the paroxysms of which he was heard frequently to exclaim, "*Ne frustra vixisse videtur*;" i. e. that I may not seem to have lived in vain. When the fever subsided, and he recovered his senses, he was well apprised of his approaching end. In the prospect of it he gave necessary orders with composure and resignation, amused himself with composing an extempore copy of verses, sung various hymns, offered up prayers to the Supreme Being, recommended to his family and friends piety and submission to the divine will; charged his sons, that none of his works should be lost; exhorted his pupils to persevere in their studies, and conversed with Kepler on the abstruser parts of astronomy, and requested him to complete the Rodolphine tables which he had constructed for regulating the motions of the planets. Thus employing his last moments,

he expired so quietly, that he was neither heard nor seen by any of those who were present, to breathe his last. He died October the 24th, 1601, in the 55th year of his age; and was very magnificently interred in the principal church at Prague, where a noble monument was erected to his memory. His wife, two sons, and four daughters, survived him.

Tycho Brahe was a man of moderate stature, with light red hair, and a countenance that was rather handsome. As to his mental powers, he combined energy and activity; and thus endowed, he was admirably qualified for arriving at those eminent attainments by which he was distinguished. His merit as an astronomer is unquestionable; for though he rejected the simple and beautiful system of Copernicus, and endeavoured to reconcile the absurdities of the Ptolemaic hypothesis, he formed a system conformable to the more obvious phenomena, but which did not require any motion of the planet which we inhabit. To this system (for an account of which, see SYSTEM) he was so zealously attached, that, in his last moments, he desired his favourite scholar, the great Kepler, to follow his hypothesis rather than that of Copernicus. For a further account of his discoveries, as well as for a concise abstract of his history, see ASTRONOMY. As a poet, Tycho wrote some Latin verses, which are not altogether destitute of classic elegance. He had also a taste for building; he drew the plan of the castle of Cronberg, and sketched the design for the noble mausoleum of Frederic II., which was executed in Italy, and erected in the castle of Roschild. As a medical practitioner, he was fond of being consulted, and gave his advice and medicines gratis; he invented an elixir, which he calls an infallible remedy for epidemic disorders, and of which he published the recipe in a letter to the emperor Rodolphus. He was likewise a good mechanic, and constructed several automata, which he took delight in exhibiting to the peasants; and in his apartments at Uraniburg he had several contrivances, which were calculated to deceive and astonish those who came to visit and consult him. He was also very much devoted to the study of chemistry; and expended as much on the terrestrial astronomy, as he styled it, as on the celestial; but he has left no writings on this subject. Indeed, his researches in this department of science, like those of his contemporaries, were directed to the visionary desiderata. To judicial astrology he was addicted to a degree that is truly astonishing; and he manifested a proneness to credulity and superstition, very unsuitable to his learning and judgment. He was an attentive observer of good and bad omens; inasmuch, that if he met an old woman on first leaving his house, or a hare crossed him upon his journey, he would instantly return home. He took pleasure in being consulted as a fortune-teller; and pretended, that his knowledge of the heavenly bodies enabled him to observe horoscopes, and to foretell future events. At his house at Uraniburg, he kept an insane person, who sat at his feet during the time of dinner, and whom he fed with his own hand; and he noted down any incoherent expressions which were uttered by this person, under a persuasion, that the mind, in a state of emotion, was capable of predicting future events; and he even believed, that, if any inhabitant of the island was taken ill, this idiot could predict his recovery or decease.

As to his natural disposition, it was irritable, impetuous, morose, and inflexible; and he indulged a humour for railery, to a degree that gave offence; but while he rallied others without reserve, and becoming caution, he was easily provoked by the railery of others. If, however, we divert our attention from the unfavourable to the brighter parts of his

his character, we shall be justified in adopting the eulogy of his panegyrist Joffens, in his "Funeral oration;" who observes concerning him, that "His studies were life; meditation, delight; science, riches; virtue, nobility; and religion, his constant guide." Gassendus, in his "Equitis Dani Tychonis Brahe Astronomorum Coryphæi vita," gives the following list of his principal writings:

1. "An account of the new star which appeared Nov. 15th, 1572, in Cassiopeia," Copenhagen, 1573, 4to.
2. "An oration concerning the mathematical sciences, pronounced in the university of Copenhagen, in 1574;" published by Conrad Aslæ, of Bergen, in Norway.
3. "A treatise on the comet of the year 1577, immediately after it disappeared." Upon revising it nine years afterwards, he added a 10th chapter, printed at Uraniburg, 1589.
4. "Another treatise on the new phenomena of the heavens;" in the first part of which he treats of the restitution, as he calls it, of the sun, and of the fixed stars; and in the second part, of a new star which had then made its appearance.
5. "A collection of astronomical epistles," 4to. Uraniburg, 1596; Nuremberg, 1602, and Francfort, 1610. It was dedicated to Maurice, landgrave of Hesse; because it contains a considerable number of letters of the landgrave William, his father, and of Christopher Rothmann, the mathematician of that prince, to Tycho, and of Tycho to them.
6. "The mechanical principles of astronomy restored," Wandersburg, 1598, folio.
7. "An answer to the letter of a certain Scotchman concerning the comet in the year 1577."
8. "On the composition of an elixir for the plague; addressed to the emperor Rodolphus."
9. "An elegy upon his exile;" Rostock, 1614, 4to.
10. "The Rodolphine tables," revised and published by Kepler, according to Tycho's desire.
11. "An accurate enumeration of the fixed stars, addressed to the emperor Rodolphus."
12. "A complete catalogue of 1000 of the fixed stars, which Kepler has inserted in the Rodolphine tables."
13. "Historia cælestis; or, a history of the heavens, in two parts;" the first containing the observations he had made at Uraniburg, in 16 books; the latter containing the observations made at Wandersburg, Wittenberg, Prague, &c. in 4 books.
14. "An epistle to Cæsar Puer," printed at Copenhagen, 1668.

The apparatus of Tycho Brahe, after having been transported from place to place, during his life, was, after his death, purchased of his heirs by the emperor Rodolphus for 22,000 crowns of gold. The persons to whose custody he committed them, concealed them from inspection; and thus they remained useless till the time of the troubles of Bohemia, when the army of the elector palatine plundered them, breaking some of them, and applying others to different uses. The great celestial globe of brass was preserved; carried from Prague, and deposited with the Jesuits of Neyssa in Silesia, whence it was afterwards taken, about the year 1633, by Udalric, son of Christian, king of Denmark, and placed in the hall of the royal academy at Copenhagen. Gassendi, ubi supra. Moreri. Coxe's Travels in Denmark, &c. vol. v. p. 161. &c. 8vo. Gen. Dict.

BRAHELINNA, in *Geography*, a town and royal demesne of Sweden, in the province of Savolax.

BRAHLESTAD, a town of Sweden, in the province of East Bothnia, built by count Peter Brahe in 1652, and invested with the privileges of a town. It has a commodious harbour.

BRAHILOW, or **BRILA**, a town of Walachia seated on the Danube, near the confines of Moldavia, opposite to Sibiria. N. lat. 45°. E. long. 27°. 14'.

BRAHIN, a town of Lithuania, in the palatinate of Minsk; 48 miles E. of Mozyr.

BRAILLER, *Fr.* to scream and roar in singing vulgarly, like country psalmodists and parish clerks.

BRAILS, in *Sea Language*, a general name given to all ropes which are employed to *haul up*, or coil to their yards, the bottoms, lower corners, and skirts of the great sails, for the more ready furling them whenever it becomes necessary. In particular, it is applied to ropes, fastened at different places on the utmost ridge of the mizen, and passing through blocks on the mizen mast, for the purpose of bringing or brailing up the sail to the mast; boats with either gaff or sprit-sails have generally brails attached to these sails. The operation of thus drawing them together, is called *brailing them up*, or *hauling them up in the brails*.

BRAIN, in *Anatomy*. The brain is a soft and somewhat white substance, situated in the cavity of the skull, and corresponding in form to that cavity. Its parts are supported by a firm membrane, called the *dura mater*, and its substance is immediately invested by a more delicate membrane, named the *pia mater*. The Greeks termed these membranes simply *meninges*, whilst the Latin writers gave them the name of *matres*, from the supposition, that they were the origins of the other membranes of the body. We shall first describe the dissection of the brain; which will comprehend an account of its membranes, of its general divisions, and of the appearances found in the interior of the organ.

It may not be improper to premise a few general observations. The structure of the brain is remarkably constant and uniform, very seldom deviating from the accustomed standard. Varieties in formation occur not unfrequently in most other parts of the body; but the parts of the brain preserve an almost invariable relation of form, position, magnitude, and connection, which seems to prove, that the right performance of the functions of this organ requires an exactness in the structure of individual parts. The brain is symmetrical; all its parts are double; even those which being situated in the middle, appear on superficial examination to be single, will be found, by more attentive investigation, to consist of two symmetrical portions, e. g. the corpus callosum septum lucidum and medulla spinalis. The weight of the brain, according to Soemmerring, varies from 2lb 5¼ oz. to 3lb 3¾ oz. (De corpus humani fabrica, tom. iv. § 23.) Out of two hundred brains which he has examined, none weighed four pounds, whereas Haller states its weight generally at five pounds. This error must of course affect the account, which that author gives, of the proportion between the weight of the brain, and that of the body. The weight of the brain, compared with that of the body, is in an inverse ratio to the age of the subject. It is soft and almost fluid in young subjects, becomes of a more solid consistence with increasing age, and is firmest in old persons.

Dissection of the brain. An incision should be made from ear to ear through the scalp, which is to be reflected from the cranium forwards and backwards. The cranium is next to be sawn through in a circular manner, as low down as convenient.

In lifting off the top of the skull, it is torn from the *dura mater*, which is closely connected to it by vessels and cellular substance. The *dura mater* may be, therefore, regarded as the periotum of the internal table of the skull, as well as the membrane which invests and supports the brain. The surface of the membrane is covered with bloody points, which are the orifices of the torn vessels that connected the *dura mater* to the inner table of the bone. These are more numerous in the course of the sutures than elsewhere, but abundant in every part. This is manifest from the pores observable in the internal table of the skull; and there can be no doubt but that more blood is sent into the bone for

its nutrition, from the dura mater, than from the pericranium.

The dura mater, which is a very strong, dense, and inelastic membrane, consists of two layers, intimately connected in general, but separated from each other at particular parts, so as to leave vacancies between them called sinuses, into which the veins of the brain pour their blood. (For an account of the sinuses, see *VEINS, distribution of.*) Its structure is obviously fibrous; the fibres not following any regular distribution, but intersecting each other in every direction. After being macerated for some time in water, it is resolved into a firm tendinous kind of cellular texture. The sides of the membrane are covered by the ramifications of the arteria meninge media, which are very conspicuous on the mere removal of the skull cap, each branch being accompanied by two veins. (For the description of this artery, see *ARTERIES, distribution of.*) In the middle of the superior surface of the membrane is a depression, extending from the lower part of the os frontis to the tentorium, which denotes the situation of the superior longitudinal sinus.

We also observe, on the upper part of the dura mater, clusters of little white granular bodies, termed glandulæ Pacchioni. These vary in number and situation; sometimes they rise in little heaps on the side of the longitudinal sinus, and are lodged in considerable cavities formed in the bone for their reception. In other instances the clusters of these glands are so small and few in number, that they may escape observation. In dissecting the brain, we are in the next place to cut the dura mater round on a level with the bone which we have sawn, except in front and behind, where the falx is situated. We are then enabled to reflect it on either side from those membranes which immediately invest the brain. Its inner surface is smooth and shining, and has no connection with the pia mater, except at the upper part, near to the longitudinal sinus. The connection at this part is of two kinds; one by means of large veins, which, coming from the surface of the brain, pass between the layers of the dura mater to terminate in the longitudinal sinus: the other by means of clusters of glandulæ Pacchioni, which adhere equally to the under layer of the dura mater, and surface of the membranes, which more immediately invest the brain. These glands are found not only in the outer and inner layers of the dura mater, but frequently they communicate and make one cluster through an opening in the membrane. They are also found attached to the inner surface of the longitudinal sinus. The use of these glands, as they are called, is not known.

The internal layer of the dura mater forms, by its secession from the outer, processes for the support of the brain: the principal of these are, one which descends perpendicularly between the hemispheres of the cerebrum, and is called the falx cerebri, from the shape of its lower edge; and one, which proceeds transversely, supporting the back lobes of the cerebrum, and separating them from the cerebellum. As this is stretched across over the cerebellum, it is called the tentorium cerebelli. The falx is a duplication of the internal layer of the dura mater, which begins to recede from the external at the æthmoid bone, and incloses the crista galli of that bone. It proceeds in like manner from the spine, and from the middle of the os frontis, from the sagittal suture of the parietal bones, and from the upper half of the perpendicular ridge of the occipital bone, and it terminates behind in the tentorium, gradually increasing in breadth to its termination.

The arteria meninge media is the principal source of the arterial supply of the dura mater: it receives some small branches in front from the internal carotid, ophthalmic, and

pharyngeal arteries: behind from the occipital and vertebral vessels. Its veins open into the nearest sinuses. The accurate researches of Lobstein and Wrisberg have shewn that no nerves can be traced to this membrane. (See Comment Gottingens: an. 1777. Ludwig collect. scriptor. neurol. minor. tom. 1.)

After the connection of the dura mater with the subjacent membranes is broken, the front of the falx is to be divided from the crista galli, and that process is to be turned back from between the hemispheres of the brain. Then the brain and its immediate investing membranes become fairly exposed to our examination. These membranes were considered as one, and called the pia mater, till Ruysch demonstrated that they were two. The outer one is uniformly spread over the visible surface of the brain, is of a pale white colour, yet in some degree transparent, very thin, devoid of evident vessels, and is named the tunica arachnoidea. It is seen most distinctly where it passes between the two lobes of the cerebellum: in most other parts of the brain it adheres very firmly to the pia mater. Although the tunica arachnoidea has in its natural state no visible vessels, yet, when it is inflamed, its vessels become enlarged and evident, and there can be no doubt but that it contributes at all times to secrete its share of that liquor which preserves it separate from the dura mater. In inflammation of the pia mater and tunica arachnoidea, it is common to have a turbid and sometimes puriform fluid effused between it and the dura mater, which is doubtless secreted by the inflamed membrane.

The membrane which lies beneath the tunica arachnoidea is called the pia mater; it covers the whole surface of the brain, sending down processes between all its convolutions. It is extremely vascular, and a great portion of the blood, which the brain receives, is spread out upon its surface in minute vessels: from these others proceed capable of admitting very subtle injections. From the great number of vessels, which ramify on this membrane, Soemmerring calls this membrane, membrana vasculosa cerebri. Its vessels are fewer and smaller where it covers medullary parts, than where it is in contact with the cortex. The processes which pass from its inside no where touch medullary matter. The outer surface is tolerably smooth; the inner universally villous, from the torn orifices of innumerable vessels which entered the substance of the brain.

The membranes of the brain having been examined, may be removed; and then the surface of the cerebrum is brought into view, which appears convoluted, so as to resemble the windings of the small intestines. These convolutions do not in general penetrate more than one inch, or one inch and a half, into the substance of the cerebrum. A very deep fissure is however observed extending itself obliquely upwards, and backwards, from the ælæ of the sphenoid bone; and this is called the fissura magna Sylvii.

The encephalon or brain is divided into the cerebrum, cerebellum, and medulla oblongata.

The cerebrum is the uppermost portion, and by much the largest, and that which first claims our attention in dissection. It rests upon the tentorium and petrous portions of the temporal bones behind, and upon the sphenoid ælæ, and the orbital processes of the frontal bones in front. Its superior surface presents a regularly convex oval, narrower in front than behind. This oval is divided into two equal parts named hemispheres, by a deep longitudinal fissure, into which the falx cerebri descends. The depth of this cleft being greater than the breadth of the falx, the opposed plane surfaces of the hemispheres are loosely united below the inferior edge of the falx, by vessels and cellular substance.

stance. The hemispheres are conjoined below, and the part which unites them can be perceived at a considerable depth from the surface, by dissecting the hemispheres from each other. It is about three inches in length, and is called the corpus callosum. (In a singular instance, which occurred to Mr. Carstle, the falx was deficient, and there was no division into hemispheres. See Transactions of a Society for the improvement of medical and chirurgical knowledge, vol. i. p. 212.) Each hemisphere is divided into two lobes. This subdivision is the consequence of the projection of the transverse spinous process of the sphenoid bone, which divides the bottom of it into two surfaces; and it is from this division that the fissura Sylvii commences. All that part of the hemisphere which is in front of the fissura Sylvii, and which rests on the orbit, is called the anterior lobe; and all that which is supported by the sphenoid bone, by the petrous part of the temporal bone, and tentorium, is called the posterior lobe. Such is Haller's division of the cerebrum, which has been generally adopted by anatomists. Some authors, however, divide the posterior or great lobe into two parts; calling that portion of it, which rests in the middle fossa of the basis crani, the middle lobe of the brain; and that which is supported by the tentorium, the posterior lobe.

As there are no distinguishable parts in the upper portions of the hemispheres of the cerebrum, so in dissection it is customary to pare all these away, nearly to the level of the corpus callosum, in order that we may be able more easily to open, and more particularly to examine, certain cavities which are situated on either side of that body, and which are called the lateral ventricles. On making a section of the brain we perceive that it is composed of two substances, an exterior one which is of a grey colour, and an interior one which is white. These are termed simply the cineritious and white substances, or substantia cinerea and alba; or, from the former surrounding the latter, as the bark does the wood of a tree, they are named in contra-distinction, the cortical and medullary substances of the brain. The cortical part receives so great a supply of blood, that after a successful injection it appears almost composed of vessels; the medullary substance on the contrary has very few vessels. In the crura cerebri is a small portion of a black substance, named by Soemmerring locus niger; and in some places, a fourth substance, partaking of the appearances of the cortical and medullary matter, is described, as in the under surface of the posterior lobe, and is named by Soemmerring portio intermedia.

When the substance of the two hemispheres has been removed by repeated horizontal sections, as low as the surface of the corpus callosum, we see the greatest extent of medullary matter, that can be demonstrated in the brain. The medulla of the two hemispheres is united by the corpus callosum. The margin alone is grey; all the rest is white. This appearance is the centrum ovale of Vieussens; the maximus medullæ orbis of Soemmerring; a more complete view of the corpus callosum is now obtained. This part is overlapped by the edges of the two hemispheres, in such a manner that it is completely hidden, until the hemispheres are either held asunder, or removed by dissection. Its length is equal to that of one half of the hemisphere, and it is placed in such a situation, that a space equal to one third of its own length is left, between its anterior extremity and the front of the cranium, and another twice as long between its posterior part and the back of the skull. The breadth of this part is about $\frac{1}{2}$ of an inch, but less in front. Its upper surface is convex. It turns downwards in front and behind, so as to form two rounded extremities, which are the

bouretlets anterior and posterior of Vieq d'Azyr. Two prominent lines run through the whole length of the corpus callosum, with a depression between them, which is called the raphe. Transverse lines proceed from these on both sides at right angles.

The two lateral ventricles (ventriculi tricornes of Vieq d'Azyr) are situated in the substance of the brain, by the side of the corpus callosum, (one in either hemisphere,) and should be opened by an incision along the margin of that body. The roof of the ventricle being dissected off, its course becomes apparent. The cavity begins in the front lobe of the brain, as far forwards as the commencement of the corpus callosum. This portion of the ventricles, which is formed between the front of the corpus striatum and the medullary matter of the front lobe, turns rather outwards, and is distinguished by the name of cornu anterius. The ventricle then runs from before backwards, in a direction parallel to that of the corpus callosum, and diverging from the opposite one. Afterwards it bends downwards, something like the turning of a ram's horn, and returns obliquely from behind forwards, to terminate almost under its superior extremity, being situated however behind that, and more externally. This is the cornu inferius, or descendens, or reflected horn of the ventricle. At the place where the ventricle bends in order to run downwards, there is a particular elongation passing into the posterior lobe, forming a triangular pointed cavity, terminating in a cul de sac, with its point turned inwards. This is the digital cavity or cornu posterius of the lateral ventricle. Its length and size vary considerably in different subjects and often are very dissimilar in the right and left sides of the same brain. It sometimes extends quite to the posterior part of the back lobe, and at others is barely demonstrable. This part of the ventricle is peculiar to the human subject and simiæ. These ventricles, and some other cavities, which will be presently described, are lined with a smooth membrane, and contain a small quantity of a watery fluid, which serves to preserve the parietes of the ventricle separate and distinct from each other, and to fill up the spaces which are left between the convexities which constitute the sides of the cavity. The disease of hydrocephalus is a morbid increase of quantity in this fluid, which accumulates sometimes to the amount of some pounds, distending and dilating the ventricles enormously. The learned Soemmerring, who may justly be esteemed the first of modern anatomists, places the sensorium commune in this fluid. He has traced all the nerves of the brain to the sides of the ventricles; and concludes, that impressions made on these nerves will be transmitted to the water of the ventricles, which he considers as the organ of the soul. (See his dissertation ueber das organ der seele, Berolini, 1796, 4to.)

The two lateral ventricles are separated by a perpendicular partition, which descends from the inferior surface of the corpus callosum to the fornix. This septum, which is broad in front, grows gradually narrower behind, and, at the posterior part of the ventricles, does not exist at all; the corpus callosum and fornix being there continuous. It is composed of two thin layers, separated above and uniting below at an acute angle, so as to leave between them a triangular cavity, called the fifth ventricle of the brain, or ventricle of the septum lucidum. The corpus callosum may be cut off from the septum lucidum, so as to shew the two layers and intervening ventricle.

The fornix is composed of two crura, which arise in front of the brain, from the corpora subrotunda. These, which are round in shape, converge, and unite to form the fornix, which lies between the two corpora striata, and on the upper

surface of the *thalami nervorum opticorum*. It separates behind into two posterior crura, which are thin, broad, and flat, and pass into the reflected horns of the ventricles, where they run along the front of the hippocampus major, and soon terminate. Their posterior margin is connected to the hippocampus; the anterior is loose and floating, and forms the *bandelette de l'hippocampe* of Vicq d'Azyr. The triangular space left between the posterior crura fornicis, where they diverge to enter the reflected horns of the ventricles, is filled up by medullary matter marked on its under surface by several oblique lines; it is called *trigonum psalterium*, or *corpus psalteroides*. It may be regarded as the under surface of the corpus callosum. The origin of the fornix in the front of the brain is situated at some distance from the corpus callosum; it rises gradually in an arched manner, until it reaches the under surface of the corpus callosum, before its separation into the posterior crura. On this circumstance depends the different breadth of the septum lucidum in the front and back part of the ventricles. Under the anterior part of the fornix is a small slit-like opening, by which the two lateral ventricles communicate. This aperture is just in front of the *thalami nervorum opticorum*, and precisely over the *foramen commune anterius*. It becomes considerably enlarged, in cases of great accumulation of fluid in the ventricles. The communication between these cavities would be much more extensive, did not the fornix behind this aperture adhere to the choroid plexus and velum, which intervene between its under surface and the optic thalami. The thin edge of the fornix, and of its posterior crus, receives vessels from this vascular membrane. The fornix should now be cut through opposite to the communication just described. By turning up the anterior part of this body, its origination by two distinct crura becomes clearly seen, which would not be satisfactorily made out on the upper surface. By reflecting the posterior part, the *psalterium*, the separation of the posterior crura, their course, flat shape, extenuated margin, and pointed termination on the hippocampus, will be clearly exposed.

In this stage of the dissection, the situation and connections of the choroid plexus may be traced. This is a production of the pia mater, containing a vast number of tortuous, arterial, and venous ramifications, entering the reflected horn of the ventricle, and ascending into the superior part of the cavity. It is broader and larger below, diminishes in size, as it proceeds along the upper part of the ventricle, and terminates just at the opening of communication between the two lateral ventricles, by joining the opposite plexus. The right and left plexuses are joined together by a middle expansion under the fornix, which is the velum, five plexus *choroideis interpositus* of Haller, or the *rete*, or *tela choroidea* of Vicq d'Azyr, who has illustrated these parts by the most beautiful coloured plates which have ever been published on any anatomical subject. (See particularly *Tab. 7.* also *Tab. 5* and *8.*) The two plexuses, with the intervening velum, cover the hippocampi majores, the pineal gland, and upper surface of the optic thalami. They support the fornix and *psalterium*, intervening between them and the optic thalami, and giving blood-vessels to all the parts just enumerated. When successfully injected, these plexuses resemble a mere net-work of blood-vessels. They contain numerous little glandular bodies, which are often enlarged, so as to resemble hydatids. The veins of the choroid plexus form a large trunk situated in the middle of the velum, and named the *vena magna Galeni*. This, passing in the angle of connection of the falx and tentorium, constitutes the *torsular Herophili*. The choroid plexuses and velum should now be reflected, to expose clearly the

eminences which form the sides of the lateral ventricles. We now see, in the middle of the under surface of the velum, a small and narrow portion of plexus, which was first described and represented by Vicq d'Azyr under the name of *plexus de la glande pineale ou du troisieme ventricule*. (*Tab. 7. fig. 4. p. 21.*) The anterior and superior eminence in each lateral ventricle is oblong, smooth and grey on its surface, but composed internally of a striated mixture of cortical and medullary substance, whence it derives the name of *corpus striatum*. The more deeply we cut into this body, the more complicated does its striated texture appear. The corpora striata are large, convex, and near to each other in front; they diminish in size, and diverge behind, being separated by the optic thalami, and presenting on the whole a pyriform appearance. The posterior eminence of the lateral ventricle is called the *thalamus*, or *colliculus nervi optici*. It is found behind, within, and rather below the former. Its surface is white, but the interior of the body is formed of a striated intermixture of cortical and medullary matter; in shape, it is nearly hemispherical, except that it is surmounted above by a more or less prominent oval tubercle, which extends from before backwards. The convexities of the optic thalami are turned towards each other, and are connected by a cineritious union, which is called the middle commissure of the brain, or soft commissure of the optic thalami. This union, which is naturally of a soft and delicate nature, is torn by the mere weight of the parts, when the brain has been kept a few days before it is used for dissection. Hence some anatomists have denied its existence altogether. This is the opinion of Sabatier, derived, as he says, from the most exact observation and very numerous dissections. (*Traité d'Anatomie*, tom. ii. p. 32.) The careful examination of a recent brain will shew the error of this celebrated anatomist; and if authority be required on a point which can be made the subject of demonstration, it will be sufficient to cite the names of Vieussens, Winslow, Morgagni, Soemmerring, and Vicq d'Azyr. These bodies separate from each other below, and form a cavity, which is the third ventricle of the brain. The *thalamus nervi optici* is separated from the corpus striatum, by a whitish, fibrous, and flat cord, which is broader in front than behind. This arises from the front of the third ventricle, and following the posterior margin of the corpus striatum, was named by Willis *limbus posterior corporis striati*. It descends into the inferior horn of the ventricle, and terminates on the upper surface of that cavity. This part is the *centrum geminum femicirculare* of Vieussens, the *tænia femicircularis* of Haller, *bandelette striée* of Vicq d'Azyr, and *stria cornæ* of Soemmerring. The posterior and reflected horns of the ventricle contain certain eminences, which are named *hippocampi*. The posterior margin of the corpus callosum mixes on either side with the medullary matter of the brain, and produces in the digital cavity one or more small projections, corresponding in direction to the course of the cavity, and named *colliculus*, or *unguis cavæ posterioris ventriculi lateralis* (Perrot, or *hippocampus minor* of Vicq d'Azyr.)

In the descending horn a very large and conspicuous medullary body is seen, extending to the termination of the ventricle, where it forms a bulbous extremity divided by three or four fissures, in such a manner as to bear an obscure resemblance to the foot of an animal. The eminence is named *hippocampus major*, or *cornu Ammonis* (*processus cerebri lateralis* Soemmerring *de corporis humani fab.* tom. iv. § 36.), and its termination *pes hippocampi*.

It is necessary to remark in this place, that the hippocampi are continuations of the medullary matter, which forms the corpus callosum; and that the corpus callosum itself,

itself, the septum lucidum, fornix, and psalterium, are parts of one continuous medullary body. To understand clearly the relative position and connections of these parts, it is absolutely necessary to resort to the proper source of all anatomical descriptions, dissection of the parts, which will show how inadequate a notion of these circumstances is obtained from the best description.

An oval opening is seen between the optic thalami in front, named the foramen commune anterius, which leads into the third ventricle. As it is situated under that part of the fornix, which is not adherent below, it opens by means of the slit above mentioned, as forming the communication between the two lateral ventricles, into each of these cavities. Hence they communicate with the third by means of this aperture. The foramen commune posterius, which opens also into the third ventricle, is a triangular space left between the optic thalami at the posterior part, and only exposed when the choroid plexus and velum have been reflected.

On drawing asunder the thalami, and separating their soft commissure, we expose a considerable oblong cavity, which is named the third ventricle. In front of this a round medullary cord appears just under the anterior crura of the fornix, which passes transversely between the two hemispheres, and is continued in a distinct form, for the space of an inch, into the substance of the brain on each side, as will be best seen by a transverse section. A similar body is seen at the back part of the ventricle, which is not however produced into the hemispheres like the anterior one; these are the anterior and posterior commissures of the brain. There is a round aperture under the anterior commissure, beyond which the ventricle terminates by a pointed and conical extremity, from which a small and short cylindrical process is continued to the pituitary gland, under the name of the infundibulum. It is a matter of dispute among anatomists, whether or not this process be hollow. The foramen commune anterius leads through the third ventricle into this opening. Just before the posterior commissure a round opening is found leading through a short canal, in front of the tubercula quadrigemina, into the fourth ventricle. The canal of communication is named canalis medius, iter ad quartum ventriculum, or aqueductus Sylvii.

The pineal gland, or conarium, is found at the back of the optic thalami. Its size is about that of a small horse-bean; its colour a reddish grey; its shape most frequently conical. Two small medullary cords connect it to the posterior commissure and to the optic thalami; they are inserted in the convex part of the thalamus, and form a distinguishable prominent line, extending quite to the front of that body, as is very beautifully represented in the 8th plate of Vieq d'Azyr. This gland is covered by the velum, and has immediately over it the two small plexuses, which have been already described under the name of plexus de la glande pineale. In the substance of the pineal gland, or in the medullary matter, which connects it to the optic thalami, there is found a small quantity of a gritty matter nearly resembling sand. It consists of a number of little semi-transparent and light yellow grains. Sommering, who first discovered that this was a part of the healthy structure of the brain, call it the acervulus of the pineal gland. (*Dissertatio de lapillis intra vel prope glandulam pinealem sitis*, in Ludwig. collect. scriptor. anatol. minor. tom. iii.)

The pineal gland rests on a square portion of the brain, which rises from behind and below the optic thalami, and below the level of the tentorium. The surface of this is divided into four projections or tubercles, and hence it has acquired the name of crura quadrigemina. Of these bodies the two superior are larger and more plane; the inferior more

convex. From the lower bodies a medullary production extends to the upper part of the crura cerebelli. Vieussens described this part by the name of the valvula magna cerebri, supposing it to perform the office of a valve to the fourth ventricle. Vieq d'Azyr, whose incomparable plates throw new light on this as well as on every other part of the subject, calls it the "lame medullaire du cervelet." The lateral portions of this production constitute pretty strong medullary bodies, which are the "processus a cerebello ad testes" of Haller. "les pedoncales ou colonnes de la lame medullaire" of Vieq d'Azyr. The interval between these is filled by a very thin medullary plate, the velum interjectum of Haller, which is the part commonly known as the valve of the brain. This valve forms the roof of the fourth ventricle; therefore, if air be impelled into that cavity from the canalis medius, the valvula cerebri is elevated, and we can perceive the fourth pair of nerves arising from it; the origin of this nerve evidently projecting from the surface of the valve.

On lifting up the posterior lobes of the cerebrum, a transverse production of the dura mater, called the tentorium, comes into view. This is attached to the internal transverse ridge of the occiput, and posterior angle of the parietal bones behind, and to the sharp margin of the petrous portion of the temporal bone in front, as far forwards as its connection to the body of the sphenoid bone, where it terminates in a pointed form. This process therefore separates the cavity, which holds the cerebellum, from that part of the cranium which contains the cerebrum. The vacancy left in its anterior part, opposite to the basilar process of the occiput, transmits the commencement of the medulla oblongata. The middle of the tentorium, which has the termination of the falx fixed to it, is elevated; the lateral portions of the process are rather sloping.

The tentorium should be divided on either side, in order to expose the cerebellum, which then appears lying in the posterior fossa of the occiput. This is divided into a right and left lobe by the falx cerebelli, which is a small process of dura mater, attached to the lower part of the perpendicular ridge of the occiput.

The rest of the encephalon should now be removed from the cranium, that the fourth ventricle and basis of the brain may be considered. In doing this, we lift up the anterior lobes, and detach the different nerves as they go out of the cranium, cutting them near to the brain on one side, and near to the apertures by which they quit the skull on the other. The pituitary gland is to be scooped out of the sella turcica, and the medulla spinalis to be cut across as low down as possible.

The part which has been taken out should be laid on a plate, in the same situation which it held in the cranium, that the fourth ventricle may be demonstrated. This cavity is formed between the upper and posterior part of the medulla oblongata, and the middle anterior part of the cerebellum. It extends laterally to a considerable distance in the crura cerebelli; a groove runs along the middle of the medulla oblongata, which constitutes the front of the ventricle, and terminates in the end of the cavity in a point. From the lateral productions, and the pointed termination of the cavity, it has been named the calamus scriptorius. Its shape indeed bears considerable resemblance to a pen, except that it is much larger. To describe its boundaries more accurately, we may state, that it has four sides or parietes. The superior is formed by the valvula cerebri, the lower and anterior by the back of the medulla oblongata, the two lateral by the crura cerebelli, and in part by the thick portions of the valve, which unite the crura cerebelli

to the corpora quadrigemina. It opens above into the third ventricle, by means of the canalis medius; its termination would open below towards the back of the medulla spinalis, were it not closed by pia mater. The brain may now be turned over to expose the basis. The lower and anterior part of the third ventricle is closed by a cineritious substance of a conical form, which extends from the anterior commissure and crura cerebri to the junction of the optic nerves, where its apex is continued, under the name of infundibulum, to the pituitary gland. This body is lodged in the sella turcica, the upper aperture of which is contracted by a fold of the dura mater. Its superior surface is plane; its inferior convex. Its substance is harder than that of the brain. Immediately behind the infundibulum are seen two small convex medullary eminences, named the corpora subrotunda, candicantia, or mamillaria, from which the anterior crura fornicis and the pedunculi of the pinal gland commence. The crura cerebri (processus medullæ cerebri of Soemmerring) are two large medullary processes, having a fibrous appearance externally, which come from the middle and convex part of the hemispheres. They are separated above and in front, approach below and behind, and meet together just before they terminate in the medulla oblongata. There is seen therefore a depression, or hollow, between these crura in front, from which the third pair of nerves arises, and which is called by Vicq d'Azyr la fosse des nerfs oculo-musculaires.

The cerebellum is lodged in the posterior and inferior fossa of the basis cranii; it is situated therefore under the cerebrum, in a peculiar cavity, formed chiefly by the occipital bone, the posterior surface of the petrous part of the temporal bone, and the tentorium. Its upper surface is nearly flat; the under and posterior are convex. It forms in front some prominences named appendices vermiciformes. It is divided into a right and left lobe, by a fissure which does not extend very deeply, and which lodges the falx cerebelli. The cerebellum consists, like the cerebrum, of an intermixture of cortical and medullary matter; but they have not the same relative arrangement as in the cerebrum. The surface of the cerebellum is marked by several horizontal lines, not disposed concentrically, into which the pia mater descends to a considerable depth, and from which other divisions containing also processes of pia mater commence. The cerebellum has, therefore, a much more extensive surface than an equal bulk of cerebrum; and the cortical matter is more abundant than the medullary. On a vertical section we see a thick cord of medullary matter sending off processes, from which other branches proceed, and all of which are surrounded by cortex; this is the arbor vitæ. An horizontal section discovers several parallel curved portions of cortex and medulla succeeding each other alternately. The trunk of the arbor vitæ constitutes the crus cerebelli on each side, which joins the medulla oblongata.

The medulla oblongata is a large protuberance occupying the lower and middle part of the cranium, and resting on the basilar process of the occiput. It is formed by the crura cerebelli and cerebri, which have been already described. Its surface has an irregular and fibrous appearance. It is divided into a right and left portion by a groove, which contains the basilar artery. This body is named the pons Varolii, tuberculum annulare, or nodus cerebri. A medullary cord passes from its posterior part to go through the foramen magnum occipitale, and enter the spinal canal under the name of medulla spinalis. It is separated from the pons Varolii by a circular contraction. The upper part of this medullary cord forms a bulb or dilated

part, which is divided into four convexities, of which the two superior are named corpora olivaria, the two inferior corpora pyramidalia. For the most ample and satisfactory information on the anatomy of the brain, we refer the reader to the *Encefalotomia Nuova universale di Vincenzo Mala carne*, Torino, 1780; the *Traité d'Anatomie* of Sabatier, vol. ii.; the fourth volume of Soemmerring's work "*De corporis humani fabricâ*"; and his dissertation "*Ueber das organ der Seele*." Above all, however, the "*Traité d'Anatomie, et de physiologie, avec des planches colorées*," Paris, 1786, folio, of Vicq d'Azyr, requires the greatest commendation. In this superb work all the parts of the brain are represented of their natural colour, with such fidelity and beauty, as render it, beyond dispute, the grandest book which has ever been published in illustration of the human frame.

We shall subjoin to this description of the brain, a brief account of the anatomy of the medulla spinalis, and nerves. Thus, we shall include in one article, the structure of the sensorium, of the organs which transmit impressions to it, and convey the determinations of the will from it; which are only to be considered as parts of one circle of actions.

Structure of the Medulla Spinalis.

This part is a continuation, as we have already mentioned, from the medulla oblongata, which is formed by the union of the medullary appendices of the cerebrum, and cerebellum. The bulbous portion, which we have before described as forming the corpora pyramidalia and olivaria, is the commencement of the medulla spinalis; although, as it is contained in the cranium, the term of spinal marrow cannot, with strict propriety, be applied to it.

The medulla spinalis consists externally of medullary matter; on making a transverse section, we find a portion of cineritious substance in the centre, consisting of two stripes, which cross each other, thus X. When covered by its membranes, it is of a firmer consistence than the brain; but it speedily dissolves when laid bare. Its form is nearly cylindrical, but it is compressed before and behind. A groove extends along its anterior and posterior flat surface, and these impressions seem to divide it into two cords. It is larger in the bottom of the neck, and towards the lower part of the back, than in the intermediate spaces. It contracts in the lumbar region into a conical form, and terminates by a small filament, which is fixed to the bottom of the sheath of dura mater.

It sends off a pair of nerves at each interval between the vertebrae, which are named cervical, dorsal, lumbar, or sacral, according to the region in which they arise. These nerves are produced by two fasciculi of fibres, one of which comes from the front, the other from the back of the cord. These are separated by a membrane which will be presently mentioned, and penetrate the dura mater by two distinct holes, after which they unite to form a ganglion. The arteries of the dura mater are derived from many sources; the vertebrae furnish an anterior and posterior one. The others are derived from the cervical, intercostal, lumbar and sacral arteries, which enter at the openings, through which the nerves go out, and communicate with the spinal branches of the vertebrae, so as to keep up their size to the end of the medulla spinalis. The veins, which are also numerous, pour their blood into two longitudinal sinuses, formed in the dura mater, which lines the vertebral canal, and extending the whole length of that canal. These communicate together by transverse portions at the intervals of the vertebrae. They communicate in the neck with the vertebral veins; in the back, with the intercostals; and below, with the lumbar and sacral veins.

The

The spinal marrow is covered externally by a production of dura mater, which extends from the great occipital foramen to the bottom of the sacrum, connected throughout to the vertebral canal, by a loose cellular and adipose substance; and at the intervals of the vertebrae by the conical process, which it attaches to the commencement of the nerves. The tunica arachnoidea is much more loosely connected to the vascular membrane, than it is in the brain. The pia mater surrounds the spinal marrow very closely, in so much that, in making a transverse section, the medullary matter protrudes from the cut surface. The medulla spinalis is connected at the side to the dura mater by small portions of membrane, which are found between the anterior and posterior origins of the nerves, and are inserted in a pointed manner into the dura mater: it is called *ligamentum dentatum*. For descriptions and representations of the medulla spinalis, the reader may consult Huber de medulla spinali, Goetting. 1741. which is also contained in the *Icones of Haller*; *Monro's observations on the nervous system*, and *Fratzcher descriptio medullæ spinalis cum iconc*, Erlang. 1783.

Structure of the Nerves.

The nerves are soft, white and fibrous cords, nearly of a cylindrical shape, arising from the brain, or medulla spinalis. When they leave the brain, the pia mater collects the fibres into larger or smaller fasciculi, which can be seen without any previous preparation, by making a longitudinal or transverse section of a pretty large trunk. Where the nerves penetrate the dura mater, they are firmly connected to the margin of the opening, and have been supposed to receive an external coat from that membrane; this, however, is only true of the optic nerve. The medullary filaments of the nerves are covered by a vascular membrane called by *Reil neurilema*, which detaches processes from its inner surface, to surround and invest the smaller divisions and fibres of the medullary substance. By immersing a nerve in alkali, the medulla of the nerve is dissolved, and the contained membranous tubes formed of neurilema are left. Acids dissolve the neurilema, and leave the medullary fibres. These organs receive a considerable supply of blood from vessels which ramify on the neurilema, as those of the brain do on the pia mater. The cellular texture, which constitutes the vascular membrane of the nerve, is resolved on its surface into a loose substance, which connects the nerve to the surrounding parts. By maceration in water, and careful dissection, a nervous trunk may be separated into numerous threads; and each of these, when examined in a microscope, seems to be an assemblage of proportionally smaller fibres. Greater magnifying powers shew those fibres, which before appeared single, to be still composed of smaller threads; and it is doubtful, whether the ultimate nervous fibre can be discovered. All that is said, therefore, of the form, course, &c. of these ultimate fibres, is wholly conjectural. Microscopical observations, however, shew many transverse striæ in the substance of nervous trunks, of a more lucid appearance than the rest, which disappear on stretching the nerve, and are restored by again letting it loose. This appearance characterizes the smallest perceptible fibres, and enables us to distinguish them from muscle, tendon, &c. *Fontana* probably alludes to this circumstance, when he calls the nervous fibres, waving cylinders. The fibres do not proceed in a straight uninterrupted course, but join frequently with each other, so that, according to the expression of *Monro*, they form a plexus in each nervous trunk. The experiment of *Reil*, of immersing the nerve in nitric acid, to dissolve its membrane, shews this, as well as microscopical observations. A nerve, when divided

in the living subject, retracts: the medulla is expressed from its extremities by the contraction of its membranes, in the form of globules, more copiously, according to *Prochaska*, from the upper, than the lower end. This protrusion of the medullary matter takes place in a less degree in the dead subject. If a nerve be cut in a living animal, and he be killed at some period after the operation, it will be found, that the divided extremities have swollen into a small tubercle, and that they are connected by a new-formed matter. Anatomists have disputed greatly, whether or not this were real nerve, whether it was a regeneration of medullary matter. As it would not probably be very easy to decide this question, by merely anatomical testimony, from our ignorance of the minute structure of these organs, it appears most philosophical to inquire, whether the new matter will perform the functions of a nerve; and this has been completely proved by the experiments of *Dr. Haighton*, in the first part of the *Philosophical Transactions* for the year 1795. In some parts of the nervous system, little tubercles or knots, called ganglia, are found in the course of the nerve; and are usually formed by the concurrence of several branches. These bodies are of various figures, but generally flattened. They partake more of the red colour, than the trunks of the nerves on which they are formed, as they possess more numerous blood-vessels. They contain several nervous fibres, distinguished by their peculiar characteristics, and surrounded by a pretty firm vascular substance. The fibres communicate in these bodies, and each nerve which goes from a ganglion, is said to possess some fibres of every other nerve which joins it. For a further account of the structure of nerves, the following works may be consulted: *Reil Exercitationes Anatomicae*; *Prochaska de Structura Nervorum*; *Monro's Observations on the Structure and Functions of the nervous System*; *Arneiman versuche an lebendigen Thieren*; *Fontana Traité sur le Venin de la Vipère*, &c.; *Haase de gangliis nervorum*; *Scarpa Annotationes Academicæ*.

BRAIN, Physiology of the. Having described the anatomy of the brain and nerves, we proceed in conformity to the arrangement adopted in this book, to speak of the functions or physiology of these organs. The first circumstance which it appears necessary to discuss in this intricate and interesting subject, is the inquiry respecting the place in which sensation exists. There could scarcely be any thing more difficult than to convince a person who has never thought on this point, that feeling resided solely in the brain, and that his belief, that it existed in the tangible extremities of the nerves, is a deception; and yet there is nothing of which men of the strongest minds, and who have most attended to the subject, are more perfectly convinced. The circumstances which have induced them to entertain this belief are, 1st. that if the continuity of the nerve between the extremity which receives impressions from the objects of sense, (and which we shall, therefore, call the tangible extremity of the nerve,) and that extremity which terminates in the brain, (which is usually denominated the sensorial extremity,) be by any means intercepted, both feeling and voluntary motion are suspended. 2dly, The false judgment which the percipient forms of corporeal disorders, confirms this opinion. If a nerve be irritated at the mid-space between its origin and termination, severe pain is supposed to be felt in those parts to which it is distributed; and if it supplies muscles, they become convulsed. If a disease forms about the hip-joint, or in the loins, the patient frequently complains of violent pain on the inside of the knee, without adverting to the real seat of the disorder. And people who have had their limbs taken off, can scarcely

ly believe that they are removed from their bodies, in consequence of the pains and sensations which they seem to feel in them. In either of these cases a motion is produced in the middle of a nerve, which being transmitted to the brain, is attributed by the percipient to a disordered state of the parts, from which it had been accustomed to receive impressions. Again, if a certain degree of pressure be made on the brain, all sensation and voluntary motion are interrupted. As these circumstances have been so well explained by Haller, we shall not enlarge on this subject, but proceed to consider the means, by which this transmission of motion from one end of the nerve to the other, is probably effected.

From the earliest times in which men contemplated the animal economy, reflecting persons imagined, that they perceived some subtle invisible agent, which operated in the performance of the animal functions. Hippocrates attributed actions, which he could not otherwise account for, to something which he called nature; Paracelsus, to the operation of an archæus; Stahl, to different animæ; and Harvey seems to have had an idea of a vital principle. But if any merit is due to such opinions, the credit of first decidedly teaching that a subtle invisible matter was diffused throughout living bodies, and was the cause of many phenomena occurring in them, belongs to Mr. Hunter. This opinion he has endeavoured to prove by experiments, which will be noticed under the article LIFE. The most conclusive arguments in favour of this opinion will probably be given under the *physiology* of MUSCLES, in discussing the cause of muscular motion, and to these the reader is referred.

It has been customary to consider matter as passive, and to denominate the active power which puts it in motion, by the name of spirit; but we relinquish the pursuit of the primary cause of the motions of matter, because we know nothing of the substances which we usually denominate matter or spirit. These appellations have been given to them from their properties, which we do know. We know nothing of matter, but some of the properties which different species of it possess. Of that matter, which, for the most part, presents itself to our notice, when collected together in such quantity as to be cognizable to the eye and touch, we know that it possesses a property, called by Sir Isaac Newton inertness, an indisposition to move, unless impelled to it, and a propensity to continue in motion, unless retarded. But there are other substances in the universe which are usually considered as material, such, for instance, as electricity and magnetism, the motions of which do not seem to be regulated by the same laws, and which are cognizable neither to the eye nor touch, but of the existence of which reason furnishes us with the most indisputable testimony. Of these kinds of subtle and mobile matter, we know that they frequently act upon, and put in motion that which is more gross and inert. We see magnetism move even ponderous pieces of iron, and electricity displace and disperse the most stable substances which oppose its passage. The reasons for entertaining the opinions of Mr. Hunter, that there is a subtle, mobile, and invisible species of matter connected with the evident structure of living bodies, as magnetism may be superadded to iron or electricity to various substances, will be detailed under different articles in this book. At present, we claim permission to employ this explanation of the phenomena of life, because there appears nothing improbable in it, or inconsistent to present philosophical notions; and it is a supposition, which appears, not only verifiable, but adequate to account for the phenomena which occur in living bodies. By employing this mode of accounting for the

actions of life, we avoid all inquiry into the primary cause of the motions of matter; we contemplate only a secondary cause, such as takes place in electrical and magnetic experiments, in which a subtle species of matter puts in motion that which is more gross and inert.

If it be admitted, that sensation exists in the brain, and volition proceeds from that part, it necessarily follows, that a motion must be transmitted along the nervous cords, whenever these effects take place. It was formerly supposed that these cords were passive, and might be made mechanically to vibrate; but their want of elasticity and tension, and their pulpy origins and terminations, are circumstances which rendered this supposition inadmissible. Physiologists were, therefore, induced to suppose, that the nervous fibrils were tubular, and that they contained a subtle fluid, by means of which such motions were transmitted. Haller's opinion of the nervous fluid appears sensible and accordant to the philosophical opinions of his time. He says, "*Si vero cogitata nostra de ipsa natura spirituum proferre juberemur, activum ad motum a voluntate et a sensu concipiendum aptissimum celerimum omne sensuum acie subtilius, tamen hætenus igne et æthere et electo, et magnetica materie crassius facere elementum, ut et contineri vasis et vinculis coerceri aptum sit, et denique manifestum ex cibis nasci et reparari queat.*" But, at present, no one will doubt the possibility of a subtle and mobile fluid inhering in cords, and moving along them without being contained and confined in tubes. Does not electricity move along a wire? and is it not probable that a subtle fluid may inhere in a substance, in consequence of an attraction which it possesses to it, and more particularly, if the substance which attracts it is surrounded by others, which may be regarded as non-conductors? The celerity with which motions are transmitted from the tangible extremities of those nerves which are most distant from the brain, and the celerity with which volition is transmitted to muscles in consequence of sensations thus occasioned, are sufficient to convince us that these effects must be produced by the medium of a very mobile matter. It is not necessary to suppose, when motions of a subtle matter are transmitted along the nervous cords, that an evident motion of the visible matter of those cords should take place. This opinion, that sensation is caused, and volition directed through the medium of a subtle, invisible matter, inhering in the nervous cords, is so like the opinion of Hartley, of the phenomena of the nervous system being produced by the vibrations of an æther, that it is not necessary, in this place, further to prosecute the subject. We rather refer the reader to his work, for a more ample illustration of this theory.

Formerly it was supposed, that the motions of the nerves, which cause sensation, were the mere effect of an impulse made on their tangible extremities by the bodies which we feel. It seems to be an improvement in modern physiology, to impute the nervous motions to an action begun in them, in consequence of the stimulation which they suffer from such impulses. This opinion is contended for by Doctor Darwin, in his paper on "*Ocular Spectra*", inserted in the *Philosophical Transactions*; and Mr. Home has further shewn, in the *Croonian Lecture* for the year 1801, inserted in the *Philosophical Transactions*, that nerves have an irritability resembling that of muscles, which produce a contraction in them when they are divided. This opinion assists us in understanding how our sensations may be very vivid from the slightest impulses; such as, for instance, take place from the application of the particles of odour to the olfactory nerves, for it is not the impulse, but the consequent action, that is transmitted to the sensorium; and why

we may have no sensation from the most violent impulses, for such we cannot but suppose to take place when a limb is removed by a cannon ball, a circumstance which has happened without the consciousness of the person to whom it has occurred.

These hypotheses appear to us adequate to explain all the circumstances that have been noticed relative to the functions of the nervous system. To review the circumstances, even with the greatest possible brevity, would render this article too extensive. Yet, there are some particulars which the reader may expect that we should advert to. Of these, it is right to mention, that the disposition of the nerves to act is increased, as the causes exciting their action is diminished. This circumstance has been expressed, we can scarcely say explained, by the late Doctor Brown, in his "*Elementa Medicinæ*," by saying that the excitability of the nerves is accumulated in proportion to the deficiency of the exciting causes. This fact is productive of consequences which appear particularly beautiful and useful; it furnishes a power of accommodation in our senses to the varying circumstances of life. Thus, for instance, a person confined in the dark shall receive the impression of light from a very small quantity of light, and his eyes would even be injured by the common day-light. The reverse of this is equally true: that a person shall live in a strong light, till his eyes become so accustomed to it, that a less quantity shall not produce a proper impression; or a person, who has long been in a still and silent place shall hear the slightest sound, such as would be imperceptible to one whose auditory nerves had, for some time, been accustomed to the forcible impressions of the air, made by loudly sounding bodies. This power of accommodation does not only belong to particular senses, but it will bear a more universal application. A person, living a luxurious life, who avoids every sensation which gives him the least uneasiness, and who attends only to the gratification of his pleasures, renders his nervous system too sensible: he shivers at the cold wind, he is startled at a loud noise; and every rough impression, which would not disturb another, owing to his ill-judged indulgence, distresses him. Let us remark the contrast in a hardy seaman, who has endured the inclemency of the weather, who has sustained fatigue and pain: if the winds blow, or the cannon thunder, he hears the one, and feels the other, but they do not much affect him; and from being habituated to sensations, at first painful, he is afterwards unaffected, even by those impressions which would hurt a man living in the medium between these two extremes.

It seems also right here to remark, that a great similarity appears to exist between the supposed irritable actions of the nerves, and those of the muscles. The facility, accuracy, and celerity of the actions of nerves are improved by use, as is exemplified in the correct and quick sensations of those persons who are accustomed to exercise their auditory nerves in attending to musical sounds.

A train or succession of nervous actions having taken place, they become concatenated, and are liable to recur in succession, if one of these actions is accidentally induced.

Both the nerves and muscles seem to require temporary respites from action, and both appear to be refreshed by sleep.

The supposition of actions occurring in the nerves, explains many circumstances connected with diseases. Venement actions may be begun independent of impulses in the tangible extremities of nerves, and thus occasion severe pains. This seems to happen in the disease called *tic douloureux*. Ordinarily, actions begun in the tangible extremities of the nerves, are regularly transmitted to the brain; but in cases of nervous pains, the action seems to begin in the middle of the nerves.

It is also probable, that actions may take place in the sensorial extremities of the nerves producing illusory sensations, and thus exciting ideas.

The next subject which claims our attention, is the part of the brain to which all the nervous motions, produced by external impressions tend, and from which all the motions arising from volition begin. Physiologists have agreed to call this part the sensorium, and have supposed it to be situated in various parts of the brain; but there is no part of the brain to which this importance has been ascribed, which has not been occasionally found diseased, without sensation and volition being impeded. Of late, Soemmerring has affirmed, that he can trace all the nerves to the ventricles of the brain, in which he therefore supposes the faculty of sensation and volition to reside. All our senses may be gratified at the same time, and we may give a preference to the pleasure which we receive from one of them, above that which we derive from the others; which circumstance seems to prove the unity of that which perceives and determines. Haller, after considering the subject, thus concludes: "*Nunc quidem in universum observamus, non debere angustiore animæ sedem poni, quam sit conjuncta omnium nervorum origo; neque particulam aliquam pro ea sede offerri, nisi ad quam omnes nervos ducere possimus. Facile enim intelligitur, debere a sensorio communi nullum ullius particulæ corporis animati sensum abesse.*" &c. *Elem. Physiol.*

If it be admitted that sensation and volition exist in the brain, it must also be granted that motions must be produced in the sensorial extremities of the nerves by the objects of sense, and that reflected motions must take place in the nerves, by which the mandates of the will are transmitted to the muscles.

If all that has been said were to be ascertained, the extent of our knowledge would, in that case, only lead to this conclusion, that motions of a subtle substance took place in the sensorium, and from such motions we esteem it impossible to account for sensation. We can conceive no varieties in these motions but those which relate to degree or duration. We feel it impossible to believe that sensation can be the result of such motions, or that ideas can arise from any succession or train of them. We therefore conclude, with many celebrated physiologists, and men of the soundest understanding and greatest reflection, in the natural belief, that sensation, remembrance, comparison, judgment, and volition are properties of a distinct substance.

The conclusion to be drawn from this examination of the functions of the brain and nerves, and from that of the other animal functions, seems curious and interesting. We perceive an exact correspondence in the opinions we obtain from physiological researches, and those which arise so naturally from the suggestions of reason, that they have been considered as intuitive. For most reflecting persons in all ages of the world have believed, and it is, indeed, natural to believe, what modern physiology teaches, that in the human body there exists an assemblage of organs, formed of common inert matter, such as we see in the dead state, a principle of life and motion, and a sentient and rational faculty, all intimately connected, yet each distinct from the other.

BRAIN, Chemical Analysis of. Though the analysis of this most important organ can throw no light on its peculiar functions, it is in itself sufficiently remarkable to be detailed somewhat at length.

It is needless to give all the conjectures on the nature of brain, made before chemists had acquired a tolerably accurate and just method of analyzing animal matter. The experiments of real importance are chiefly those of Thourret, in 1790, with some subsequent additions by Fourcroy.

The natural state of brain is known to every one to be a soft pulp, with somewhat of a soapy feel; and little or no smell when fresh. Exposed to a moderate heat, it loses moisture, shrinks to about a fourth of its bulk, and then becomes a thick tenacious mass, of a greenish brown. Fully dried, it becomes solid, and breaks under the fingers like old cheese. If this is strongly heated in a crucible, it first gives out ammonia, puffs up and melts into a black pitchy mass, takes fire and burns with much flame and a thick sharp smoke, and leaves a coal which is long in reducing to ashes. No naked alkali is to be obtained from its ash by lixiviation, but some traces of the phosphates of lime and soda.

Brain, either in its natural state, or gently dried, without decomposition, unites very readily with water, by rubbing, and forms an opaque, uniform, emulsive mass, which froths strongly by agitation, and does not separate from the water by filtration. In this, and other properties, it much resembles a lather of soap, and has been thought to be truly saponaceous, by Thourët; but it does not turn blue vegetable colours green, nor is it in all respects a proper soap.

This emulsion coagulates by heat, and deposits its contents in white flocculi. The clear liquor shews the presence of a phosphoric alkaline salt, by giving a calcareous phosphat, when mixed with lime water which precipitates.

Acids, and all calcareous salts, and alcohol added to the cerebral emulsion, immediately curdle it. When an acid is used, the clear liquid separated from the white coagulum contains lime, soda and ammonia, all united with the acid employed; and which, therefore, in the natural state, contributes to render the matter of brain so easily miscible with water.

Dilute nitric acid only coagulates the cerebral emulsion. Strong nitric acid added to brain causes an effervescence with evolution of much azotic gas, a violent intumescence, heat, and subsequent production of nitrous gas, carbonic acid, and much ammonia; and the residue furnishes oxalic acid, as generally happens when this acid is decomposed over any inflammable animal matter.

Muriatic acid simply coagulates the cerebral emulsion, without inducing any complex chemical change. The white coagulum, collected and dried, amounts to about a tenth or a twelfth of the substance of the brain employed for the emulsion.

Caustic fixed alkalies act very powerfully on brain, even without heat, and disengage much ammonia by the mixture. When dissolved by heat, the mass is truly saponaceous.

The action of alcohol on brain is the most singular. When brain, gently dried by heat, or first coagulated by an acid and afterwards dried, is digested in a boiling heat, with about twice its weight of alcohol, the latter deposits, on cooling, a number of yellowish white crystalline blades. It requires two or three digestions with alcohol, entirely to exhaust the soluble matter. Brain loses in the process about five-eighths of its weight; however, on evaporating the spirit, to collect all the crystalline matter, no more than about half of the above quantity is obtained, so that the loss is probably water. This crystalline mass crushes under the finger with a kind of greasy consistence; it is not melted, but only softened, in the heat of boiling water, and when further heated it blackens, melts, and gives out a burnt and ammoniacal smell. In this respect it differs from spermaceti, to which it has been compared, which last melts unchanged at about 104°. Adipocire, to which also it has been likened, melts unchanged at about 83°.

This crystalline matter, left in solution with the spirit after cooling, may be obtained very similar to that which first separates, by slowly evaporating the spirit. This latter has a

fatty taste, and a consistence like soft soap. Both are readily miscible with water into a kind of emulsion, and reddens litmus paper. A long maceration in cold alcohol will cause a deposition of the same crystalline matter, and hence it is perceived in wet anatomical preparations of the brain or nerves.

The substance of brain, on the whole, bears considerable resemblance to albumen, reduced to a kind of saponaceous state, perhaps by union with ammonia, and with much watery fluid; but the theory of the production of the peculiar crystalline matter is very obscure. Though this much resembles spermaceti, adipocire, and still more the crystalline matter of biliary concretions, it somewhat differs from them all. Its nature is considerably like that of a concrete oil, but no oil can be obtained from recent brain by strong pressure, in the way that oil is commonly extracted, and the difficult fusibility of this appears to be a character of difference from most other oily substances.

The spontaneous change which brain undergoes by putrefaction is very singular. This was observed by M. Thourët, on the memorable occasion of the clearing out of the burying ground of Les Innocents at Paris, which has been already alluded to under the article *ADIPOCIRE*, and which furnished, to the meritorious philosophers who had the courage to make this abode of the dead a field for chemical observation, a vast number of most interesting facts on the subject of animal putrefaction.

It appears extraordinary that the brain, whose texture is so soon injured for anatomical demonstration, should be, of all the soft parts of the body, the most indestructible by putrefaction when retained in its bony case. The following are the remarks of M. Thourët on this subject, on the occasion above-mentioned. "The bodies contained in the burying-ground of Les-Saints-Innocents were found in different states; the greater number of those which had lain in the common receptacles for twelve or fifteen years, were mostly converted to a kind of whitish soap, retaining the form of the different parts of the body. In all these the brain was equally in a state of preservation, for, on opening the skull, I always found the brain in pretty large lumps, filling at least a quarter or a third of the cavity. In this state it was mostly soft, pulpy, and breaking down under the fingers, like the soapy matter to which the flesh was changed; but sometimes firmer, more friable, and solid. In these masses the original form of the brain, the division of the hemispheres, and the convoluted texture were still observable. The natural colour also remained, so that the white medullary part could be distinguished from the browner cortical; and no smell was to be observed, except that of the soapy matter with which the bones were covered. Even where the period of inhumation had been so long as to destroy all the viscera, and most of the muscles of the body, the brain still remained." *Journ. de Phys. tom. 329. Fourcroy, Systeme de Conn. Chim. tom. 9.*

BRAIN, Injuries of the, in Surgery. This organ may suffer from a great variety of causes, either accidental, or spontaneous; for example, from wounds, contusions, fracture of the cranium, exposure to inclement weather, and all the exciting causes of inflammation, suppuration, effusion of serum, or blood, &c. The symptoms will, consequently, differ according to the nature of the morbid affection, and the precise seat of the injury; but this one symptom is found to exist in all cases where the brain suffers from compression;—namely, an irregular or defective nervous energy. We do not know in what the action or influence of the brain consists; but we invariably experience either a paralysis, or an inordinate motion of some part of the body, when the nerves going to that part have been compressed at their origin in the brain.

brain. The explanation of these phenomena, and of the various diseases of the brain, belong to other articles in the *Cyclopædia*. See, especially, INFLAMMATION, CONTUSSIONS, WOUNDS, CONCUSSION, FRACTURES, APOPLEXY, HYDROCEPHALUS, or *Watery Head*; likewise the operation of TREPANNING.

BRAIN, *fungus of the*. See FUNGUS.

BRAIN, *traces of the*. See TRACE.

BRAIN. in *Geography*, a town of France, in the department of the Maine and Loire, and chief place of a canton in the district of Saumur, 2 leagues N.E. of Saumur.

BRAINE, a town of France in the department of the Aisne, and chief place of a canton in the district of Soissons, seated in a beautiful plain on the river Vesle, 3 leagues E. of Soissons. The town contains 1291, and the canton 10,779, inhabitants; the territory includes 255 kilometres and 42 communes.

BRAINE l'*Aleu*, a small town of the Netherlands, in the county of Hainaut, 10 miles E.N.E. of Braine le Comte.

BRAINE le Comte, a small town of the Netherlands, in the county of Hainaut, having a tower said to have been built by Brennus, a general of the Galli Senones, from whom the town is also said to have derived its name; 15 leagues S. of Antwerp, and $3\frac{1}{2}$ N. of Mons.

BRAINTREE, a large market-town of Essex, England, situated on rising ground, 40 miles N. E. from London, and connected on the north with Bocking, or Bocking-Street, one of the most considerable villages in this county. In the *Domesday-book*, the manor is comprehended under the name of Raíses, and was then held by the Bishop of London, to whose fee it continued attached, till the reign of Edward the sixth.

Braintree was made a distinct parish about the time of king John or Henry the third: the former of whom constituted it a market-town, through the interest of William de St. Maria, bishop of London. At that period, however, it was only a hamlet to Raines, and the parish itself was called Great Raine; but from the increase of houses and population, Braintree at length became the chief place, and gave its own name to the district. Its rise is supposed to be owing to its convenient situation on the high road from London into Suffolk and Norfolk; and to the building of inns and lodging-houses for the reception of the numerous pilgrims from the south, who, in the days of superstition, were continually travelling to the shrines of St. Edmund and our lady of Walsingham. After the reformation, the town was deserted of its visitors; but again obtained consequence from the Flemings, who settled here in the reign of Elizabeth, after being expelled from the Netherlands by the duke of Alva. These emigrants were the first who introduced the baize and say manufacture to this part of England, which business is still carried on here, but not to such great extent as formerly. The government of the town is vested in a select vestry, composed of twenty-four parishioners, who, as early as the year 1584, were styled governors of the town, and town magistrates. The church is a spacious structure, occupying a high spot of ground, which appears to have been the site of a camp. This fabric was founded in the reign of Edward the third, as appears from the arms, which decorate it, of the neighbouring gentry who lived at that time; and also from the will of John de Naylinghurst, who, in 1349, bequeathed a "black bullock towards the work of the church." It has since been greatly enlarged, particularly in the reign of Henry the eighth, when the roof was heightened, and the south aisle built. The expence of these alterations was partly defrayed by receipts, arising from the performance of three plays acted in the church. The first play, entitled St. Swithin, was acted in 1523;

the second, named St. Andrew, on the Sunday before Relique Sunday in 1525; and the third called Placy Dacy, alias St. Ewestacy, in 1531. After the reformation, the players' robes were sold by the church-warden, for fifty shillings, and the play-books for twenty shillings. In the chancel is an inscription to the memory of Dr. Samuel Collins, who was the son of a minister of this parish, and for some years principal physician to Peter the Great, czar of Muscovy. This town contains 454 houses, and 2821 inhabitants; the streets are mostly narrow and incommodious; and many of the buildings are of timber and very old. Various bequests have been made for the service of the poor; the most celebrated, though not the most valuable, was the gift of Henry Smith, esq. alderman and salter of London, who, in the reign of Charles I. left 2800*l.* to purchase an estate in this county; the proceeds to be distributed among the poor of the five parishes of Braintree, Henham, Terling, Tolleshunt-D'Arcy, and Dover-court.

The village of Bocking, which now forms part of this town, principally consists of one long street, extending along the high road, and contains 623 houses, and 2680 inhabitants; several of the houses are inhabited by respectable families. The principal trade, in addition to what arises from the passage of goods between the metropolis and the more eastern counties, is the manufacture of baize. On the river Pant, named the Blackwater, in the lower part of its course which flows through it, are several fulling and corn mills. The church, a spacious building, standing on an eminence, between one and two miles north-west of Bocking-Street, is dedicated to the Virgin Mary, and supposed to have been built about the time of Edward III. An hospital for seven poor people was founded and endowed here in the reign of Henry VI. by John Doreward, esq. This hospital still exists; and also a charity-school, endowed by Dr. Gauden, bishop of Worcester, for educating thirty poor boys. Morant's History of Essex, 2 vols. folio.

BRAINTREE, a township of America, in Orange county, Vermont, 30 miles N.E. from Rutland, joining Kingston to the west, and Randolph on the east, and containing 531 inhabitants.

Also, one of the most ancient townships in Norfolk county, in the state of Massachusetts, settled in 1625, and then called "Mount Woolaston," from the name of its founder. It lies in a bay, 8 miles E. of S. from Boston, and contains 1285 inhabitants. Granite stones are sent in great quantities from this town to Boston and other places for sale. The bay abounds with fish and sea fowl, and particularly "brants."

BRAINTREE, *New*, a town of America, in the county of Worcester, 21 miles N.W. of Worcester, and containing 875 inhabitants.

BRAINTREM, a post town in Luzerne county, Pennsylvania, 303 miles from Washington.

BRAIT, *Mark*, or UNDER-BRAIT, a town of Germany, in the circle of Franconia, and county of Schwarzenberg, seated on the Mayne; 12 miles S. S. W. of Wurzburg, and 36 S.W. of Bamberg.

BRAITNBRUG, a town of Germany, in the archduchy of Austria; 3 miles N. of Steyrugg.

BRAKE, or BRAKEN, in *Botany*, the vulgar name for the *Pteris Aquillina*, or common fern. It is also used in some parts of England for a copse of various wild shrubs, intermingled with fern, and other tall reeds.

BRAKE, is also used for a farrier's instrument, otherwise called BARNACLES. The word also occurs for a baker's treading-trough.

BRAKE, in the *Hempen Manufactory*, denotes a wooden-toothed implement, wherewith to bruise, and break the bun of hemp, and separate it from the rind.

BRAKE of a pump, the handle or lever, by which a pump is usually managed. It operates by means of two iron bolts, thrust through the inner end of it; one of which resting across two cheeks or ears, in the upper end of the pump, serves as a fulcrum for the brake, supporting it between the cheeks. The other bolt connects the extremity of the brake to the pump spear, which draws up the box, or piston charged with the water in the tube. See PUMP.

BRAKEL, in *Geography*, a town of Germany, in the circle of Westphalia, and bishoprick of Paderborn, formerly a city of the empire, 3 miles E. of Paderborn.

BRAKENBURG, **REINIER**, in *Biography*, a painter of landscapes and conversations, was born at Haerlem in 1649, and studied first under Mommers, and afterwards, according to Houbraken, under Bernard Schendel. His subjects were like those of Brouwer; and he resembled him, not only in his genius, and style of composition, but in the dissoluteness of his morals. In some of his pictures he seems to have been desirous of imitating Ostade. His figures were designed after nature, and represented in the habit and fashion of the times. His subjects were the feasts of boors, the amusements of the villagers, dancings, and frequently conversations, in which love and wine were always introduced. His compositions are ingenious, and full of variety; though the forms of his men and women are the same, and selected without elegant taste from low nature. His colouring is strong and natural, his touch lively and fine, but he is deficient in taste of design. Pilkington.

BRALIN, in *Geography*, a town of Silesia, in the principality of Oels; 7 miles E. of Wartenberg.

BRALIO, a mountain in the country of the Grisons, separating the valley of Munster from the county of Bormio, and being a part of the Alps, which is supposed to be the same with that mentioned by Tacitus, under the appellation of "Juga Rhætica." The first source of the river Adda lies near the summit of this mountain. Over the Bralio is a road, which, though very indifferent, was formerly the principal passage for the merchandize, sent from the Tyrol, through the Valteline, into the Milanese: at present, it is much less frequented.

BRAM, a river of Germany, which runs into the Stoer, 10 miles above Itzehoe, in the duchy of Holstein.

BRAMA, or **BRABMA**, in *Mythology*, a pagan deity among the Brahmins in the East Indies. See BRACHMANS.

BRAMA, in *Ichthyology*, a species of **CYPRINUS**, known with us by the name of Bream, and which is distinguished by having the fins brown, and in the anal fin twenty-seven rays. The bream is found in lakes and rivers, or in the sea. It grows to the length of two, or even almost three feet. The food of this fish is herbs, worms, and smaller fishes. This is esteemed a coarse fish for the table, but to the angler it affords excellent sport. The best time of angling for the bream is from St. James's day to Bartholomew tide, being then in the highest perfection.

BRAMÆ, in *Natural History*, a species of **ECHINORHYNCHUS**, that infests the intestines of the bream. The neck is filiform, and the proboscis armed with very minute prickles. Gœz. Gmel.

BRAMÆ, a species of **FASCIOLA**, found in the intestines of the bream and sticklebacks. The form is oblong, round, tapering, and obtuse at the base; neck round and somewhat incurved. Mull. Zool. Dan.

BRAMAGUM, or **BROMAGUM**, in *Ancient Geography*, a town of Italy, in the route from Rauracum to Augusta Prætoria. Antonin. Itin.

BRAMAN, in *Geography*, a small town of Savoy, in the valley of Maurienne, seated on the river Arc. N. lat. 45°. E. long. 4° 15'.

BRAMANTE, **LAZZARI**, in *Biography*, a famous Italian architect, was born at Castell-du-Sante, in the territory of Urbino, in 1444. His first views were directed to the profession of a painter; but architecture being better adapted to his taste and talents, he devoted himself wholly to the attainment of excellence in the art. For this purpose he went to Milan, about the year 1470, and afterwards to Rome and other cities of Italy, availing himself of instruction from the best masters, and from a diligent examination of the architectural remains of antiquity. At Naples he was employed by cardinal Caraffa in re-building the convent della Pace; and the reputation he thus acquired recommended him to pope Alexander VI., in whose service he executed many designs. Under Julius II. he was employed, as superintendent of his buildings, in accomplishing the grand-project of joining the Belvidere with the Vatican, by means of two galleries extended across a valley. In 1504 he accompanied pope Julius to Bologna, and was engaged in fortifying the town; and during the war of Mirandola, he had several opportunities of exercising his talents in the military art. After his return to Rome, he adorned the city with many fine buildings; and at length undertook to demolish the cathedral of St. Peter's and to supply its place with another edifice suited to the capital of the Christian world. His plan for this purpose was adopted; and before the death of the pope, in 1513, the new structure was advanced as far as the entablature; and at the time of his own death in 1514, the four great arches for the support of the dome were erected. The original design was abandoned by the architects who succeeded him, not without injury to the structure; but the prosecution of the work was entrusted with Michael Angelo, who praised his plan, and conformed as much as possible to his ideas. Bramante was no less estimable for his general character than for his extraordinary talents as an artist. Obliging in his disposition, he took pleasure in encouraging young persons of the profession; and he invited the celebrated Raphael, who was his cousin, to Rome, instructed him in architecture, and procured for him employment in the Vatican. He was also skilled in poetry and music, and composed extemporaneously for his harp. To him is ascribed the invention of constructing arches by casting in wooden moulds a mixture of lime, marble dust, and water, supposed to be a revival of the stucco of the ancients. His poetical works were printed at Milan, in 1756. The knowledge and practice of the art of engraving may also be added to his other accomplishments. This art he probably acquired at Milan, and his execution of it exactly resembles the style of Andrea Mantegna, that is, with the strokes running from one corner of the plate to the other, without any crossing. He died in 1517. Tiraboschi. Strutt.

BRAMBAS, in *Botany*, a name given by the people of Guinea, and some other parts of Africa, to a peculiar species of lemon-tree. The leaves of this are of a deep green, and of an admirable fragrancy, when rubbed between the hands. The fruit is very small, and has a remarkable thin skin. The juice is used in dying. Phil. Trans. N°. 108.

It has not been taken up as a distinct species, either by Linnæus or any other systematic botanist. In the Abridgment of the Philosophical Transactions it is passed over without notice.

BRAMBER, in *Geography*, is an ancient borough town of Suffex, in England. This place, though now reduced to only 25 houses, still possesses the privilege of sending two members to the English imperial parliament, and the borough of Steyning, which unites with this, also returns two members. (See STEYNING.) From 1298 to 1472 the writs for electing burgesses to serve in parliament were directed jointly

to these two places; but since that period each has been separately represented, and each governed by its respective charter. This borough is the joint property of two persons, who, in the year 1786, strongly opposed each other, for the exclusive power of possessing the whole. In this struggle, it is stated on authenticated authority, that a tenant of one of the poor cottages had the fortitude and integrity to resist the present of 1000*l.* which was offered for his vote. Here is neither market nor fair, and its whole population only amounts to ninety-one persons. It is 51 miles south from London. History of the Boroughs of Great Britain, Svo. vol. iii.

BRAMBLE, in *Botany*, the common English name for the black-berry and dew-berry bushes, *Rubus fruticosus* and *ca.*

BRAMELE, *Brambling*, *Bramble-finch*, in *Ornithology*. See *FRINGILLA montisfringilla*. **BRAMBLING**, greater. See *FRINGILLA japonica*. Ray calls the tawny bunting, *Emberiza muscellina*, the brambling or sea lark.

BRAMBLE-galls, in *Entomology*. See *GALLS of the Bramble*.

BRAMELE-net, otherwise called *ballier*, is a net used by bird catchers, of several sizes.

BRAME, Martin Brame of Sonnerat, in *Ornithology*, *Turdus Pagodarum*, the pagoda thrush.

BRAMER, LEONARD, in *Biography*, a Flemish historical painter, was born at Delft, in 1596, and acquired the art of painting in the school of Rembrandt, whose manner in small he imitated. At the age of 18 years he went to Rome for further improvement, but could never wholly divest himself of the Flemish goût. With a fine taste of design he combined an expression generally good, and occasionally noble. His pencil is delicate, and his colouring very peculiar in the tints, and by great skill in the management of the chiaro-scuro, light, bold, and full of lustre, particularly in the vases, which he was fond of introducing, and to which he gave a rich and fine relieve. To his pictures he was accustomed to give a great degree of transparence, by painting with a very thin body of colour, especially in the brown and shadowy parts. His name was famous, not only at Rome, but in several other cities of Italy, and his works, out of Italy, are scarce; but when they occur in an undamaged state, they fetch high prices. Among his most capital pictures are the "Raising of Lazarus," exhibiting a charming contrast of light and shadow; his "Denial of St. Peter;" both executed in his best manner, and preserved at Rome; and, particularly, a small picture on copper, representing the "Story of Pyramus and Thisbe." Pilkington.

BRAMIA, in *Botany*. Rheed. Hort. Malab. tom. x. tab. 14. Class, *didynamia angiospermia*. Gen. Char. Cal. five-leaved, rather unequal. Stamens, four, two longer. Pyl. style filiform; stigma simple; germ superior. Pericarp, capsule conical, one-celled. Seeds, numerous, attached to a linear, central receptacle.

There is only one known species. Stems, cylindric, tender. Leaves, opposite, oblong, obtuse, succulent. Flowers, axillary, single, blue. It is a native of moist situations in the East Indies.

BRAMHALL, JOHN, in *Biography*, an eminent prelate of Ireland, was born at Pontefract in Yorkshire, about the year 1593, and admitted into Sidney college in Cambridge, in 1608, where he took his degree of B.A. in 1612, and that of M.A. in 1616. Having taken orders, he was preferred to a living in the city of York; then to the rectory of Elvington in the same county, and afterwards to the prebenda of York and Rippon. In these several situations he engaged such a degree of esteem and confidence,

both by his abilities as a preacher and by his general conduct, that he had very considerable influence in all public transactions. As one of his majesty's high commissioners, to which office he was appointed, he was very assiduous, and, as some have said, severe in the discharge of his duty. In 1623 he took his degree of B.D. and in 1630 that of D.D. on which latter occasion the subject of his Latin thesis was "The Pope is the Author, or Maintainer of all, or at least, of the chief controversies in the Christian world," in the support of which he displayed great learning. Soon after he was invited to Ireland by lord Wentworth, deputy of that kingdom, and sir Christopher Wandesford, master of the rolls; and in 1633, having resigned all his English preferments, he removed into that country. From the archdeaconry of Meath, which was his first preferment, he was advanced in the following year to the bishopric of Londonderry. In these stations of dignity and influence he was eminently active and useful in passing several important acts in the parliament of 1634, in reforming the doctrine and discipline of the church, and in the improvement of its revenues. In pursuance of the first of these measures he abolished the fee-farms that were charged on the lands of the church; in accomplishing the second, it was his object to effect a more entire union between the churches of Ireland and of England, and for this purpose he obtained a canon in the convocation, holden at that time, which expressed an approbation of the 39 articles of the English church, and which denounced excommunication against those who affirmed, that "any of them are in any part superstitious or erroneous;" and with a view to the improvement of the revenues of the church, he adopted various means, which, in the space of four years, gained an accession to them, of 30 or 40,000*l.* a year. In the conduct and execution of these measures, however, he excited much opposition and obloquy, and he incurred the charge of being inclined to popery and arminianism. In March 1640-41, articles of high-treason were exhibited by the house of commons to the house of lords in Ireland against him, and several of the ministers of state, in which they were charged with a conspiracy for subverting the fundamental laws of the kingdom, and for introducing an arbitrary and tyrannical form of government. Instead of securing himself by flight, agreeably to the advice of his friends, he determined to repair to Dublin, and to appear before his enemies in the parliament house, where he was arrested, and from thence conveyed to prison. After a rigorous examination, in the course of which he cleared himself from all selfish and sinister views in recovering the patrimony of the church; and when his accusers were proceeding to fix upon him the charge of subverting the laws of his country, he obtained, by the interposition of the primate Usher, then in England, a letter from the king to stop the prosecution of the suit. Accordingly he was let at liberty, though not publicly acquitted. Finding it unsafe to reside at Londonderry, he removed to England; and settled in Yorkshire, where, by his influence and activity, he did great service to the royal cause; but, after the battle of Marston-moor, when the king's affairs became desperate, he embarked with several persons of distinction for Hamburg, in 1644; and from thence he went to Brussels, where he mostly resided, and exercised his ministry till the year 1648. In that year he visited Ireland, but was soon obliged to withdraw again to the continent; and he remained abroad until the restoration. Upon this event he was recompensed for his loyalty, by being translated, in January 1660, to the archbishopric of Armagh, the primacy and metropolitan see of Ireland. Soon after his promotion he visited his diocese, and by prudence, moderation, and firmness, allayed the dis-

contents that prevailed in it, removed several prejudices that were very generally entertained, both against himself and the church, and gained over many adherents to the cause of conformity. In the parliament of 1661 he was chosen speaker of the house of lords; and as a further evidence of the high estimation in which his character was held, both houses concurred in expunging from their records every charge both against himself and the earl of Strafford. In this parliament he also obtained many substantial advantages for the church. Whilst he was meditating other plans for the benefit of the church and its ministers, he was disabled from prosecuting them by a second stroke of the palsy; and this was succeeded by a third fit, which terminated his life, in June 1663. His works were collected and reprinted at Dublin in 1667, in one volume, folio, which was divided into four series or parts. The *first* contains his discourses against the Roman Catholics; the *second* consists of various pieces against the English sectaries; the *third* includes his writings against Mr. Hobbes, which have been deemed very valuable; and the *fourth* comprehends his controversies about the Sabbath and the Lord's day, single sermons, and occasional tracts. Mr. Granger observes, "that Dr. Bramhall was one of the most learned, able, and active prelates of the age in which he lived, an acute disputant, and an excellent preacher." Although his conduct in the Irish convocation of 1634 be not entitled to any very extravagant applause, and the latter part of the canon, which is said to have been procured by his arguments, be totally inconsistent with a proper respect for free inquiry, or any just sentiments of religious liberty; and although he coincided in many respects with Laud, and more especially in his principles of civil government, he possessed much greater moderation in religious matters. The temper and prudence, likewise, with which he conducted his designs, for the interest of the established church, were far superior. Whilst he approved himself a firm friend to the church of England, he manifested a great degree of charity towards persons of different persuasions; and, accordingly, he distinguished between articles necessary for peace and order, and those that are necessary for salvation; often declaring, "That the church was not to be healed but by general propositions." Biog. Brit.

BRAMICIDE, the crime of killing a Bramin, reputed in the East Indies one of the five most enormous sins.

BRAMINS. See **BRACHMANS**.

BRAMNEE, in *Geography*, a river of Hindoostan which runs into the bay of Bengal, 40 miles S. of Balasore.

BRAMPOUR. See **BURHAMPOUR**.

BRAMPTON, a market town in Cumberland, England, is situated in a deep and narrow vale, 311 miles N.W. from London. Camden supposes it to have been the Roman *Bremetunacum*, "where the *Cuneus Armaturarum* were in garrison on the decline of the Roman empire;" and from its general appearance, it seems to have been of much greater importance than at present. At the east end is a vast conical mount, called the Moat or Castle-hill; which is about 360 feet in perpendicular height, and its acclivity very steep. Near the summit are a trench and rampart, which entirely surround the hill, the crown of which has been formed into a plain, about forty paces in diameter, and defended by a breast-work. Brampton principally consists of one spacious street, irregularly built; but a few modern houses, and a good inn, have been lately erected. Its chief support are a large weekly market (Tuesday), and two annual fairs, for which the grant was obtained in the reign of Henry the third, by Thomas de Multon, lord of Gilsland. The houses are 346, and the inhabitants 1682, who are not well employed, there being no manufacture of any extent in

the town: it appears, however, to be improving; and a railed waggon-way, which the earl of Carlisle has lately made from his collieries at Tindalefell, will probably conduce to the augmentation of its trade. Religious worship is performed in a chapel, which was consecrated in 1789, having been built with the materials of the church, which stood about a mile from the town, on a bold eminence, near the banks of the river Irthing. The chancel yet remains, and the burial-service is generally read there, most of the inhabitants preferring to be interred in the ground that had entombed their ancestors.

About two miles distant, on the face of a rock overhanging the river Gelt, is the celebrated Roman inscription, noticed by Camden, and almost every antiquary since his time. The rock is of an angular form; and, from its exposed situation, the letters have been partially obliterated, but less so than could have been expected from the storms of fifteen centuries.

Near the junction of the rivers Irthing and Gelt is Edmond-Castle, the seat of Thomas Graham, esq. beautifully situated, but greatly improved by the plantations, and other tasteful and judicious alterations of the present proprietor. Near this mansion, on a rising ground, is a mound of earth, called *Cattle-Hill*, raised about twelve feet from the adjacent land, hollow on the top, and upwards of thirty yards in diameter. Between one and two miles north-west from Edmond-Castle, is *Watchcros*, the fourteenth station ad lineam Valli, and supposed to have been the *Aballaba* of the *Notitia*. It is situated on the summit of an eminence, of an easy ascent, and commanding a very extensive prospect. On the south side are several irregular lines and breast-works, and the site of the *Prætorium* is still distinct. The military way, which generally accompanied the *Prætenturæ*, runs in this part of the county at some distance, in order to avoid the marshes and bogs through which both the walls of Severus and Hadrian were carried. Its comparative direction, therefore, from Carr-voran to Stanwix, is that of a string to a bow; and hence it passes this station, which is several hundred yards south of the wall.

BRAMSCHE, a town of Germany, in the circle of Westphalia, and bishopric of Osnabruck, on the Hase; 5 miles S.W. of Vorden.—Also, a town in the circle of Westphalia, and county of Lingen; 5 miles S.S.E. of Lingen.

BRAMSTEDT, or **BRAHNSTEDT**, a town of Germany, in the circle of Lower Saxony, and duchy of Holstein, situated on the river Bram, and having near it a medicinal spring discovered in 1681; 21 miles N. of Hamburg.

BRAN, the skins or husks of corn, especially wheat, ground, separated from the farina or flour, by a sieve or boulder.

Of wheat-bran it is that starch-makers make their starch, which is nothing else but the *fecula* remaining at the bottom of the vessels, wherein the bran has been steeped in water.

Bran is held detergent, and, on that account, is of some medicinal use in gargarisms and glysters. It is also a chief ingredient in the composition of cataplasms. Some apply it hot against the pleurisy; boiled, it purges scurf and dandriff, and cleanses the hands in lieu of soap. Among the ancients, it was also used as an erotic, to excite love.

Bran has been given to horses; but it has been observed that those of bakers and mealmen, which have principally subsisted on this article, with the addition of a few split beans or peas, have become purfue and thick-winded, then asthmatic, and lastly, dull, heavy, and inactive; and when they have died at 9 or 10 years old, a large ball, or mealy concretion, of different sizes in different subjects, has been found

found in the stomach and intestinal canal, impenetrably hard, and about 10 or 12 pounds in weight. However, bran, though an improper food for horses in its dry state, is an useful ingredient in mashes with meal, and serves to prevent the satiating richness of that article alone; and also in common mashes with oats, when a horse is under a course of physic; and with a proper impregnation of honey in the mashes for colds, during the severity of the winter season. *Taplin.*

Dyers rank bran in the number of non-colouring drugs; because it yields no colour of itself. It serves for the making of their four waters, used in preparing stuffs to take the dye. This water is made by boiling wheaten bran, and into the decoction putting a little leaven.

BRANA, in *Ancient Geography*, a town of Spain, in Bætica. *Ponv.*

BRANAW, in *Geography*, a town of Bohemia, in the circle of Koniggratz, in which is a manufacture of coloured cloth; 11 miles N.W. of Glatz, and 29 N.E. of Koniggratz.

BRANCA URSINA, J. Bauh. in *Botany*. Bear's breech. See ACANTHUS.

BRANCA Ursina Germanica, J. Bauh. See HERACLEUM *Sphondilium*.

BRANCA, in *Geography*, a small island in the Atlantic, being one of the Cape de Verd isles, near the coast of Benin, in Africa.

BRANCA, in *Middle Age Writers*, the paw, or extreme part of the foot of a wild beast, or bird of prey. *Du-Cange.*

BRANCA, or BRANCHIA, also denotes a right of lopping or cutting off branches of trees in the forest for firing. *Du-Cange.*

BRANCALEO, JOHN FRANCIS, in *Biography*, a Neapolitan physician, published, in 1534, "De balneo, quam salubria sint, tum ad sanitatem tuendam, tum ad morbos curandos. Dislogus adversus neotericos." Rome, 8vo. He defends bathing against the objections of his contemporaries, on the authority of Galen, and from his own experience recommends the practice in intermitting fevers, and as an assistant in the cure of the lues venerea. He reproves his brethren for their too frequent use of purgative medicines, the common resource, at that time, against most diseases. The work has been several times reprinted. *Haller Bib. Med. Præc.*

BRANCALEONE, in *Geography*, a town of Italy, in the kingdom of Naples, and province of Calabria Ultra; 9 miles S. E. of Bova.

BRANCAS, ST. a town of France, in the department of the Indre and Loire; 4 leagues S. of Tours.

BRANCH, in *Botany*. Branches are the divisions of a stem or trunk, which are found on many herbaceous plants, but are chiefly noticed on shrubs and trees. The primary branches spring immediately from the trunk; the secondary ones from the primary; and so on in a regular subordination, till they terminate in slender twigs. They consist of precisely the same anatomical parts as the trunk, and with the exception of a root, are in fact little trees, which if separated from their parent stock, and planted in the earth under favourable circumstances, would throw out roots, and become independent plants. They proceed from buds formed within the surface of the trunk which interrupt the parallelism of its fibres, and form knots in the wood. These knots afford a point of support, and centre of motion to the growing branches, and are sunk more deeply in the wood in proportion to their age.

The lower branches are often nearly parallel to the horizon at right angles with the trunk: those above them make

angles more and more acute, as they are placed nearer the summit; but these angles differ in different species, and in every individual tree are subject to numerous varieties; from the influence of external causes. Some branches produce only leaf, and new branch buds: others produce only flower buds. The former are smooth in their surface, pliable and tough, with close straight fibres, easily separable from each other: the latter are wrinkled at their base, have their fibres less compact, and break short when struck. There are also branches which pierce the bark without a bud, and form what is commonly called false wood. These, as they are often luxuriant in their growth, and rob the more useful branches of their due nourishment, are carefully pruned away by the skilful planter and horticulturist. They have a rough bark, and produce only a few blackish buds.

BRANCH, in *Vegetable Anatomy*. Almost every plant or tree, when arrived at a certain period of its growth, exhibits at its superior part, more or less of a divided or ramified appearance. The mode of increase by means of branches has been observed so generally amongst vegetables, that it was formerly considered the exclusive distinction of that class of beings; but it is now well known that a numerous tribe of animals multiply themselves by branches, and therefore this mode of propagation is not quite peculiar to the vegetable kingdom.

On a superficial inspection, the branches appear as so many divisions and sub-divisions of the tree, in the formation of which the main trunk is disposed of or expended; but a more accurate examination proves, that the trunk loses none of its substance in the production of the branches; that both trunk and branches take their origin, and continue to increase precisely in the same manner; that, in fact, every branch should be considered as a lesser trunk, differing only from the parent stem, in the circumstance of not deriving its sustenance immediately from the earth.

The branches are the product of the buds in which they enjoy, for a certain period, a species of foetal existence, as the embryo of the trunk did originally in the seed. See the articles SEED, FRUIT, TRUNK, BUD, and BULB.

The kind of attachment which continues to subsist between the trunk and the branches affords additional proof of the individuality of the existence of the latter: although the external form of a tree would lead to the supposition, that the branches were formed by different detachments of the fasciculi composing the original trunk, in the same manner as one separates into several portions the fibres of a rope; yet, to exhibit the contrary, it is only necessary to make some sections of the branches where they are implanted into the trunk. Thus, suppose a tree, which divides into two primary branches, be cut transversely about a foot above the bifurcation, the section will be found to represent that of two distinct trunks, each composed of concentric circles of woody fibres. (See *Plate II. in Vegetable Anatomy, fig. 1.*) If a transverse section be then made of the same branches, at the place where they first appear to separate from the trunk, the concentric layers corresponding to each branch will be perceived as before, but they will be found surrounded by several circles of the woody layers belonging to the trunk. (See *Plate II. in Vegetable Anatomy, fig. 2.*) If a transverse section be again made similar to the last, but a few inches lower down, the circles of woody layers which compose the branches will be seen diminished in number and size, while the concentric layers of the trunk have become in the same proportion more numerous. (See *Plate II. in Vegetable Anatomy, fig. 3.*) If, lastly, similar sections to these described be repeated at short distances from each other, it will be found, that the number of woody circles which

appertain

appertain to the branches, continue regularly to decline, in proportion as the sections are performed lower upon the tree, until they disappear altogether, there being at last exhibited only the appearance of the divided circles of the layers of wood, which constitute the main trunk. The connexion of the branches with the trunk is, therefore, by means of a cone, of which the apex is directed towards the centre of the tree, and the base corresponds with the superficies. *Fig. 4. of Plate II. in Vegetable Anatomy*, represents the arrangement of the ligneous fibres, by means of which the origin of the branches is rendered of a conoid form.

When a branch is forcibly torn from the stem, it is commonly observed to bring with it a portion of a cone or pyramid, which leaves a corresponding depression at the part from whence the branch has been removed. This arises from the woody fibres being most easily ruptured, where they are reflected into the angle, which forms the line of junction between the branch and the trunk.

The small or secondary branches have precisely the same kind of origin and connexion with respect to the large or primary branches, which these latter have with regard to the trunk. Hence every branch may be considered as a parent stem sustaining others, which in their turn give origin to new branches, and these again to others, as long as the vegetable continues to grow.

Branches acquire bulk by the addition of successive layers of wood, in the same manner as the trunk. See *fig. 5. of Plate II. in Vegetable Anatomy*, which is copied from the design of Duhamel, to illustrate the growth of branches. The entire figure is supposed to represent a tree of four years of age, furnished with several branches in the order in which they might naturally occur. The woody cone, N° 1, having developed a bud towards *a*, a branch would exist in the fourth year possessed of four layers of wood, as represented by *a b*. If another bud were formed upon the ligneous layer of the second year, N° 2. 2, its branch in the fourth year would be composed of three layers, as seen in *c d*. Admitting further, that in the third year a bud was produced from the branch *a b* towards *f*, a little branch would be formed which could only have two layers; and lastly, if in the fourth year, when the ligneous layer N° 4. 4, is deposited, another bud were to grow towards *g*, the branch to which it would give origin would be made of only one layer of woody fibres, as shown by *g h*. Thus the number of woody layers which compose any branch being ascertained, its age becomes known, and the relation which this bears to the age of the parent trunk is discovered by finding the woody layer upon which the apex of the ligneous cone of the branch is implanted; or, in other words, observing the point where the parallelism of the longitudinal fibres of the trunk is first interrupted.

It is asserted by Parent, "Histoire de l'Academie," 1711, that the branches are nourished by the pith or medulla, but nothing can be more erroneous: the medulla of the branch does not even communicate with that of the trunk, although the ligneous cone of the branch is most frequently implanted upon the innermost layer of the woody fibres, or those which immediately incase the medulla.

Du Hamel has remarked, that the longitudinal fibres, whether woody or cortical, take the direction of the chief current of the sap: thus, if the sap be propelled in the direction of the trunk, (which happens when either the branches have been originally inconsiderable, or have been early lopped off,) the cortical and woody fibres preserve nearly a perpendicular position, only separating to give passage to the branches and immediately after recovering their parallelism. (See *Plate II. in Vegetable Anatomy. Fig. 6.*

exhibits a portion of a thick trunk, from the side of which had proceeded a small branch. If a large branch arises from a trunk, it necessarily attracts a great portion of the sap, and, in this case, the inclination of the cortical and woody fibres is obliquely towards that branch, as it is represented by *fig. 7. of Plate II. in Vegetable Anatomy*. This effect is still more remarkable in trees, which have been topped immediately above the origin of a young branch; for then, all the sap being obliged to pass towards the branch, the fibres pursue the same direction, and hence, if a tree be examined in the spring, after having been thus deprived of its top the preceding winter, the new ligneous fibres will be observed to cross the others, as appears in *fig. 8. of Plate II. in Vegetable Anatomy*.

The course of the ligneous fibres determines the nature and quality of what is called the grain of wood. In proportion as the fibres preserve the parallel direction the grain is smooth and equal, and the wood tractable in the hands of the workman, and accordingly those trees which furnish but few or small branches, such as the different *firs*, are most used in carpentry: whilst *mahogany* and several *fruit-trees* are preferred for making furniture, on account of the various disposition of the fibres, and the number of large knots, which produce the beautiful diversity of colours observed in these woods.

The branches occasion that appearance in wood, known by the name of a *knot*: the longitudinal fibres being diverted from their course, and subjected to compression, at first by the eruption of the bud, and afterwards by the growth of the branch, acquire a degree of solidity and compactness unlike any other part of the vegetable body. The ligneous cone of the branch itself generally acquires more or less of the knotty texture; the conversion of the origin of the branch into a knot is influenced however by several accidental circumstances, the habit of the tree, &c. which are pointed out in another place. See *KNOT*.

The branches of the vegetables with one seminal leaf differ from the dicotyledons in this particular, that they are not produced by buds, but by the longitudinal fibres turning aside, and prolonging themselves in a diagonal course, until they penetrate the bark.

After the description which has been given of the origin and growth of the branches, it is almost unnecessary to add, that they possess the same anatomical structure as the trunk; all the parts which compose the one are met with in the other, and are disposed with perfect similarity in each, as the epidermis, the parenchyma, the cortical layers, the wood, and the medulla.

The form of the larger branches is most frequently cylindrical, but the slender ones have several sides, or exhibit in the transverse section more or less of a polygon figure. The section of the branches of the *alder* and the *orange-tree* is triangular, that of the *Virginian poplar* is square, and in the *plum-tree* and *willow* it is pentagonal.

The general appearance of a vegetable, which botanists have termed the *habitus*, depends chiefly upon the position which the branches and their ramifications obtain with respect to each other, and the different directions they assume. The branches like the leaves arise in various orders: sometimes they are opposed to each other, as in the *hazel*, *oak*, and *coffee-trees*; at other times they succeed one another alternately, as in the *pear* and *apple trees*, &c. They are arranged in a circle round the stem in the *protea argentea*: in some instances the branches are widely scattered on the tree, while in others, they are so thickly set, that they conceal from view the trunk and one another. The various situations of the branches depend upon that of the buds from

from whence they originate; and being constant in each species, more particularly with regard to the secondary branches, it furnishes a botanical character, of which Adanson has taken advantage. The branches, as well as the leaves, are strongly attracted by the light; they avoid even the shade caused by the foliage of the adjoining branches of the same tree, and hence it is, that those which are next the ground extend in a horizontal direction, in order to escape from the shadow of the superior branches, and that the latter, in proportion as they approach the summit of the tree, assume more of an erect position. The lesser ramifications observe a similar position. The economy of some trees renders the direction of their branches somewhat peculiar: thus, in the *poplar*, they are nearly vertical, whilst in the *weeping willow* they bend towards the earth, and in the *fig-tree* they are curved towards the root; but in these instances also the lowest branches are still the most prominent, in order that all may be equally and fairly exposed to the light.

Du Hamel has made a number of experiments, to determine the proportionate thickness of the trunk to the primary branches, and again of these to the secondary branches: his experiments tend to prove, that the squares of the circumferences of the first branches exceed those of the trunk, in the proportion of 5 to 4; and in comparing the squares of the circumferences of the primary and secondary branches, he found that the latter fell short of the others in the proportion of 100 to 101 in one instance, and in another of nearly 50 to 51; the primary branches, therefore, not only exceed in quantity the trunk, but those of the second order also, which are nevertheless so much more numerous. Du Hamel explains this curious circumstance, by supposing that the smaller branches are most liable to be destroyed, in which case they would not only suffer diminution themselves, but their loss would tend to make those from which they spring more vigorous, and consequently larger.

The Abbe Schæbol distinguishes in fruit trees five sorts of branches: the first kind are smooth on the surface, their fibres are straight and closely applied to each other, but easily separated; they are pliant, and break with difficulty; it is upon these branches the wood buds are found. The second sort suit in the fruits; they are wrinkled at their base; their fibres appear to be more interwoven; they are supposed to be endowed with numerous vessels and pores; they contain a thick sap, and when bent are readily broken. The third kind of branches resemble those which become the wood, but are not produced from buds; they arise from the bark, and, as they never become hard, they are called the *branches with false wood*. The fourth set are very broad at their base; their bark is brown and rough; their buds are black and not numerous: these branches, like the last, are produced by the bark; they grow rapidly and soon perish; they are injurious to the tree, in depriving more useful branches of their due proportion of nourishment. The fifth sort are small branches which abound upon unhealthy trees; they exhibit feeble trees, and are useless upon the most vigorous; they die before they acquire any magnitude.

There is a remarkable relation between the branches and the roots; upon these parts mutually depend the ascent and descent of the sap; they must, therefore, act in harmony and in proportion to each other: hence, if a tree be deprived of some of the principal branches the corresponding roots perish; or, if the small branches be clipped to form the tree into any particular shape, the roots gradually assume the same figure; if the summit of the trunk be cut off, the lateral branches become more vigorous; in the same manner

the lateral roots acquire strength, by the removal of the extremity of the principal root. The fine fibres of the root perish at the fall of the leaf; and lastly, experiment has shown, that the tops of the branches, when covered with the earth, will produce roots; and that the roots, when exposed to the air, will put forth leaves.

BRANCH, in *Mythology*. Anciently branches were carried in the hands at the processions and ceremonies of the gods; whence the *thallophori*, or branch bearers. The Thespians adorned a branch. The olive-branch was the symbol or ensign of peace. The natives of the islands of the South Seas use green boughs, &c. for the same purpose at this day.

BRANCH is also applied to the parts or ramifications of divers other bodies, which, in respect hereof are considered as stems. Thus chemists speak of the branches of their metalline vegetation, branches of the *arbor Dianæ*, *arbor Martis*, &c. Phil. Trans. No. 286. Mem. Acad. Sc. 1692. 1710.

BRANCH, in *Anatomy*, denotes a division of a vein, artery, or nerve. All the veins in the body are only branches of the *vena cava*.

BRANCH is also used in the *Military Art*, in speaking of trenches, mines, and their several ducts, ways, returns, and the like, between one well and another. See GALLERY.

BRANCH is also used in speaking of the veins in mines of gold, silver, or other metals, which divide like the veins in the body.

BRANCH in *Genealogy*, is applied to the several lines or successions arising out of the same stock or origin. In which sense, branches amount to much the same with cadets.

BRANCH also denotes a complex metalline kind of candlestick, contrived for the reception of a number of candles. These in ancient writers, are called *phari*, *cantharus*, *jeffe*; when made of glass *lustres*, the richer sort, *girandoles*.

BRANCH of the trenches, in *Fortification*. See BOYAU.

BRANCH-land, in *Falconry*, signifies to make a hawk leap from tree to tree, till the dog springs the partridge.

BRANCH, in *Scripture*, is an appellation peculiarly given to the Messiah, as being of the branch or house of David.

BRANCHES of vaults, are sometimes used to denote the arches of them.

BRANCHES of arches, denote several portions of arches springing all from the same summer.

BRANCHES of eaves, in *Architecture*, the reins or arches of Gothic vaults; which traversing from one angle to another, diagonal-wise, form a cross between the other arches which make the sides of the square, whereof those arches are diagonals.

BRANCHES of a bridle, in the *Manège*, are two crooked pieces of iron which support the mouth-bit, the chain, and the curb: and which are fastened on one side to the head-stall, on the other to the reins; serving to keep the horse's head under command.

What was forever the branches of the bit incline, the horse's mouth goes to the contrary. The duke of Newcastle is very particular on the head of branches; explaining their several kinds and their effects, which are reducible to those of a lever. The branch is always to be accommodated to the design, either of bringing in, or raising a horse's head, and to the necessary degree: accordingly, we have strong and hardy branches, gentle branches, rude branches, &c.

With regard to their form and structure, branches are either straight, in form of a pistol, for young horses to form their mouth; or, after the countable of France's fashion, for horses that already carry the head well: others are in a form of a

gigot, or leg; others of a bent knee; others in the French fashion, &c.

These are the laws in the *Manège*: 1. That the farther the branch is from the horse's neck, the more effect it will have. 2. That short branches, *veteris paribus*, are ruder, and their effects more sudden, than those of longer. 3. That the branch is to be proportioned to the length of the horse's neck.

That part of the branch of a bridle, whereby we judge of its effects, and which discovers its strength or weakness, is called the *line of the banquet*. A strong and hardy branch is that whose seville-hole, at the lower end of it, is placed on the out-side of the line of the banquet. A gentle branch is that, the seville-hole of which is set on the inside of the said line. A rude and hardy branch will bring in a horse's head, proportionably as it is more or less hardy; whereas a gentle branch, by diminishing the effect of the bit-mouth, makes a horse more easily to bear the pressure thereof, who before could hardly endure it. See BITS.

BRANCHED velvet. See VELVET.

BRANCHER, among *Fowlers* and *Falconers*, denotes a young bird well sledged, which, having quitted the nest, is not yet in a condition to fly far, or shift for itself, but still keeps in the bushes or branches about its native dwelling, where it is fed by the dam.

The branches of hawks are also called *ramage falcons*; those of nightingales, *pushers*: because, as some say, they are thrust out of the nest by the old ones. Canary birds of the first year are called branches; when just flown, and unable to feed themselves, *pushers*.

BRANCHERY, in the *Anatomy of Vegetables*, denotes the vascular parts of divers fruits, as apples, pears, plums, and berries. In which sense the branchery stands contradistinguished from the skin, pulp, &c.

The branchery of an apple is only the ramifications of the ligneous body through all the parts of the *parenchyma*; the greater branches being likewise, by the inoculations of the lesser, united together. Grew. *Anat. of Plants*, lib. i. cap. 6. § 2.

BRANCHIA, in *Ichthyology*. See GILLS.

BRANCHIADÆ, in *Ancient Geography*, a people who are placed by Quintus Curtius towards the Oxus, and by Strabo in Sogdiana, the adjacent country.

BRANCHIALE, in *Natural History*, a name given by Mr. Lhuyd to a peculiar species of *FUNGITÆ*, which being of a deeply striated texture, is supposed to resemble the gills of a fish.

BRANCHIDÆ, in *Antiquity*, priests of Apollo serving in his temple at Didyma, near Miletus; which was famous for its oracle. The temple of the Branchidæ, or, as it was afterwards called, of Apollo Didymæus, together with the oracle, were seated on the promontory called Posideum, at the distance of 18 or 20 stadia from the shore, and 180 from the city of Miletus; and both are recorded as occupying this spot before the Ionic migration. The appellation "Branchidæ," was derived from a very noted family, so called, which continued in possession of the priesthood till the time of Xerxes, deducing its pedigree from the real or reputed founder, and original proprietor, "Branchus." Several of these sacred tribes flourished in Greece, and intermixed, as the Branchidæ did, fable with their genealogy; and with a view of conciliating from the people a greater respect for their progenitor, raised him far above the level of common humanity. The story of the Branchidæ is too ridiculous to be recited; and we shall, therefore, refer, for the relation of it to Varro. By some, however, this name is derived from Branchus, a Thessalian youth, beloved by

Apollo, who received him into his own temple, and commanded that divine honours should be rendered him after his death. Stephanus Byzantinus informs us, that this oracle was sacred to Jupiter, as well as to Apollo; and probably both these deities, as well as Branchus, were honoured in this temple. Whatever be the origin of the oracle, it is certain, that it had acquired a very early and extensive reputation at Branchidæ; and it was particularly consulted by Cræsus, who was profusely munificent upon these occasions, dedicating his choicest treasure to a vast amount, in the same manner as at Delphi.

The Persians, under Xerxes, the son of Darius, afterwards despoiled this temple and oracle of all their wealth, and then destroyed it by fire. The Branchidæ, who had betrayed this temple and oracle into the hands of the Persians, became, on the miscarriage of Xerxes, the voluntary companions of his flight, in order to avoid the punishment of their treachery and sacrilege, and settled among the Bactri, in a region far remote from Greece. However, the descendants of those who had fled with Xerxes, were cruelly extirpated by Alexander the Great; thus visiting the sins of the fathers on the children, in a manner which will for ever reflect the greatest odium on the memory of the perfidious tyrant, who, after receiving their submission, put them all to the sword, and erased even the vestiges of their towns: so that the city remained a bare solitude and barren waste.

Although the Milesians were too much impoverished and depressed to attempt an immediate restoration of their temple, after the conclusion of the Persian war, they exerted themselves at a subsequent period, not precisely ascertained, in rearing the fabric from its ruins; and the architects employed by them for this purpose, were Peonius, an Ephesian, and Daphnis, of Miletus. With what magnificence and prodigious spirit this new edifice was designed, may in some measure be inferred from its present remains. Strabo has termed it, "The greatest of all temples;" adding, that it continued without a roof, on account of its magnitude. Pausanias mentions it as one of the wonders peculiar to Ionia; and Vitruvius numbers this among the four temples which had raised their architects to the summit of renown. In this temple was the famous statue of Apollo, formed by Canachus, a Sicyonian, who had been a scholar of Polyclethus the Argive; it was carried away by Xerxes, and restored by Seleucus Nicanor. It is said, that the oracle of this Milesian temple became silent, when it was deserted by the Branchidæ, and that it afterwards resumed its prophetic and oracular faculties. After Paganism began to decline, this oracle continued in some repute; and the emperor Julian was very solicitous to reinstate the god in the full possession of his Ionian territory; which, however, he was constrained to yield up to Christianity, soon after the death of the royal apostate. Strabo, *Geog.* tom. ii. p. 517—634—814. Pausanias, *Græc. Descript.* p. 533. 694, ed. Kuhnii. *Ionian Antiquities*, by Chandler, Revett and Pars. 1769.

BRANCHIER, *St.* in *Geography*, a town of Switzerland in the Valais, seated near the river Drance. N. lat. 46° 5'. E. long. 7° 3'.

BRANCHING, the *ramification* or *sprouting* of the horns of deer, &c. which bears an analogy to the vegetation of plants. Phil. *Trans.* N° 227.

The hair at the ends is apt to *branch*, or split and divide into whole brushes, which are easily visible by a microscope.

BRANCHIOPODA, in *Entomology*, a genus of crustaceous insects established by late continental naturalists to include those species of the Linnæan *cancris*; and *gammari* of Fabricius, which have four simple, setaceous, unequal antennæ; the body oblong, and destitute of feet, but in lieu of

of which each side is furnished with either a single, or a double series of oblong, ciliated, branchiostegous appendages, which are formed for swimming; and the tail naked, jointed, long, and forked at the extremity.

The two species of this new genus, described by Herbert, Dufresne, and Bosc, are le branchiopode itaque, which is cancer itaque of Linnæus, and a second sort delineated by Herbert, called le branchiopode pallideux.

BRANCHIOSTEGA, in *Zoology*, a kind of conchyliæ, having for the aperture of the gills a transverse cleft, or opening. It inhabits the Asiatic seas.

BRANCHIOSTEGI, in *Ichthyology*, a term employed for that natural order of fishes which have gills destitute of bony rays. The genera of branchiostegous fishes are, *mormyrus*, *ostreacion*, *tetrodon*, *diodon*, *syngnathus*, *pegasus*, *centrifus*, *balistes*, *cyclopterus*, and *lophius*.

BRANCHUS, in *Medicine*. The hoarseness which accompanies a catarrh is so called from *βραχς*, to be moist. See CATARRH.

BRANCHUS, or *branchæ*, also denotes a kind of glandular tumour in the *fauces*, resembling two almonds, which render the breathing and hawking difficult.

BRANCION, in *Geography*, a small town of France, in the department of the Saône and Loire, $1\frac{1}{2}$ league W. of Tournus.

BRANCO, an island in the gulf of Mexico, and bay of Campeachy, between cape Concededo, or point Delgado, and Vera Cruz.

BRANCO, de Malambo, a town in the province of St. Martha, in Terra Ferina, S. America; seated on the river Magdalen, having a good harbour, considerable trade, and a bishop's see. N. lat. $11^{\circ} 40'$. W. long. $75^{\circ} 30'$.

BRANCOVAN, a town of European Turkey, in the province of Walachia; 28 miles N. of Nicopoli.

BRANCOURT, a town of France, in the department of the Aisne; 10 miles W. of Laon.

BRANCZYCE, a town of Lithuania, in the province of Novogrodek; 10 miles N. of Sluck.

BRAND, in *Agriculture*, the name of a disease to which corn, and some other grasses, are subject. It is a sort of fungus, which derives its nourishment from the vegetable. Of these fungi, there are several species. One of them is named by Dr. Withering (*Bot. Arrang.* vol. iv. p. 388.) "*Reticularia Segetum*;" and in a pamphlet upon Brand, by the Rev. Henry Bryant, entitled, "A particular inquiry into the causes of that disease in wheat commonly called Brand, &c.," Norwich, 1783, it is called "Dust Brand." In other places its usual name is "Smut," or "Burnt Corn." This species is common to wheat, oats, barley, and rye. The *felluca fluitans*, and other grasses, are also affected by it. It is destitute of scent, and consumes not only the farinaceous part of the grain, but even the arillus and chaff, dispersing itself entirely before the corn is cut; so that the injury occasioned by it is confined to the quantity of grain destroyed by it, which is not very great in any season. The ear is often affected by this reticularia before it emerges from the *folium vaginans*, or huse; but about the root there is no appearance of disease. Barley and oats are more frequently attacked by it than wheat; which circumstance may be accounted for by the latter being usually *drilled* for sowing. Mr. Lathbury examined the dust of this fungus under a powerful magnifier, and thus found, that it consisted of a number of minute particles, uniform in shape and size, much smaller and blacker than those of the "pepper brand," and less easily separable; and they seemed to be contained in little irregular cells. This dust, or seed, is the food of a small, shining, black dermestæ, the "*Dermestes ater*," of Marsham. Another species

which Mr. Bryant distinguished by the name of "pepper brand," is also called simply "brand," or "bladders." This species does not eat through the arillus, consuming only the farinaceous part of the grain. The ears affected by it are easily discovered by their external aspect; for the chaff opens as if unnaturally distended, the germen becomes shorter and rounder, and exhibits the appearance of swelling, and a sort of inflammation; the grain assuming in this state a deep and dingy hue, easily breaking when rubbed, and furnishing a sooty powder, which soils the fingers, and emits a very fetid scent. This species is very prejudicial to the farmers; because it is carried with the corn into the barn, and when broken under the flail it discolours and otherwise injures the sample, so as to render it unsaleable, or to reduce its price. For the prevention of this evil, farmers generally dress their seed-wheat, with various preparations: some use a lixivium of wood-ashes and water; others, salt and water only, or sea-water, when it can be easily procured; others, the ley from the soap-boilers; others again, urine and cheese-whey; and others, it is said, have infused arsenic for this purpose. Ail, as Mr. Kirby believes, dry their seed with fresh slacked lime. From this practice we may infer, that the disease is supposed to originate from the adhesion of the dust or seed of the brand to the seed of the wheat; and these methods are adapted for the purpose of washing it off, or destroying it. The ultimate cause of this distemper has been variously assigned. Mr. Bryant (*ubi supra*) strenuously maintains, that it is occasioned by an injury which the antheræ receive by too great constriction, when the ear emerges from the *folium vaginans*; and therefore he condemns the common practice of dressing the seed, as not only useless, but destructive of the grain. Some take the dust for the eggs of insects; and others adopt the opinion, with which Mr. Kirby coincides, that this evil is occasioned by a minute vegetable of the order of "Fungi." Mr. Bryant's method of accounting for this disorder, is acknowledged by this ingenious naturalist to be plausible; but he conceives that it is founded upon no arguments which can convince one who is in search not of theories, but of truth. From a variety of experiments made by the Rev. Peter Lathbury, F.L.S., and recited by Mr. Kirby, (*ubi infra*) together with other facts that occurred within his own knowledge, he concludes, without hesitation, that the practice of dressing the seed previous to sowing, in the way above-mentioned, is a very effectual prevention of the brand.

Rejecting Mr. Bryant's hypothesis, and also that of the brand's being produced by insects, Mr. Kirby proceeds to establish the third opinion, that the disorder is occasioned by a vegetable substance. The fact, established by the experiments which he recites, that the dust of brand, carried into the field with the seed-wheat, like other vegetables, propagates itself, gives (he says) the highest degree of probability to this opinion. It is further confirmed by the recital of an experiment of Mr. Lathbury, of sowing it, as it were, upon its native soil (especially in the case of wheat taken from a clean sample), which seems to have occasioned the destruction of three-fourths of its produce. Besides, this dust, when placed under a powerful magnifier, exhibits every appearance of minute seed. As to the manner in which these seeds vegetate and ascend from the seed with the growing plant, till they reach the heart of the grain, it is a subject of inquiry that may be extended to a great number of the fungi, which without impropriety may be denominated "subcutaneous" vegetables. With regard to the brand in particular, it is suggested, as a probable conjecture, that the uncommonly minute seeds of this fungus may attach themselves either to the "*plumula*," and so pass through the air-vessels into the plant; or else to the

"rostellum," which seems most likely; and in that case they may be propelled through the sap-vessels with the sap, till they at length arrive at their final seat, the heart of the germen. See observations upon certain fungi, which are parasites of the wheat, by the Rev. William Kirby, F.L.S. in the *Linnæan Transactions*, vol. v. page 112, &c.

BRAND, in *Geography*, a town of Germany, in the circle of Erzgebirg, chiefly inhabited by miners; 2 miles S. of Freyberg.

BRAND-SUNDAY, *Dimanche des Brandons*, in *French Ecclesiastical Writers*, denotes the first Sunday in Lent; which is thus called on account of an ancient practice in the Lyons, where the peasants, in the night of this day, walked about their orchards, gardens, &c. with torches lighted, or fire-brands in their hands; in which plight they visited every tree, and addressing themselves to them one after another, threatened that if they did not bear fruit well the ensuing season, they should be cut down to the ground and burnt. This is evidently a relic of paganism; the like of which was practised by the ancient idolaters in the month of February; hence called *Februarius*, à *februando*. *Menestr. Hist. de Lyon*. p. 279. *Menag. Orig.* p. 126. & Du-Cange *Gloss. Lat. tom. i.* p. 610.

BRANDAN, in *Geography*, a town of the East Indies, in the island of Java, belonging to the king of Sourabaya.

BRANDANO, a river of Italy, which runs into the gulf of Tarento, 10 miles S. of Castellanetta, in the kingdom of Naples.

BRANDARIS, in *Conchology*, a sort of MUREX, common in the Mediterranean and Adriatic sea. The shell is somewhat ovate, and surrounded with straight spines; beak moderately subulate, straight, and obliquely surrounded with spines. *Gmelin*, &c.

Many varieties of this shell are described by writers; generally the colour is white, whitish, cinereous, or brown, with a triple row of spines, or sometimes with only a single row.

BRANDEIS, in *Geography*, a town of Bohemia, in the circle of Königgratz, seated on the river Orlitz; 21 miles S. E. of Königgratz.

BRANDEL, PETER, in *Biography*, a painter of portrait and history, was born at Prague, in 1660; and having spent about four years in the school of John Schroeter, principal painter at that court, a kind of jealousy of his rising merit was excited in the mind of his master, so that Brandel resented the ill-treatment. He removed from him; and at the age of about 19 years, quitted his school, and commenced a master himself. Most of the churches at Prague and Baslau are embellished with his works; and the prince of Hatzfeld is said to have given 100 ducats for one picture of St. Jerome at half length. He spent most of his time at Prague, where the wealth which he acquired was dissipated by profusion and irregular conduct; so that he died poor, and was buried by charitable contributions. The Jesuits and monks, however, honoured his memory by appointing for him a solemn funeral procession, in which 300 tapers of wax were carried by ecclesiastics. Brandel was distinguished by a ready invention, an expeditious manner of painting, and natural colouring, except that his shadows were sometimes too black. His pencil was broad, easy, and free. *Pilkington*.

BRANDEN, in *Geography*, a bay lying on the east coast of China, in the Indian ocean, north of Harling's bay.

BRANDENBURG, MARK, or MARQUISATE OF, a country of Germany, bounded on the north by Mecklenburg and Pomerania, on the east by Poland, on the west by the duchies of Magdeburg and Lunenburg, and on the south by Silesia, the Lusatias, the electorate of Saxony, the principality of Anhalt, and part of the duchy of Magdeburg. Its greatest extent from west to east is about 200 miles, and

from north to south about 110 miles. The country is generally level, and the soil sandy and barren, but by the industry of the inhabitants rendered productive of several sorts of grain. They find, however, that the only very profitable crop upon these sands is buck-wheat, which they sow in large quantities, and which yields a product equal to that of the best soils applied to that grain. When a piece of land has been managed with greater care than ordinary, it will yield a good crop of rye; but wheat and barley are rarely to be seen. In some parts the inhabitants cultivate millet and flax; in other parts, potatoes and turnips; and again in others, tobacco and woad for dyeing. By various improvements of modern times, the waste lands and the large morasses, which have been drained, are become fertile. From their woods they derive an ample supply of fuel for their domestic use, and for their glass and iron furnaces, charcoal, tar, wood-ashes, and large quantities of timber for house and ship-building, part of which is exported to Hamburg, Holland, France, and other places. Their breed of cattle, and especially their sheep, are objects of particular attention; from the latter they are supplied with wool, which has enabled them to establish several woollen manufactures; and with a view to the improvement of their breed of sheep, king Frederic II. caused rams to be imported from France and England. The culture of silk is also carried on with industry and with increasing success; and besides their silk and woollen manufactures, they have others of linen, cotton, and leather. At Berlin, and Potsdam in particular, they have also excellent painters, statuarys, and engravers. By means of these manufactures and arts they not only preserve in the country large sums, but they also import an accession from other countries to which their productions are exported. The country also furnishes good clay, and fine porcelain earth, together with iron-stone, amber, salt-petre, alum, colour-earths, and medicinal springs. The principal rivers are the Elbe, the Oder, the Prignitz, the Havel, the Warthe, the Spree, and the Dosse. The Spree and Oder are united by a canal, begun in 1662, and finished in 1668. The Havel and Oder are joined by the canal of Finow, which king Frederic II. caused to be begun in 1743, and completed in 1746, with thirteen sluices. By these canals navigation is facilitated; and from their rivers and lakes they draw a supply of various kinds of fish. In the electoral mark they reckon 84 cities, 19 market-towns, about 1917 royal and noble villages, 2027 ancient villages, 44,749 hides of land liable to taxes, and 8421 hides of the nobility, 26,000 hearths in the towns, and 68,000 in the country, 1971 Lutheran churches, and 80 Calvinistical churches. The population of Brandenburg, according to the statement of Hoeck, consists of 755,577 persons. The states consist of the nobility and towns, whose house of assembly is in the Spandau street at Berlin, and who still enjoy some small remains of their ancient privileges. The hereditary offices of the marquise are, a marshal, chamberlain, cup-bearer, purveyor, sewer, treasurer, and ranger. The religion of the country is Lutheran, which was adopted by Joachim II., elector of Brandenburg, in 1539; but the king of Prussia, who is also elector of Brandenburg, and those of his court, are Calvinists. The churches of both persuasions are well endowed; and the laity jointly employed by the government. The Roman catholics are also tolerated; and every inhabitant enjoys liberty of conscience and a free exercise of his religion. For the education of youth, and the advancement of learning, this electorate, besides Latin schools and gymnasia in several places, has an university at Frankfurt on the Oder, and an academy of sciences at Berlin.

The whole country of Brandenburg is divided generally into the Electoral Mark and New Mark. The Electoral Mark

BRANDENBURG.

Mark is again subdivided into the Old Mark, the Vor-Mark, or Mark of Prignitz, the Middle-Mark, and the Ucker Mark.

The *Old Mark*, extending from east to west about 9 German miles, and from north to south about 11 miles, is separated, towards the east, by the Elbe from the Prignitz and the duchy of Magdeburg, and bounded also by the latter to the south and likewise, in part, to the west, but in other parts by the duchy of Lunenburg. It contains 13 cities, of which the capital is Stendal. Its taxable lands are 8058 hides.

The *Vor-Mark*, or *Prignitz*, is terminated by the Elbe and Havel, the duchy of Mecklenburg, and the circles of Ruppın and Havelland in the Middle Mark, and is 10½ German miles in length, and 7½ in breadth. It contains 20 towns, the principal of which is Perlberg. The hides of land that pay taxes are 5211.

The *Middle Mark* is bounded by the Prignitz, the duchies of Magdeburg, and the electorate of Saxony, the Lower Lusatia, the New Mark, the Ucker Mark, and the duchy of Mecklenburg. The most fertile part lies near the Oder, in the circles of Havelland and Ruppın; the marshes having been drained, and the inhabitants cultivating millet, radder, and buck-wheat, producing also wine, and breeding silk-worms, and having manufactures of alum and vitriol, and some medicinal springs. Among its cities and towns, which are reckoned 48, the chief are Berlin, Brandenburg, and Potsdam; and its hides of taxable land are 24,991.

The *Ucker Mark* terminates to the south and west on the Middle Mark and the duchy of Mecklenburg, from the latter of which it is principally separated by the Havel; and to the north and east on Pomerania and the New Mark, being mostly separated from the former by the Welse and Rando, and from the latter by the Oder. Its greatest extent is about 13 German miles in length, and 11 in breadth. This province was anciently called the Ucker, or Uckerland, from the river and lake of that name; and the title of the Ucker Mark was first applied to it towards the latter end of the 15th century. If we except a narrow slip, which runs along the Middle Mark, from the frontiers of Mecklenburg towards the Oder, it consists of a very good soil, which, by the industry of the inhabitants, has been so much improved, that the province annually exports great quantities of grain, and more particularly supplies Berlin. It also produces a great number of sheep, fruit, honey, hops, and tobacco. The inhabitants are Lutherans, but not without a mixture of French and German Calvinists. The whole territory is divided into the two circles of Ucker-Mark and Stolp, and contains 15 towns, of which the capital is Prenzlau. The hides of land that are taxable are 6579.

The *New Mark* is a long narrow tract of land, separated to the west from the Middle and Ucker Marks by the Oder, terminating to the north on Pomerania, and eastward on Pomerania, Poland, Silesia, and the Lower Lusatia, and extending about 40 geographical miles in length, and in breadth 10 miles. Although the soil is generally sandy, this province has some good corn lands, and near the rivers luxuriant pasture grounds and marshes, the tracts of which is coarse and rushy. It abounds in wood, and supplies fruit, fish, and game. The incorporated circles produce wine, and yield great quantities of iron ore. The New Mark, properly so called, extends from the river Rega to the river Warthe; and contains, according to the statement of Hueck, 279,584 inhabitants. It appears to have been in the possession of the margraves of Brandenburg as early as the year 1257; it was transferred by Otto the Tall to the knights of the Teutonic order in 1286, but soon redeemed. In 1429, it was wholly ceded to the same order;

and in 1443, the cession was confirmed at Francfort, by the elector Frederic II. But in 1455, their circumstances required the sale of it, and it was purchased by the said elector; and since that time it has remained in the house of Brandenburg, under the appellation of the New Mark. It has a regency of its own, courts of justice, and other colleges. It consists of Cultrin, or Kultrin, which is the capital, seven original circles, and four incorporated circles. Its cities are reckoned to be 39; its hides of taxable land 16,738; and the value of the estates is estimated at one million of dollars.

The ancient inhabitants of Brandenburg are said to have been the Suevi, of whom there are several subdivisions. As the Romans pursued their conquests as far as the Elbe, about the commencement of the Christian æra, they were probably acquainted with this country. However, the Vandals checked their further progress in this direction; but, about the fifth century, they repaired more to the south, abandoning their own country to the Wendi, Veneti, or Heneti, who, being too much confined by the Vistula, occupied the territory which the Vandals had abandoned, and, possessing themselves of the whole country along the southern side of the Baltic, formed there a new nation, known by the general name of Sclavi or Slavonians, who were a barbarous people of very extensive migration, and inveterate enemies to the Christian religion. With these the kings of the Franks, and especially Charlemagne, had frequent wars, and his successors were indefatigable in their endeavours to subdue them. At length, Henry, surnamed the Fowler, succeeded about the beginning of the 10th century, A.D. 927, in the conquest of them, and planted Christianity in the country. He then conferred it on his brother-in-law Sigefrid, a Saxon count, with the title of margrave or lordwarden of the marches or borders; and he, with his successors, new-planted and peopled it from the Netherlands, Westphalia, Franconia, and Saxony. At first this title was conferred by the emperor, according to his own arbitrary pleasure; and it did not become hereditary till the time of Albert, surnamed the Bear, the first prince of the race of Anhalt, who was made margrave by Conrad II., and afterwards raised to the dignity of an elector by Frederic Barbarossa, about the year 1100. When this family became extinct in 1332, several others succeeded; and, in 1373, the emperor Charles IV. assigned Brandenburg to his second son Sigismund, who, in 1415, being then emperor of Germany, sold this margravate and electorate to Frederic, burgrave of Nuremberg, for four hundred thousand ducats. Frederic, the ancestor of the present reigning race, received the investiture of Brandenburg, in 1417, at the diet of Constance, from the hands of the emperor Sigismund, who, two years before, had conferred upon him the dignity of elector and arch-chamberlain of the holy Roman empire. This Frederic was the first elector of the house of Hohenzollern, which some German genealogists have traced to Thassilo or Tassilon, who lived in the beginning of the 9th century. From Frederic the electorate descended, through different branches of the family, to Jorchim II. who, in 1539, embraced the Lutheran religion, and who, whilst the war of religion desolated Saxony, and the neighbouring countries, maintained his electorate in peace; having declined to enter into the union which the Protestants concluded at Smalkald: nor did he agree to the interim published by the emperor Charles V. In 1618, the elector, John Sigismund, received from the king of Poland, the investiture of Prussia for himself and his descendants; and resigned the electorate in favour of his son, George William, who, in 1640, was succeeded by his son, Frederic

Frederic William, surnamed the Great, born at Berlin in 1620, and educated in the camp of Frederic Henry, prince of Orange. When he came to the government, he found a desolated country in possession of his enemies, allies in whom he could repose no confidence, few troops, and almost no resources of supplies. Nevertheless, he compelled the king of Poland, in 1656, to declare Prussia an independent state, which had been formerly held of the Polish sovereigns; and closing a reign, which has been much celebrated, was succeeded, in 1688, by his son Frederic III. born at Königsberg, in 1637, who, supporting the emperor in the contest for the Spanish succession, was by him acknowledged as king of Prussia, in 1700, and in the following year crowned by the emperor at his native place. This elector has been usually distinguished by the title of Frederic I. He died in 1713; when his son Frederic William II. ascended the throne. By him the city of Potsdam was founded in 1721; but he was chiefly distinguished as the father of that great prince Frederic II. who ascended the throne in 1740, and died in 1786, after a long and glorious reign: the most memorable and permanent event of which was the acquisition of Silesia from the house of Austria, in 1742. The short reign of his nephew is well known; during which the failure of the Prussian tactics in France and Poland, convinced Europe, that the great Frederic had been the soul of the machine. However, these checks were counterbalanced by the completion of the Prussian acquisitions in Poland. Of the reign of his son, the present monarch, it is sufficient now to say, that it has been marked by caution and prudence more than by enterprise. See PRUSSIA.

The elector of Brandenburg possesses the seventh place among the electors of the empire; and in the council of the princes of the empire he has five voices. As arch-chamberlain, he carries the sceptre before the emperor at his coronation, and brings him water to wash with in a silver basin. For the government of Brandenburg, and the administration of justice, there are several supreme colleges and tribunals.

BRANDENBURG, an ancient city of Germany, in the circle of Upper Saxony, and the marquisate to which it gives name; seated on the Havel, which separates the old town from the new, and the castle from both, and likewise environs the new town to the left with a particular trench, on which a sluice has been erected. Both these towns have, ever since the year 1714, been under the government of the same magistrates; and each of them contains two churches; the number of inhabitants does not exceed 6000. It was erected into an episcopal see by the emperor Otho I. in 949, but the see was abolished at the reformation, in 1563. Manufactures of cloth, fullian, and canvas have been established in this place by the French Calvinists; and the navigation of the Havel affords it a considerable trade. The fort appears like a suburb, and contains, besides the cathedral church, and residences for the members of the cathedral, a riding school for the instruction of young noblemen. The members of the chapter, which still subsists, and which is composed of a Lutheran provost, dean, senior, sub-senior, and three other canons, are distinguished by a cross of gold, enamelled with violet, and terminating in eight points: an honour conferred by Frederic II. in 1755. In the vicinity is a mountain, on which Henry I. in 928, erected a church in honour of the Virgin Mary, from which time the mountain had the name of "Marienberg." The church has been destroyed, and its site planted with vines. Near the old town is a lake about two German miles long. Brandenburg is 31 miles W. from Berlin. N. lat $52^{\circ} 25'$ E. long. 13°

BRANDENBURG, NEW, a town of Germany, in the circle of Lower Saxony, and duchy of Mecklenburg, seated on

a small rivulet, which loses itself in a neighbouring lake. The town is flourishing, and has two churches, a grammar-school, and a superintendency. Hops are much cultivated in its environs; 48 miles W. of Stettin, and 60 N. of Berlin.

BRANDENBURG, a town of Prussia, in the province of Natangen, near the Frische-Haff, chiefly inhabited by fishermen; 12 miles S.W. of Königsberg.

BRANDERI, in *Entomology*, a species of CIMEA, that inhabits Barbary, the snout of which is bent; thorax somewhat six-spined; wing-cases with three white dots. Gmel. —Obf. This is of the middle size, griseous beneath, testaceous, and has the antennæ rufous.

BRANDERIANA, a species of PHALÆNA, (*Tortrix*) described by Linnæus in Fn. Suec. The first wings are testaceous, fuscous, and without spots. A native of Europe.

BRANDERIM, in *Geography*, a town of France, in the department of Morbihan; 1 league E. of Hennebont.

BRANDEUM, in *Ecclesiastical Writers*, a linen cloth or veil put over the tombs of the apostles St. Peter and St. Paul, and left there for some time; by which it is supposed to acquire a degree of sanctity, so as to be worshipped as a relic; and for that purpose frequently sent by the pope as a present to some prince. In this sense, brandeum amounts to the same with what was otherwise called *sanctuarium*, *sudarium*, *orarium*, and *velum*. The use of Brandea was introduced as a means of diffusing and propagating the virtues and influences of relics, without moving or any way impairing the substance of them; the translation of relics in early days being forbidden. Fleur. H. E. l. 35. Du-Cange, Gloss. Lat. t. i. p. 909.

BRANDGANS, in *Ornithology*, the name given by Chisus and Frisch to the sheldrake or burrough duck, *anas tadorna*. Linn.

BRANDGUTH, in *Geography*, a town in Germany, in the circle of Upper Saxony, and country of Erzgebirg; 4 miles N.E. of Lauterstein.

BRANDHIRSCH, in *Zoology*. See CERVUS HIPPELAPHUS.

BRANDI, GIACINTO, in *Biography*, an Italian painter of history, was born at Poli, about 20 miles from Rome, in 1623, and first instructed by Algarde, and afterwards, by Giacomo Sementa of Bologna, who painted after the manner of Guido. Upon quitting the school of Sementa, he became a disciple of Lanfranc: and having exercised his art in several of the churches and palaces at Rome, he rose to such reputation, that he became head of a school, and was made president of the academy of St. Luke. He obtained the patronage of several persons of rank, and especially that of the pope, who created him a knight of the order of Christ; but less attentive to fame than fortune, and more remarkable for avarice than excellence, although he had a lively genius and free pencil, he was often very incorrect, and his colouring was feeble. He seldom associated with persons of his own profession, of whom he generally expressed an unfavourable opinion; but took pleasure in low company, dissipating by profusion and pleasure the wealth which his industry acquired. He died in 1691. His works are chiefly at Rome, Verona, Milan, and Gæta. The daughter of this painter was married to the celebrated Rosa da Tivoli, of whom Giacinto conceived a mean opinion, because he painted only beasts. By this contemptuous behaviour Rosa was so incensed, that he collected all the clothes belonging to his bride, on the morning after marriage, and sent them back to her father with a message, "that his daughter's person was fortune enough to make her husband happy; and that a good painter of beasts was as likely to become rich, as a bad painter of men." Argenville. Piquington.

BRAND.

BRANDING in the face or hand, denotes a punishment inflicted by law on various offences, by burning with a hot iron, after the offender has been once admitted to benefit of clergy.

By 4 Hen. VII. c. 13, a distinction was established between mere lay scholars, and clerks in orders, by directing, that also laymen, who are allowed the privilege of clergy, should be burnt with a hot iron in the brawn of the left thumb. This distinction, however, was abolished for a time by 28 Hen. VIII. c. 1, and 32 Hen. VIII. c. 3, but it is held to have been virtually restored by 1 Edward VI. c. 12. After this burning, the laity, and before it the clergy, were discharged from the sentence of the law in the king's courts, and delivered over to the ordinary to be dealt with according to the ecclesiastical canons. But the trial in the ecclesiastical courts, and consequent purgation, were attended with such perjuries and abuses, that the statute 18 Eliz. c. 7, enacts, that after the offender has been allowed his clergy, he shall not be delivered to the ordinary; but, upon such allowance and burning in the hand, he shall forthwith be enlarged and delivered out of prison; with proviso, that the judge may, if he thinks fit, continue the offender in gaol for any time not exceeding a year. Thus the law continued for above a century; except only that the statute 21 Jac. I. c. 6, allowed, that women convicted of simple larcenies under the value of 10s. should be burned in the hand, and whipped, stocked, or imprisoned for any time not exceeding a year. And a similar indulgence by the statutes 3 & 4 W. & M. c. 9, and 4 & 5 W. & M. c. 24, was extended to women guilty of any clergyable felony whatsoever, who were allowed to claim the benefit of the statute, in like manner as men might claim the benefit of clergy, and to be discharged, upon being burned in the hand, and imprisoned for any time not exceeding a year. The punishment of burning in the hand, being found ineffectual, was also changed by statute 10 & 11 W. III. c. 23, into burning in the most visible part of the left cheek, nearest the nose; but this provision was repealed by statute 5 Ann. c. 6. It was farther enacted by the same statute, that when any person is convicted of any theft or larceny, and burnt in the hand for the same according to the ancient law, he shall also, at the discretion of the judge, be committed to the house of correction or public work-house, to be there kept to hard labour for any time not less than six months, and not exceeding two years; with a power of inflicting a double confinement in case of the party's escape from the first. It was also enacted by 4 Geo. I. c. 11, and 6 Geo. I. c. 23, that when any persons shall be convicted of any larceny, either grand or petit, or any felonious stealing or taking of money or goods and chattels either from the person or the house of any other, or in any other manner, and who by the law shall be entitled to the benefit of clergy, and liable only to the penalties of burning in the hand, or whipping, the court, in their discretion, instead of such burning in the hand, or whipping, may direct such offenders to be transported to America, (or, by statute 19 Geo. III. c. 74, to any other part beyond the seas) for seven years. See **TRANSPORTATION**. It is also enacted by the same statute, 19 Geo. III. c. 74, that, instead of burning in the hand, the court in all clergyable felonies may impose a pecuniary fine, or (except in the case of manslaughter,) may order the offender to be once or oftener, but not more than thrice, either publicly or privately whipped: which fine or whipping shall have the same consequences, as burning in the hand; and the offender, so fined or whipped, shall be equally liable to a subsequent detainer or imprisonment. See **Benefit of Clergy**.

BRANDIS, in *Geography*, a town of Germany, in the

circle of Upper Saxony, and territory of Leipsick; 9 miles E. of Leipsick.

BRANDLECHT, a town of Germany, in the circle of Westphalia, and county of Bentheim; 3 miles S.S.E. of Northorn.

BRANDMULLER, GREGORY, in *Biography*, a painter referred by the Germans to the first rank of artists, was born at Basle in 1661; and, in consequence of having discovered a genius for his art, and of having acquired a knowledge of design by studying and copying some good prints in his father's possession, he was placed under the tuition of Caspar Meyer. From Basle he removed to Paris, and was admitted into the school of Le Brun, whose esteem and preference he acquired by his proficiency in his profession to such a degree, that he became the object of jealousy to others, and was under a necessity of retiring into his own country; having first obtained the prize in the Royal Academy at Paris. He excelled in history and portrait; and resembled Le Brun in the fire, elevation, and grandeur of his subjects. His design is correct; his expression just and animated; and his method of colouring good, so that it retained its original strength and beauty without fading. He died in 1691. Pilkington.

BRANDO, in *Geography*, a small island in the gulph of Bothnia, containing 6 or 7 villages, a church, some arable land, and small woods.

BRANDO, a town in the island of Corsica, 6 miles N. of Bastia.

BRANDOLINI, AURELIO, in *Biography*, an eminent Italian poet, divine, and polite writer, was born of a noble family at Florence in the 15th century, and surnamed "Lippus," on account of a delusion from his eyes, which, at an early age, had nearly deprived him of his sight. Notwithstanding this misfortune, he acquired great eminence in various kinds of literature; and he found in these sources of consolation, amidst the afflictions occasioned by a defect of sight, and the loss of his fortune. Among other excellencies for which he was distinguished, he was singularly ready in his poetic compositions; and this talent he possessed in so eminent a degree, that he is said to have put into very elegant verse, without premeditation, all the topics of Pliny's 37 books of Natural History. Corvinus, king of Hungary, hearing of his fame, invited him to his court; and employed him, for several years, in teaching rhetoric at Buda and Gran. After the death of that king, in 1490, he returned to Florence, and assumed the habit of the friars of St. Augustin. In this new profession, he applied assiduously to the exercise of his ministry, and preached, with great applause, to crowded auditories in several parts of Italy. As to the character of his sermons, it is said, that they were distinguished, not only by ingenious illustrations of the Scriptures, but also by a strain of sublime philosophy derived from the ancients. After residing for some time at Naples, where he had for his scholar Giammaria del Monte, afterwards pope Julius III., he settled at Rome, and died there of the plague in 1498. The most valuable of his numerous works were his 3 books, "De Ratione Scribendi," containing the precepts of good writing, and written with singular learning and elegance; his two books, entitled "Christiana Paradoxa," first printed at Basil in 1543, 8vo.; "De Humanæ Vitæ Conditione, et tollenda Corporum Ægritudine." These, with some others, were printed at Basil in 1498. He also published, in heroic verse, the histories of the O. and N. T., a commentary on St. Paul's epistles, a treatise "De Luge," some orations, and some Latin and Italian poems: and left several treatises in MS. on political and historical subjects. Tiraboschi. Gen. Dict.

BRAN-

BRANDON, in *Geography*, a market-town of Suffolk, England, is pleasantly situated on the banks of the lesser Ouse, which is navigable from Lynn to Thetford, and forms part of the boundary between the counties of Suffolk and Norfolk. By the navigation of this river, various articles of trade and commerce are imported to, and exported from the town. An ancient bridge is thrown across the river, upon which there was a hermitage in 1406, belonging to the bishop of Ely. Upon the decay of this structure, that prelate granted 40 days' pardon to all persons who contributed towards the repairs, and to the hermit, a pardon for three years. This town gives the title of duke of Brandon to Archibald Hamilton, which title was first conferred by queen Anne in 1711.

Simon Eyre, lord mayor of London, who built Leaden-hall, was a native of this town. Here are a weekly market on Thursdays, and four fairs annually.

In the vicinity of Brandon, are some very extensive rabbit warrens, which supply the London markets with vast numbers of this animal.

Brandon is 78 miles N. of London, and contains 203 houses, with 1148 inhabitants. Gough's Edition of Camden's *Britannia*, vol. ii.

BRANDON, a post-town of America, in Rutland county, Vermont, situate on both sides of Otter Creek, containing 1075 inhabitants. Here Brandon Creek discharges itself into Otter Creek, from the North East.

BRANDON, a harbour on the N. side of Long Island, New York, 9 miles W. of Smithtown, and at the same distance from Hempstead plain.

BRANDON, *Str.* the name of an islet or rock lying in the Indian ocean, to the N.E. of the islands Bourbon and Mauritius. S. lat. $16^{\circ} 45'$. E. long. $64^{\circ} 48'$.

BRANDON, a mountain in the county of Kilkenny, Ireland, below which the river Barrow flows; it is the last of the granite chain which takes its rise in the county of Wicklow, and though its elevation is not considerable, it commands a very extensive prospect.—Also, a very high mountain in the county of Kerry, Ireland, which is seen at the distance of 15 leagues, and is an important land-mark for mariners. Its summit is generally covered with clouds; and it is esteemed a certain token of fine weather when its top is visible. It received its name from St. Brandon, who had an oratory, or chapel, near its summit.

BRANDON Bay, a bay on the western coast of Ireland, near Tralee bay, in the county of Kerry. On the west it has Brandon mountain, and, on the east, a flat low land called Magheriebeg, off which is a cluster of small islands. This bay is open to the north, and has neither safe anchorage nor tolerable shelter. Smith's Kerry.

BRANDON Head, a cape of Ireland, forming the western extremity of Brandon bay, and projecting from the lofty Brandon mountain. It is about 15 miles west of Tralee, and 10 north of Dingle. N. lat. $52^{\circ} 17'$. W. long. $10^{\circ} 1'$. Beaufort.

BRANDRITH denotes a trevet, or other iron stand, whereon to set a vessel over the fire.

BRANDRITH, among *Builders*, denotes a fence, or rail, about the mouth of a well.

BRANDT, GERARD, in *Biography*, an eminent historian, was born at Amsterdam, in 1626, and, after a course of preparatory study, commenced his ministry with a congregation of remonstrants at Nieukoop. Having married a daughter of the celebrated Gaspard Barlaeus, he removed first to Hoorn, and finally to Amsterdam in 1667. His principal works are, "A short account of the Reformation in the Low Countries, and the War with Spain," 1658: "History of the Refor-

mation, and other particulars concerning the Church of the Low Countries," 4 vols. 4to. 1671, &c. This work, written in Dutch, contains a faithful and accurate representation of the important event, concerning which it treats; and so highly was it esteemed, that pensionary Fagel told bishop Burnet that the perusal of this alone would amply recompense the trouble of learning the Dutch language. We have an English translation of it by Chamberlayne, and it has been abridged in French, in 3 vols. 8vo. 1730. Brandt also wrote "A History of the Town of Enkhuyzen;" "Life and Exploits of Admiral Ruyter;" "Account of the Proceedings against Barneveldt, Hoogerbeets, and Grotius;" "Poems," &c. He died in 1685. Moreri.

BRANDT, NICHOLAS, or, as some call him, *Sebastian*, a German chemist, much addicted to the fanciful researches of the period in which he lived, was born in 1458, and died in May, 1521. Leibnitz, in the *Mélanges de Berlin* for 1710, cited by Chaptal, in his "Elements of Chemistry," vol. iii. p. 350, mentions Brandt as a chemist of Hamburg, who, during a course of experiments upon urine, with a view of extracting a fluid proper for converting silver into gold, discovered phosphorus in 1667, or, as others say, in 1669. He communicated his discovery to Kraft, who imparted it to Leibnitz, and, as it is pretended, to Boyle. (See *BOYLE*.) Leibnitz, says Chaptal, introduced Brandt to the duke of Hanover, before whom he performed the whole operation; and a specimen of it was sent to Huygens, who shewed it to the Academy of Sciences at Paris. It is said, that Kunckel had associated himself with Kraft to purchase the process from Brandt; but Kunckel having been deceived by Kraft, who kept the secret to himself, knowing that urine was made use of, set to work, and discovered a process for making the substance; and hence it has been called Kunckel's phosphorus. See *PHOSPHORUS*.

BRANDY. This valuable spirit is produced by the distillation of wines of all kinds, and, properly speaking, by no other fermented liquor, though, as we have explained fully, under the article *ALCOHOL*, the purely spirituous part of all fermented virous liquors, procured by distillation, is essentially the same, and, therefore, an infinite variety of imitations of the intermediate products of distillation, may be produced by adding flavouring and colouring matters to any kind of pure spirit.

Brandy is prepared in many of the wine countries of Europe, and, with particular excellence, in Languedoc, in Anjou, whence the well-known Cogniac brandy, and other parts of the south of France.

The general mode of preparing it is extremely simple, being nothing more than a well-regulated distillation of wine from suitable vessels. This manufactory is technically termed, in France, *Brulerie*, and the makers, *Bruleurs d'eau de vie*.

Though every wine will give a certain portion of brandy, by distillation, it is not every kind that can be used with advantage. In general, the strong heavy wines are to be preferred. Those that do not yield a sixth of their quantity of spirit, are not worth the expence of working.

The apparatus is composed of three parts, the *alembic*, or boiler, the *capital* fitted on the top of the boiler to receive the spirituous vapour, and the serpentine, or *worm*, a convoluted pipe fitting to the beak of the alembic, and immersed in water, in which the vapour is condensed, and flows out at the bottom, in the form of distilled spirit.

The alembic is a cylindrical copper boiler about 30 inches (French) high, and 24 in diameter, flattened at the bottom to present a greater surface to the fuel, and drawn out into

into a neck at the top, about 2 inches high, and only 9 or 10 in diameter. The capacity of this alembic is about 320 quarts. The capital, which fits on the neck of the alembic, is somewhat in the form of a very flattened cone, with the apex downwards, and truncated where it joins the alembic. Its diameter here is of course a trifle more than that of the neck of the alembic over which it fits; above, its diameter is about 7 or 8 inches more. A tube, or beak, projects laterally from the lower part of the capital, to convey the vapour into the pewter serpentine or worm, which makes six or seven turns before it reaches the bottom of the large tub of water in which it is immersed. The diameter of the worm is about an inch and a half at the upper part, where it joins the beak of the capital, and lessens gradually to one inch towards the bottom.

The alembic is built into brick-work, which lines the whole, except the bottom, and a few inches below the neck. Beneath the alembic is the fire-place, made so that the flame of the fuel (generally wood) immediately touches the flat bottom of the alembic, and furnished with an ash-pit, flue, and registers, or dampers.

In distilling, the alembic is first filled to about five-sixths of its capacity, with wine, (which, in the above dimensions, is from 5 to 6 quintals,) and the fire kindled beneath. When the wine is near boiling, the capital is put on, and all the joints luted with clay and ashes, and presently a thin stream of brandy begins to fall from the lower extremity of the worm, into a large cask set to receive it. The fire is kept up, and the distillation continued, till all the spirit is got from the wine; after which, the fire is let out, and the remaining contents of the alembic are drawn off by a cock at the bottom, and thrown away as useless.

In distilling, care should be taken not to urge the fire too much at first, otherwise the wine boils up into the capital, and comes over into the worm, mixing with, and fouling the spirit. In general, the slower the process, and the smaller the stream of spirit from the worm-pipe, the finer and better is the brandy. The distillers make a distinction between the former and the latter runnings of the spirit. What first comes over has the strongest, richest, and highest flavour, and this is gradually lessened, and the spirit becomes more and more watery to the end. Therefore, when the brandy becomes weak, the portion already distilled is set apart, and the remainder is collected in a separate vessel, and is called *seconds*, or *petite eau*, or *feints*, in the term of British distillers, and is not immediately fit for use, but is re-distilled with fresh wine, in the next process, being still too valuable to be lost. It is obvious, that the precise point at which this distinction is made, must be arbitrary, and, therefore, it is determined, in some countries, by the proportional quantity of spirit obtained, to the wine put into the alembic; and, in others, by a certain specific gravity; in Spain and Portugal, (as with rum in the West Indies,) the sinking of olive oil in the spirit is the established proof. The wine is known to be entirely exhausted of its spirit by taking a small quantity of the liquor at that time distilling over, laying it on the heated part of the alembic, and putting a lighted match to it. If the steam which it gives, takes fire, burning with a blue flame, it is still spirituous; if not inflammable, the liquor is little else than water. It takes about nine or ten hours to run off the quantity above mentioned, in which time about 50 lb. of coal is used, when this is the fuel.

Brandy is naturally clear and colourless as water; for the different shades of colour, which it has in commerce, arise partly from the casks in which it is kept, but, chiefly, from the addition of burnt sugar, saunders wood, and other co-

louring matters that are intentionally added by the manufacturer, and which appear to do neither good nor harm to the quality of the spirit.

There are several ways of judging of the strength of the spirit. Many are mentioned under the article *ALCOHOL*. The following is also much used by the dealers: a phial is filled three quarters with the brandy, stopped with the thumb, and suddenly knocked, with some force, against the knee, to prevent breaking it. This raises a froth on the surface, and, by the size and durability of the bubbles, a good idea may be formed of the strength of the liquor by those who are in the constant habit of examining samples. This is, however, as liable to error as the trial with gunpowder, burning, &c.; for it is well known, that certain additions may be made to brandy which will very much alter the frothing. After all that has been done, it is still a difficult problem to determine, with perfect accuracy, the strength of all kinds of made spirits, by any shorter method than that of distillation, though the improved *hydrometers* answer most of the purposes of trade and revenue.

The strength of the spirit, of course, depends on the strength of the wine from which it is made, and this, again, depends on the quantity of saccharine mucilage contained in the must or grape juice, and the perfection of the fermentation. Generally speaking, the wines of hot-climates furnish much more spirit than those of colder; and sweet, rich, well-ripened grapes give much more than the cold, sour, watery fruits. The richest wines furnish as much as a third of spirit; and the general average of the wines in the south of France and Spain is stated to be, by Chaptal, about a fourth. On the other hand, some of the northern wines (though perfect as wine) give no more than a fifteenth of spirit.

The principal differences in the quality of brandies are *strength*, or quantity of alcohol, and *flavour*, which last is given, apparently, by several principles contained in the wine. There appears to exist in wine a peculiar aroma, or flavouring principle, which is imparted (somewhat altered, indeed, by distillation) to the brandy procured from it. This, whatever it is, is lessened by every subsequent rectification of the brandy, and is entirely lost when the alcohol or purely spirituous part is extracted. There are also several unpleasant flavours found in different kinds of brandy, and which greatly impair its excellence and delicacy for the table. The flavour of *empyreuma*, or *burning*, is the commonest. This is properly so termed, since it is scarcely ever found in the very first portions of any distillation, but increases as the process continues; when the wine, therefore, has undergone a longer impression of heat, and when, from the decreasing strength of the spirit, a higher temperature than at first is required to keep the wine boiling in the alembic. This burnt flavour is also more prevalent where the construction of the still is such as to require a longer continuance of the boiling, and may, at any time, be given by raising the heat much at the end of the process. Though this flavour is disagreeable to the finest judges of brandies in the wine countries, it has become, through the caprice of fashion, an excellence in some exported brandies, and must, accordingly, be given by the manufacturer.

Chaptal, with great probability, attributes this burnt taste, in a great measure, to the presence of the malic acid in the wine, which also appears, in some degree, in the spirit distilled from it. He observes, that the thin or ill-fermented wines contain much of an acid which, by its forming insoluble salts with lead, silver, and mercury, and lime, and by other chemical tests, is proved to be the *malic*, and it also appears in great abundance in cyder, perry, and other such

harsh wines. All these, when distilled, yield a spirit which is of bad quality, acrid, empyreumatic, especially in the last-distilled portion, and even contains a sensible quantity of the same acid which has passed over in distillation. The addition of chalk, alkali, or lime water to the wine does indeed keep down the acid, and prevents it from passing into the spirit, but with a very remarkable diminution of the quantity yielded, and even then, the empyreumatic odour remains. On the other hand, the richer wines are those that are the most free from this acid.

Another substance, which gives a very strong, and mostly, unpleasant flavour and smell to brandy, appears to be an essential oil of peculiar nature, which is found in the spirit of some of the richest and fullest bodied wines. The exact nature of this oil is not known, nor can it be well ascertained, whether it is different from the common flavouring principle, or aroma of wines, except in being so abundant, as to be in part altered by distillation, and changed thereby from a grateful to a nauseous substance. When spirit, charged with this oil, is rubbed in the hands till dry, a strong ungrateful smell is left by this oil, resembling, in some degree, the breath of drunkards. Sometimes this oil is in such a quantity as to separate, in part, from the spirit as it cools, and is found in the capital, as a concrete, suetty oil, strongly nauseous to the smell and taste. Brandy distilled from this oily wine is, in fact, a saturated solution of this essential oil in alcohol. It is much improved by a second rectification, with the previous addition of pure water, which immediately renders the spirit milky, separates it from a great part of its oil, and, by very careful re-distillation, the spirit rises much more pure than before. Any artificial solution of an essential oil in alcohol may be rectified, and the oil separated in the same manner.

The manufacture of brandy, in other countries, very closely resembles the French process which we have just described. Thus, in Spain, the still is filled to four-fifths of its contents with wine, the capital luted on, a fire kindled, and, in about an hour and a half, the spirit begins to come over. About a fifth of the entire quantity of wine is proof-spirit, in which olive oil sinks, and comes over fit to be used, without farther process; and, as much of inferior and weaker spirit comes over afterwards, which is re-distilled and rectified. When the wines are old, heavy, and oily, and a fine clear spirit is wanted at once, water is added to the wine before distillation, to keep down the oil. The principal distilleries in Spain are in Catalonia.

In Portugal, the olive-oil proof is also established, and the wines are there also so heavy and oily, as often to require the addition of water, which, however, is not added to the wine, but only to the brandy before rectification.

An inferior kind of brandy is made from the marc of grapes, or the residue of the grapes after the juice has been pressed out. This still retains enough of the grape-juice to be readily brought into fermentation, when properly arranged, and, therefore, to be capable of yielding afterwards a spirit by distillation. In Switzerland, it is thus performed: Wine-casks are filled with the fresh marc quite full, and pressed down by trampling, to make it lie close, and prevent it from moulding; the casks are then headed, and the bung-holes and joinings are closed up with clay. In two or three days, fermentation begins, the marc heats, and when the first working has subsided, and it has got an agreeable vinous smell (which happens in from two to four or five weeks,) it is fit for distillation. The alembic may be filled quite to the top with the fermented marc, and just water enough is added to wet it thoroughly. The fire should be very slack, and kept up very moderately in the

process, otherwise, the marc, nearest to the bottom, will burn, and give a very unpleasant taste to the brandy. Thirty-two cubic feet of fermented marc will give about ten gallons of spirit. If not wanted immediately, the marc will keep without spoiling in the barrels, if well closed, for two, three, or even four months. This spirit should be rectified over ashes or lime-water to become very drinkable.

M. Beaumé, in his experiments, found, however, that he could obtain a very good spirit from the marc, by a single distillation, either by immersing the alembic in a water-bath, and thus regulating the heat, or by making a kind of wicker cradle within the alembic, raised an inch or two from its bottom, and letting the marc rest upon it, so as to be prevented from coming in contact with the bottom, where the heat is strongest, and adding water, as before, and distilling with a slow fire. By this contrivance, all the burnt flavour was avoided, and the spirit rose at first very pure and good.

Various improvements have been proposed, and partly adopted, in the construction of the alembics and distillatory apparatus, the chief of which, with other observations relating to the general art of preparing DISTILLED SPIRITS, will be described under that article. See also WINE and ALCOHOL.

Encycl. Meth. (Art. Alcool et Distillateur liquoriste) Beaumé et Rozier, in Jour. de Phys. tom. xii. et xviii. An. Chim. Tom. xxxvii.—Report to the H. of Commons on the Scotch Distilleries.—Chaptal, &c. For the laws relating to brandy; see SPIRITS.

BRANDY-Cherry. See CHERRY.

BRANDY-Pots, in Geography, the name given to islands, in the river St. Lawrence, 40 leagues below Quebec.

BRANDYWINE, a township of America, in Chester county, Pennsylvania.

BRANDYWINE Creek, a creek of America, which falls into Christiana creek from the northward, at Wilmington, in the state of Delaware, about 25 miles from its N. and N. W. sources in Chester county, Pennsylvania. This creek is famous for a battle, fought on the 11th of September 1777, and terminating with considerable loss by the British troops. In consequence of this battle, Philadelphia was taken possession of by general Howe on the 26th.

BRANE, a river of South Wales, which runs into the Towy, near Llanidmavery, in the county of Carmarthen.—Also, a river of South Wales, which runs into the Usk, 3 miles W. of Brecknock.

BRANFORD, a township of America, in the county of New Haven, and state of Connecticut, lying on the south side of a river of the same name, which runs into Long Island sound, 10 miles E. of New Haven, and 40 S. of Hartford. It is considerable on account of its iron works.

BRANG, a town of Poland, in the palatinate of Volhynia; 44 miles S. W. of Lucko.

BRANGES, a town of France, in the department of the Saone and Loire, and chief place of a canton, in the district of Louhans, half a league N. W. of Louhans.

BRANITZ, a town of Silesia, in the principality of Oppau; 4 miles S. E. of Jagerndorf.

BRANITZY, a town and district of Russia, in the government of Moscow, seated on the Moskva, between Moscow and Kolomna.

BRANK, in Botany, polygonum fagopyrum, buck-wheat.

BRANK. See SCOLDING BRIDLE.

BRANKER, or BRANCKER, THOMAS, in Biography, an eminent English mathematician, was born in Devonshire, in 1636, admitted butler of Exeter college, Oxford, took the degree of B. A. in 1655, and that of M. A. in 1658, and

and became a preacher. Upon the restoration, objecting to conformity to the established church, he resigned his fellowship at Oxford in 1662, and retired to Chester; but changing his mind with respect to conformity, he was episcopally ordained, and was appointed minister of Whitegate. By his attention to mathematics and chemistry, in the study of which he employed his intervals of leisure, he obtained the patronage of lord Brerewood, who gave him the rectory of Tilton. Being afterwards appointed master of the well-endowed school at Macclesfield, he spent the remainder of his life in that place, and died there in 1676. His mathematical writings were "A Piece on the Doctrine of the Sphere," in Latin, published at Oxford in 1662; a translation of Rhonius's algebra, entitled "An Introduction to Algebra," 4to. Lond. 1668, in which he liberally acknowledges the assistance of Dr. Pell. He also corresponded on subjects of mathematics, with Collins, and other eminent men. Hutton's Dict.

BRANKYRKA, in *Geography* a town of Sweden, in the province of Sudermania.

BRANLE, *Fr.* a kind of dance, very gay, brought hither from France in the time of Charles II.

BRANLIN, in *Ichthyology*. See SAMLET.

BRANNE, in *Geography*, a town of France, in the department of the Gironde, and chief place of a canton, in the district of Libourne; 2 leagues S. of Libourne. The town contains 544, and the canton 10,726 inhabitants: the territory includes 155 kilometres, and 21 communes.

BRANNOGENIUM, in *Ancient Geography*, a town of the Ordovices, in Ptolemy's description of Britain, placed by Camden and Baxter at Worcester, supposing that some transcriber had committed a mistake in assigning it to the Ordovices, from which territory Worcester is too remote. Mr. Horsley places it near Ludlow, which might belong to the Ordovices.

BRANNOVII, a people mentioned by Cæsar, who were under the protection of the Ædui, and who furnished him with troops. They are placed in a small canton of Burgundy in France, called the "Briennois," to the west of Meconnois.

BRANNY, in *Botany*, furfuraceous, covered with branny scales; a term applied to the stipes, or stalks of some species of fungi.

BRANODUNUM, in *Ancient Geography*, one of the nine forts subject to the command of the count of the Saxon shore in Britain; garrisoned by the equites Dalmatæ, and seated on the Sinus Metaris; now Brancester in Norfolk, on the washes.

BRANSEE, in *Geography*, a small island of Denmark, in the Little Belt; 5 miles W.N.W. from Assens.

BRANSK, a town and district of Russia, in the government of Orel, situate on the Desna. — Also, a town of Poland, in the palatinate of Bielsk; 16 miles W. of Bielsk.

BRANSKA, a town of Transylvania, seated on the Marosh. N. lat. $46^{\circ} 0'$. E. long. $23^{\circ} 15'$.

BRANSON, a town of Switzerland, in the Valais, north of the Rhone, and about two miles N.E. of Martigny. N. lat. $46^{\circ} 11'$. E. long. $6^{\circ} 57'$.

BRANT, a river of North Wales, in the isle of Anglesea, which runs into the Menai, about 3 miles S. from Newburgh. — Also, a town of Germany, in the archduchy of Austria; 8 miles E. of Zwettl.

BRANTA, BRENTA, and BRENT GOOSE, in *Ornithology*, synonymous names of *Anas Bernicla*, the common brent goose of the English.

BRANTA TORRIDA, is the same given by Scopoli to *Anas torrida*. Gmel.

BRANTA ALBIFRONS, Scopoli, *Anas allicans*, Gmel.

BRANTHOME, in *Geography*, a town of France, in the department of the Dordogne, and chief place of a canton, in the district of Perigueux; $3\frac{1}{2}$ leagues N. of Perigueux. The town contains 2461, and the canton 10,765 inhabitants; the territory comprehends 265 kilometres, and 12 communes.

BRANTOME, in *Biography*. See BOURDEILLES.

BRAQUE, and BRAQUE DE BENGALÉ. Buff. *Canis avicularius*, the spaniel.

BRARUP, in *Geography*, a small island of Denmark, in the gulf of Schley; 10 miles E.N.E. of Sleswick.

BRAS, a town of France, in the department of the Var, and district of the Brignolles; 4 miles E.N.E. of St. Maximin.

BRASCHEN, a town of Germany, in the circle of Upper Saxony, and duchy of Crossen; 5 miles S.S.E. of Crossen.

BRASCHEVSKOI, a fortress of Siberia, on the Irtysh; 50 miles E. of Semipolatnoi.

BRASCHI, in *Biography*. See PIUS VI.

BRASENIA, in *Botany*. Schreb. 938. Class, *polyandria decagynia*.

Gen. Char. *Perianth* one-leaved, six-parted, permanent; segments lanceolate, curved, obtuse, coloured; three of them interior, alternate, a little longer and narrower than the others. *Cor.* none. *Stam.* filaments from eighteen to twenty-five, capillary, erect, attached to the receptacle, shorter than the calyx; anthers oblong, erect. *Pist.* germs from five to ten, oblong, compressed, attenuated at the apex; styles erect, bent inwards towards the top, pubescent, shorter than the stamens; stigmas obtuse. *Pericarp*, as many capsules as germs, oblong, compressed, the outer side flat, the inner gibbous, acuminate, rather fleshy, one-celled, without valves. *Seeds* two or three, oval, compressed. *Obf.* Calyx, before flowering, erect, green. Allied to *nectris*. In both genera the pericarp might, perhaps be more properly called a berry. Only one seed often comes to perfection.

Bosc, in *Nouveau Dictionnaire*, gives the same generic character, except that he considers the three inner segments of the calyx as a corolla. He gives no farther description of the plant, nor does he mention any habitat. The genus is not taken up by Willdenow, nor is there any figure of it in La Marek's illustrations.

BRASIDAS, in *Biography*, a famous Lacedæmonian general, who distinguished himself, on a variety of occasions, in the Peloponnesian war, which began in the 431st year before Christ. Having gained the reputation of one of the greatest generals of his time, he received a mortal wound in the action between the Lacedæmonians and Athenians, near Amphipolis, in which the former proved victorious, B. C. 422. See ATHENIANS. Brasidas, no less distinguished by his modesty than by his prudence and bravery, wrote a letter from Thrace to the Ephori, which closes with this heroic declaration: "Whatever the honour of the state requires, I will perform or die;" and he fulfilled his promise. Plutarch (Apothegm.) records, that having caught a mouse among some figs, he let it go after having bitten his fingers, observing to those who attended on the occasion; "That there is no creature so contemptible as not to be able to free itself from a foe, if it exerts all the power it possesses." Public honours were decreed to his mother for the speech uttered by her on occasion of his death (see ATHENIANS); and a monument was erected to Brasidas at the expence of the public. See the next article.

BRASIDIA, in *Antiquity*, anniversary feasts held at Sparta in honour of Brasidas, famous for his great achieve-

ments in favour of that state, at Methone, Pylus, and Amphipolis.

The Brasidia were celebrated with sacrifices and games, at which none were allowed to contend but free-born Spartans. To be absent from these solemnities is said by some to have been held criminal, and punished with fines. Meurs. Græc. Ferial. Potter. Arch. Græc. lib. ii. cap. 20.

BRASIL, or BRAZIL, in *Geography*, an extensive and opulent country in South America, belonging to the Portuguese, and of such importance as to be almost essential to the existence of their monarchy. It derives its name from the wood which is so called, mentioned by Chaucer, and known many ages before his time. It is bounded on the north by the river of the Amazons and the north Atlantic ocean, on the east by the south Atlantic ocean, on the south by the mouth of the river La Plata, and on the west by a multitude of morasses, lakes, rivers, and mountains, which separate it from the dominions of the Spaniards; and extends from the frontier of Dutch Guiana, N. lat. 3°, to Port St. Pedro; S. lat. 32°, including 35° of latitude, or 2100 geographical miles, and in breadth from Cape St. Roque, to the farthest Portuguese settlement on the river of Amazons, called St. Paul de Omaguas, comprehending at least the same number of miles. Some have ascribed the first discovery of Brasil to Martin Behem, in 1484 (see BEHEM); but this, however, has been more generally allowed to Pedro Alvarez Cabral, who being entrusted with the command of a powerful fleet, designed by the king of Portugal not only for the purposes of trade, but also of conquest, set sail in 1500; and in order to avoid the coast of Africa, where he was likely to be retarded in his voyage by variable breezes or frequent calms, he stood out to sea, and kept so far towards the west that he found himself, to his surprise, upon the shore of an unknown country, in the 10th degree beyond the line. He first thought that it was some island in the Atlantic ocean that had not been before observed; but proceeding along its coast for several days, he was led gradually to believe, that a country so extensive formed a part of some great continent. This country proved to be that called by its discoverer "St. Croix," but now known by the name of Brasil. Here he landed; and having conceived a high idea of the fertility of the soil, and the agreeableness of the climate, he took possession of it for the crown of Portugal, and dispatched a ship to Lisbon, with an account of that event, which appeared to be no less important than it was unexpected. The Portuguese, however, notwithstanding the flattering report of Cabral, entertained, for some time, no very favourable opinion of this country; because they found, after a survey of its harbours, bays, rivers, and coasts, that it afforded neither gold nor silver; and accordingly they sent thither none but condemned criminals and abandoned women. Two ships were annually sent from Portugal for this purpose, and they returned with parrots, and woods for the use of the dyers and cabinet-makers. In 1548, when the Jews were persecuted by the inquisition, they were plundered of their possessions and banished to Brasil. But receiving encouragement from some of their mercantile friends in different nations, with whom they had formerly been connected, they were enabled to procure sugar canes from the island of Madeira, and to establish sugar plantations. The court of Lisbon, perceiving that the mother-country might derive considerable advantage from this colony, although it furnished them neither gold nor silver, sent thither in 1549, Thomas de Souza to regulate and superintend it. This governor, notwithstanding the talents which he possessed, found it very difficult to reduce those who had been accustomed to anarchy to due

subordination, and to induce the natives, who were dispersed through the forests and plains, and who had no settled habitations, to associate with one another, and to submit to the yoke which the Portuguese seemed desirous of imposing upon them. A dissatisfaction ensued between both parties, which at length terminated in war; nor was the force that had accompanied Souza sufficient to bring it to a peaceful termination. This was in some measure effected by the establishment of a kind of central and rallying point for the colony at St. Salvadore, which was built in 1549, on the bay of All-Saints, and which was the first Portuguese settlement in the country; but the object was chiefly accomplished by the address of the Jesuits, who, dispersing themselves among the Indians, contrived to engage their esteem and attachment, and thus to extend the influence of the Portuguese, and to ensure, as well as to augment, the advantages which the mother-country derived from this settlement. The Indians, instructed by the Jesuits, and employed by them, distributed among the savage natives hatchets, knives, and looking-glasses with such effect, that they were induced to regard the Portuguese as an inoffensive and humane people. The increasing prosperity of the colony became gradually known in Europe; and excited the envy of the French, Spaniards, and Dutch successively. The latter, however, were the principal enemies with whom the Portuguese had to contend in their new settlement. In 1624, the Dutch Admiral Willekens was detached with a powerful squadron, and a considerable number of soldiers and marines, for Brasil; and having cast anchor before St. Salvadore, the capital of the country, and the residence of the Portuguese viceroy, he landed his forces, expelled the inhabitants, and took possession of the town. After having plundered it of its wealth, he appointed colonel Van Dort as governor, and left with him a strong garrison for his support. His first act was the publication of a manifesto, in the name of the States, allowing liberty of conscience to all who were willing to take an oath of fidelity to the republic of the United Provinces. When an account of the success of Willekens arrived in Holland, it was received with great satisfaction, and it was concluded, without hesitation, that the entire conquest of Brasil would ensue. Upon the return of Willekens to Europe, the Spaniards were prepared with a squadron of 56 sail, under Frederic de Toledo, which was destined to drive the Hollanders out of Brasil. The fleet was manned with 12,000 soldiers and marines, who, immediately upon their arrival, laid siege to St. Salvadore, which, after an obstinate resistance, and the loss of its governor, Van Dort, was obliged to capitulate. When the affairs of the Dutch at home assumed a more favourable aspect, they dispatched admiral Lonche, in 1630, with a strong armament to the South American sea, and he arrived on the coast of Pernambuco, or Fernambucco, one of the most considerable and best fortified provinces in Brasil, and, after several obstinate engagements, succeeded in reducing it. He left behind him troops which reduced, in the years 1633, 1634, and 1635, the three provinces of Temeraca, Paraiba, and Rio Grande. These four provinces furnished annually a large quantity of sugar, wood for dyeing, and other commodities, which supplied the Hollanders with such an accession of wealth, that they determined to conquer the whole country; and entrusted Maurice of Nassau with the conduct of the enterprise. After resisting many well-conducted efforts for self-defence on the part of Albuquerque, Banjola, Lewis Roca de Borgia, and Cameron of Brasil, idolized by his people, and himself devoted to the interest of the Portuguese, the Dutch took possession of the provinces of Siara, Serrippe, and the greatest part of that of Bahia. Having thus

thus acquired seven out of the fourteen provinces into which Brasil was divided, they expected soon to conquer the other seven, when Portugal recovered its independence by the elevation of the family of Braganza to the throne. The Dutch, then as enemies to the Spaniards, became friends to the Portuguese, who were likewise the enemies of the Spaniards. They agreed, therefore, to leave that part of Brasil which they had not conquered to the king of Portugal, who also agreed to leave that part which they had conquered, as a matter not worth disputing about with such good allies. But the Dutch government soon began to oppress the Portuguese colonists, who, instead of amusing themselves with complaints, took up arms against their new masters, and by their own valour and resolution, with the connivance indeed, but without any avowed assistance from the mother-country, drove them out of Brasil. The Dutch, therefore, finding it impossible to keep any part of the country to themselves, were contented that it should be restored to the crown of Portugal; to which it has since belonged, giving title to the presumptive heir.

Geographers are not agreed as to the number of provinces or captainships into which Brasil is divided. Some have distributed it into three grand divisions: 1. The northern, containing eight provinces, *viz.* Para, Maragnon, Siara, Patagues, Rio Grande, Paraiba, Temara, and Pernambuco. 2. The middle division, comprehending five captainships, *viz.* Seregippe, Bahia, or the bay of All-Saints, Ilheos, Porto Seguro, and Spirito Sancto. 3. The southern division, including three captainships, *viz.* Rio Janeiro, St. Vincent, and Del Rey. Others reckon fifteen provinces, *viz.* Para, Maragnon, Siara, Rio Grande, Paraiba, Temara, Pernambuco, Seregippe, Bahia, Porto Seguro, Spirito Sancto, Rio de Janeiro, Angra, St. Vincent, and Del Rey. By others again the whole of the Brasils is divided into eight independent governments, beside that of Rio de Janeiro, of which the governor retains the name only of viceroy of the Brasils. The others are those of Para or Amazons, Maragnon, Pernambuco, Bahia, Santo Paulo, Matto Grosso, Minas Geraes, and Minas Goyaves. The rest are fiefs granted to some of the nobility, in recompence of their extraordinary services, who do little more than acknowledge the sovereignty of the king of Portugal, and his representative the viceroy of Peru, who acts both in a civil and military capacity, and maintains the state and grandeur of a sovereign prince in the city of St. Salvador. Formerly Bahia dos Todos os Santos, or St. Salvador, was the principal seat of government and chief mart for commerce in the Brasils; but the discovery and improvement of the gold and diamond mines, within about 100 leagues of Rio de Janeiro, and communicating immediately with it, gave a decided superiority to the latter. On the coast are three small islands, where ships touch for provisions on their voyage to the South Seas; *viz.* Fernando, St. Barbaro, and St. Catharine's. The bays, harbours, and rivers, are the harbours of Pernambuco, All-Saints, Porto Seguro, the port and harbour of Rio de Janeiro, the port of St. Vincent, the harbour of St. Gabriel, and the port of St. Salvador, on the north shore of the river La Plata. "All the provinces of Brasil," says sir George Staunton (*Embassy to China*, vol. i. p. 180.) "are growing fast into opulence and importance. They manufacture of late several of the most necessary articles for their own consumption; and their produce was so considerable, that the balance of trade became to be already in their favour; and remittances of bullion were made to them from Europe, in return for the overplus of their exports beyond their imports." It appears, from the account of this

writer, that the Portuguese settlers have manifested repeated symptoms of revolt from the parent country. It appears also, that during the administration of the marquis de Pombal, so long prime minister in Portugal, these colonies were delivered from some monopolies and restraints, which had contributed to depress them; and moreover, that the project of removing the seat of the Portuguese government to the Brasils was, once in fact, seriously in contemplation with this minister, when that country was invaded by the Spanish forces in 1761, and that calculations were made and precautions taken, as to the number of vessels necessary to transport across the Atlantic the royal family, with the principal officers of the court, and their several attendants. But the project vanished with the danger that occasioned it; and the Brasils continued to be considered as a colony, destined, exclusively, to enrich the parent state.

The climate of Brasil has been described by two eminent naturalists, Piso and Margrave, who observed it with philosophical accuracy, as temperate and mild, when compared with that of Africa. This they chiefly ascribe to the refreshing wind, which blows continually from the sea. The air is not only cool, but chilly through the night, inasmuch that the natives kindle fires every evening in their huts. Nieuhoff, who resided long in Brasil, confirms their description. The rivers in this country annually overflow their banks, and, like the Nile, leave a sort of slime upon the lands; so that the soil, especially in the vicinity of the rivers, is extremely rich. The northern provinces are subject to heavy rains and storms; but those of the south are more temperate and fertile. Among the vegetable productions of this country, we may reckon Indian corn, wheat, rice, manioc, sugar canes, coffee, cocoa or chocolate, indigo, pepper, cactus, on which is bred the insect furnishing cochineal, and the noted Brazilian tobacco. The red or Brasil wood, imported into this country, for the purpose of dyeing, is the property of the crown. To the class of esculent plants, we may refer those that are common to all the tropical regions of America, such as, besides the cocoa and chocolate nut, the plantain, the banana, palms, the yam, potatoe, calava, together with many species of melons and gourds. The principal fruits are the pine apple, the mango, and the tamarind. The warm aromatic plants found here in a truly indigenous state, and much used by the inhabitants as condiments to their food, or as the basis of various drinks, are the oranges and limes, the grapes, ginger, the turmeric, several species of pepper, American coffee, capicum or Guinea pepper, and the wild cinnamon, (*laurus canella*.) Several medicinal plants of high estimation grow here spontaneously, and in great abundance, such are the contrayerva, the Indian pink, the mechoacan, the jalap, the amyris which yields the gum elmi, and the guaiacum. Besides the Brasil wood, this country furnishes for ornamental use, or for the purpose of dyeing, logwood, fustic, mahogany, ebony, rose wood, satin wood, and many others. Among its ornamental plants are the Brazilian myrtle, the scarlet fuschia, and the amaryllis formosissima. Brasil abounds with horned cattle, which are hunted merely for their hides, of which 20,000, it is said, are annually sent to Europe. These cattle are taken and killed, more for the sake of their hides and tallow than their flesh; though great quantities of the latter are applied to the use of such ships as sail from Pernambuco, Bahia, Todos os Santos, and Rio de Janeiro, to Guinea. The places which are chiefly frequented for procuring these cattle, are Rio Grande and Rio Paraiba, lying to the northward of Pernambuco; and they are inhabited by Indians, called Tapuyes; many of whom send annually large droves of cattle, through

BRASIL.

through the Tupique nation, which extends from the source of Rio St. Francisco in S. lat. 8° to that of Rio Doce in S. lat. 20°, to Bahia Todos os Santos, and Rio de Janeiro, where they sell them for 3 or 4 crusadoes a-piece, (a crusado being in value about 2s. 8d. sterling,) or exchange them for knives, hatchets, &c. or coarse baize, for a yard of which they will give a good beast. Among its animals, we may reckon several species of the armadillo or dasypus, the cat or felis kind, the otter or lutra, the weasel or mustela, the opossum or dydelphis, the porcupine or hystrix, the cavy, the squirrel or sciurus, the hare or lepus, the musk or moschus, the deer or cervus, the hog or sus, &c. Among the fishes found on its coasts, and in its rivers, are some species of the cachalot or physeter, and the globe-fish, beset with spikes like a hedge-hog, &c. Many of its birds are curious and beautiful, particularly some of the parrot or psittacus kind, the toucan or ramphastos, the motmot or momotus, the palamedea or aninga, with a strong nail or spur at each flexure of its wings, and a horn about 6 inches long growing from its forehead. The size and vivid hue of the flowers in the forests, and the gaudy plumage of the birds, are very striking. Brasil breeds a variety of serpents and venomous reptiles; among which are the Indian salamander, an insect with four legs, whose sting is said to be fatal; the ibiboboca, a species of serpent about seven yards long, and half a yard in circumference, (see BORGUACU;) the rattle snake of enormous size; and the liboya, or roe-buck snake, which is said to extend to the length of between 20 and 30 feet, and to be two or three yards in circumference, and which is capable, as some authors have reported, of swallowing a roe-buck whole. The hissing noise of this large and formidable snake sets the hearer on his guard, and they seldom, without provocation, advance to an attack.

The gold and diamond mines of Brasil were first opened in 1681; and our information concerning them is imperfect. The former are situated in the mountains, from which flow various streams north and south, which discharge themselves on one side into the river Tocantin, and on the other into the Parana; but there are mines of gold, as far inland as the river Cuyaba, which runs into the Paraguay, and even near river Ytenas. Others are near the river Paixe and Saguitinhonha, the Riacho-Fundo, and Guarapara in St. Paul's. One fifth of the gold is exacted by government, and the people of Rio are prohibited from working up even the gold of their own mines, and the tools and instruments used for that purpose are seized and confiscated.

The diamond mines are near the little river of Milho Verde, not far from Villa Nova de Principe, in the province of Serro de Frio, S. lat. 17° according to La Cruz, and W. long. about 44°. These diamonds of Brasil are not of so fine a water as those of Hindoostan; being of a brownish and obscure hue; and supposing the weights to be equal, they are sold 10 per cent. cheaper than those of the east. One of the largest diamonds that has been known, was sent from Brasil to the king of Portugal. It weighed 1680 carats, or 12½ ounces; and it has been valued at 56,787,500l. Some skilful lapidaries, however, have suggested, that this supposed diamond is only a topaz. All the diamond mines belong exclusively to the crown. The mines of gold and silver are said to have yielded above five millions sterling annually: those of diamonds have been usually farmed at about 30,000l. yearly, which is thought to be scarcely a fifth of their actual produce.

The trade of Brasil, notwithstanding the restraints and impositions to which it is subject, is very extensive, and continually increasing. This commerce is of such importance

to the parent state, that it could not subsist without it. The confluence of people who resort to the Brasils from Portugal, and from other countries, has much augmented the imports of gold, and, what is much more important to Europe in general, the exportation of the manufactures of this hemisphere. Great Britain supplies Brasil with a variety of woollen manufactures; such as fine broad medley cloths, fine Spanish cloths, scarlet and black cloths, ferges, duroys, druggets, sagathies, shalloons, camblets, and Norwich stuffs, black Colchester bays, says, and long ells, hats, stockings, and gloves. Holland, Germany, and France, have chiefly exported thither, fine hollands, bone-lace, and fine thread; silk manufactures, lead, block tin, and other articles are also sent from different countries. England likewise trades with Portugal for the use of the Brasils, in copper and brass, wrought and unwrought pewter, and all kinds of hardware. By this extension of its trade, Portugal, instead of 12 ships usually employed in the commerce with Brasil, employs at least 100 sail of large vessels, which are perpetually passing from one country to the other. Brasil also carries on a considerable trade with Africa in slaves, and thus Portugal occupies a great number of ships. All these ships, employed in different branches of trade, go and return at appointed seasons, under the direction of government, and under convoy of a certain number of men of war; nor can a single ship clear out or depart, without the fleet, except by a special licence from the king, which is seldom granted. By these restrictions, however, as well as by the infatuated policy of the country, it fails to derive that advantage from this extensive commerce, which it is adapted to afford. The fleets sail in the following order, and at the following stated periods: that destined for Rio de Janeiro sets sail in January; the fleet to Bahia, in February; and the third fleet to Pernambucco, in March.

The duties which the agents of Portugal levy upon the importation of goods from Lisbon and Oporto at Rio de Janeiro are 12 per cent., upon the value of each article. The chief duties paid at Lisbon, on the commodities of the Brasils, are as follow: upon gold, 1 per cent.; coffee 8 per cent.; sugar, rice, and skins, 10 per cent.; indigo, 12 per cent.; planks, 17 per cent.; and rum 4 dollars for every pipe of 180 gallons. All large ship timber, as well as the Brasil wood, is claimed as the property of the crown. Yet, notwithstanding all monopolies, prohibitions, and heavy taxes, the whole revenue from the Brasils is said not to be equal to a million sterling, of which the expence of their government consumes about a third part. The taxes are severely felt especially in the interior provinces, where the carriage and transit duties increase the price of every article so enormously, that a bottle of port wine, for instance, costs 10s. sterling to the consumer. The hardships thus imposed by the mother-country, excite a spirit of general dissatisfaction and revolt. Hence it happens, that those officers, both civil and military, who are natives of Portugal, and also the ecclesiastics, soon change their original affection for the parent state, into an attachment to that where they are likely to spend their days, and are sometimes tempted to sacrifice to their own interest that of their employers. It is observable, that whatever difficulties the Portuguese may be likely to encounter, in securing their American possessions against internal enemies, they seem to have taken no mean precautions against any foreign attack. See RIO DE JANEIRO.

The population of this extensive country has not been accurately ascertained. Some have reckoned the Portuguese and their descendants at half a million, and the natives at 3 or 4 millions. According to sir George Staunton's account,

count, (Embassy to China, vol. i. p. 172.) all the whites are computed at about 200,000, and the number of slaves, born in Africa, or descended from such, is estimated at 600,000. Probably, the natives do not exceed one million. Labour is chiefly performed by slaves, of whom about 20,000 are annually imported, and of these about 5,000 are usually sold every year at Rio. In the harbour of Rio, at a place called Val Longo, are warehouses for the reception and preparation for sale of the slaves, that are imported thither, chiefly from Angola and Benguela. This spot is appropriated to the purpose of cleansing, fattening, rendering sleek and saleable, and concealing the defects of this class of beings, who, it is said, seem little sensible of the humiliation of their condition. The average price on importation is about 28l. sterling each. Before they are shipped from Africa, a duty of 10,000 reis a head is paid to the queen of Portugal's agent there; the whole amounting to about 60,000l. a-year, which goes into her privy purse, and is not considered as part of the public revenue. The plantation slaves in the Brasil are allowed two days out of seven for their own purposes, which is a greater interval than that which is granted in the West India islands. They are upbraided for being addicted to stealing and lying; their disposition seems to be gay and active, and easily reconciled to their situation. They seldom recur to intoxication as a relief against any feelings of distress; and they are fond of music and dancing. Many of these slaves are the property of the crown, and of these, about 10,000 are employed in the diamond mines; and several of them are attached to convents. The Benedictines alone had 1000 upon their plantations; some of these fathers observed, that the offspring from the connection between the blacks and whites were generally endowed with much intelligence and ingenuity. Some of them they bred up carefully, and instructed with such success, that they thought themselves under no necessity of sending persons to the universities of Portugal for a liberal education: one of this mixed breed, as they boasted, having been promoted to a learned professorship at Lisbon.

The European settlers, in all classes of society, are much addicted to gaiety and pleasure; and though at Rio, in particular, there are three convents for men, and two for women, the austerity and self-denial intended by their original institution are little practised. Although the conquest of the country was at first professedly undertaken for converting the natives to Christianity, and ample endowments have been granted for this purpose, yet none of the friars now engage in the troublesome, unsafe, and, perhaps, hopeless enterprise. No inquisition or tribunal of the holy office has been established in the Brasil. Nevertheless, the ceremonies of religion are regularly observed, and even multiplied at Rio. During the day time, bells, and sometimes sky-rockets announce, at every hour, the performance of some solemnity in the churches; after sun-set the streets are crowded with processions; and at every corner is stuck up, in a glass case, the image of the virgin Mary, which receives regular homage from passengers. Men of the lower classes generally wear cloaks when they walk abroad; and those of the middle and higher ranks never appear without swords. The ladies wear their hair hanging down in tresses, tied with ribbands, and adorned with flowers; their heads being uncovered. In their visits to the churches, both at matins and vespers, they are very regular; at other times, they are generally seated at their balconies or windows. Many of them have fine dark eyes, and animated countenances. In the evenings, they amuse themselves with playing on some kind of musical instrument, chiefly the harpsi-

chord or guitar. Among the more innocent pleasures of both classes, are operas, plays, and masquerades, and assemblies in a public garden. In Brasil, the convents and monasteries are numerous, but the manufactories more rare.

The original inhabitants of the Brasils have been found incapable of being reduced to a state of slavery, or even to the domestic habits of civil society. Children of these natives have been taken into Portuguese families, and pains have been taken, from motives of curiosity, or of humanity, to domesticate and instruct them; but their nature, it is said, is so intractable, that they constantly return to their original habits of savage life, without retaining any of the principles which might restrain their passions or caprices. These people, though poor, seldom offer themselves for hire, and are as seldom coveted by the Portuguese, except for rowing their boats, in which practice they are remarkably expert. In their persons they are generally somewhat under the middle size, muscular, stout, and active, of a light brown complexion, black, strong, uncurling hair, with very little beard; and large dark eyes, which discover no mark of imbecility of intellect; their aspect, upon the whole, indicates no trace of meanness or vulgarity; but their looks and expressions are intelligent and distinct. Their chief pleasure seems to consist in boundless freedom; and whilst they cherish an hereditary and implacable antipathy to the invaders of their country, they withdraw from the considerable settlements of the Portuguese, and massacre individuals, without remorse, wherever they are found dispersed and unprotected. The coast between Rio and Bahia is still very much inhabited and frequented by them; and this prevents any regular communication by land, between these two places. The language of the indigenous Brasilians has not been investigated by the Portuguese; but that which is most widely diffused is the Quarania, or that of the Guaranis. They have no books in their own language.

As to the government of the Brasil, each province has its respective chief, under the viceroy, but they receive their instructions from the court at Lisbon. They are usually appointed for three years, but continued at pleasure. Each district has a particular judge, from whose sentences an appeal lies to the superior tribunals of Rio Janeiro or Lisbon.

BRASIL, or BRAZIL-WOOD. Fernambouc Wood.—Sapan Wood. The tree which bears this important wood is the *CASALPINIA Crispa*. Linn. This wood is very hard, takes a high polish, and is so heavy as to sink in water. When chewed, it has a sweetish taste. It resembles in appearance red sanders, but is distinguished from it readily, by giving out its colour to water, which sanders-wood does not.

Brasil wood is valuable for the beautiful orange and red colour in various shades which it furnishes to the dyer, and its analysis is of some importance. Boiled in water for some time, the wood furnishes a fine red decoction. The residue appears black, but alkalis will still extract much colour from it. Spirit of wine and ammonia also readily extract a colour which is of a deeper red than the preceding.

When sulphuric acid is added slowly to a fresh watery decoction of brasil wood, a small quantity of red precipitate falls down, and the clear liquor now assumes a yellow. Nitric acid produces a similar change, but the liquor is more of an orange. Most of the other acids also produce a red precipitate, and leave the liquor of various shades of yellow and orange. The alkalis restore the colour of the liquor, but with a tendency to crimson and violet-brown.

The action of the solutions of tin and of alum is the most important. Alum gives a fine red precipitate in great abundance,

dance, inclining to crimson, and subsiding slowly. The supernatant liquor also retains the original colour of the decoction, but a further crimson precipitate is yielded on adding alkali enough to decompose the alum in solution. In this way, a fine crimson LAKE and CARMINE are sometimes prepared, which therefore consist of alumine, united intimately with the natural colour of the wood, a little heightened.

Nitro-muriat of tin, added to the decoction, separates the whole of the colouring matter, which falls down in great abundance, united with the oxyd of tin, and the liquor remains colourless. Even when the decoction has first been made yellow by an acid, as above-mentioned, the solution first restores the original colour, and then precipitates it, as with the simple decoction.

The solutions of iron blacken brasil wood, shewing the presence of gallic acid.

Many of the other metallic solutions act similarly to that of tin, forming a precipitate of the metallic oxyd with the colouring matter.

The colour of Brasil wood, though very beautiful, is fugitive, and has the additional disadvantage of being readily darkened and rendered purple by alkalies, and therefore by soap. The colour is made permanent by acids, but is then changed to the shades of yellow; but it is peculiarly distinguished from kermes and madder, by having the original crimson restored by solutions of tin, after being altered by acids. Accordingly, the best practical dyers have employed acids and tin in their attempts to fix this beautiful colour. For further particulars as to its use, see the article DYEING.

BRASILIA, in *Ornithology*, a species of TANAGRA, of a scarlet colour, having the wings and tail black. Gmel. Inhabits Brasil, and other parts of South America. The synonymous names under which this beautiful bird is described by different authors are numerous; it is called Cardinal by Buffon, Cardinalis, Brisson. Merula brasiliica, &c. Aldr. Tye piranga, Marcgr. Chiltotl, Hern. Mex. &c. Latham names it the Brazilian Tanager. Its size is that of the common sparrow. It is conjectured, that *Cardinalis naxius*, and *Cardinalis torquatus* of Brisson, are varieties of the first-mentioned species.

BRASILIANA, in *Conchology*, a species of VENUS, that inhabits the shores of Brasil. The shell is lentiform, of a yellowish brown colour, with thin transverse distant striae; anterior depression, broad and bluish; posterior one of the same colour, and heart-shaped. Bonan.

BRASILIANA, in *Ornithology* a species of STRIX, the Brazilian owl of Latham. The body above is pale and ferruginous, brown spotted with white; beneath white, with ferruginous, brown spots. Gmel. This is of the size of a thrush: bill, irides, and the feet (which are short) together with the toes, yellowish. Called by Brisson *Asio brasiliensis*.

BRASILIANA, a species of PROCELLARIA, the Brazilian petrel of Latham, Puffin de Brésil of Buffon; and majague of Ray. The colour is blackish: throat yellow.

BRASILIANA, a species of CETHIA, described by Latham under the name of the black and violet creeper. The colour is black, with the crown of the head golden green: rump, chin and throat, violet: breast purple, inclining to chestnut. Gmel. &c. Length of this bird $3\frac{1}{2}$ inches. This is Le Guit-guit noir et violet, of Buffon. Inhabits Brasil.

BRASILIANORUM, in *Entomology*, a species of APIS, that inhabits America. This kind is hairy, and bluish black: thighs at the base black. Fabr. Obs. the beak is conic, or rather subulate: eyes black; antennæ above fuscous, beneath testaceous: jaws black, and bidentated: thighs testaceous, glabrous, and compressed: shanks, and soles of the feet, with testaceous pile.

BRASILIANUS, a species of CERAMBYX, the thorax of which is spinous and ferruginous: wing-cases, pointed, testaceous, with three little glabrous yellow lines. Fabr. Inhabits Brasil.

BRASILIANUS, a species of SCARABÆUS, found in the dung of cattle in Brasil. The colour is deep black: shield of the head emarginate: wing-cases striated.

BRASILIANUS, in *Ornithology*, a species of CAPRIMULCUS, of a blackish colour, varied with small white spots, and yellow: beneath, varied with black and white. This bird inhabits Brasil. The wings and tail are equal: area of the eyes yellow: bill and eyes black: legs white. Brazilian goat-sucker of Latham.

BRASILIASTRUM, in *Botany*, false Brasil wood. Aubl. Guian. Pl. 390. Class *diæcia*. Gen. Char. Male flowers unknown. Female flowers. Cal. villous without, deeply divided into five pointed segments. Corol. petals five, lanceolate, a little longer than the calyx. Pist. germ. superior, ovate, smooth; style none; stigma two-lobed, pubescent. Pericarp. drupe, soft, pulpy, shaped like an olive, but rather smaller, coral-red, slightly acid.

Sp. 1. *B. hirsutum*, a shrub from eight to ten feet high. Stem straight, near two inches in diameter, with a brownish grey bark, finely wrinkled. Branches alternate, growing near the summit of the stem. Leaves in tufts, near a foot and half long, pinnate with an odd one, on a pubescent reddish petiole. Folioles from fifteen to nineteen, about three inches long, on short petioles, oval-pointed, entire, or slightly angular, smooth, green, and shining above, villous at their edges. Flowers in terminal, branched racemes, very small, of a dull red colour. It is a native of St. Domingo, Jamaica, and Guiana, and, like the true Brazil (*Cæsalpinia*) is used for dyeing red, but does not produce so fine a colour. Aubret relates, that its leaves bruised when fresh communicate to cotton a green colour, which soon becomes violet. It is said by Plumier, that its stem, if wounded, yields a caustic juice, which fixes an almost indelible spot upon whatever part of the human body it happens to fall. Described by La-March from a dried specimen without flowers. 2. *B. glabrum*, differs from the preceding in being smaller, less proper to be used in dyeing, and in having its leaves perfectly smooth. It is a native of St. Domingo. A single female plant has been cultivated in the royal garden at Paris, which flowered in the beginning of November.

BRASILIENSIS, in *Entomology*, a species of CICADA, (*Membracis* Fabr.) The thorax of this kind has two horns, is spotted with white, and is produced behind beyond the length of the abdomen. Inhabits Brasil.

BRASILIENSIS, a sort of GRYLUS (*Acheta*), that inhabits Brasil. Its general colour is fuscous; wings tailed and longer than the elytra; back pale; tail ascending, and the length of the body. Fabr. &c.

BRASILIENSIS, in *Ornithology*, a species of FALCO, with yellow feet; body rufous, varied with white and yellow dots; tail variegated with white and fuscous. Gmel.

Willughby and Latham describe this under the name of the Brazilian kite, being found in Brasil, where, we are informed, it is highly destructive to the domesticated poultry. It is as large as our common kite. The beak and claws are long, very sharp, and black: eyes with the irides yellowish. Buffon has described it by the name of *caracara*. The same bird is *circus brasiliensis* of Brisson.

BRASILIENSIS, a sort of PSITTACUS, or parrot, that is found in Brasil. It is of the size of a pigeon, of a green colour, with the face red, the temples blue, and the orbits of the eyes cinereous. Gmel. Whether it be distinct from the lesser green parrot of Edwards (*psittacus autumnalis* of Latham),

tham), remains doubtful. It is the same bird as Buffon calls *crick à tête bleu*.

BRASILIENSIS, a species of **ALCEDO**, the plumage of which is variegated with rufous, chestnut, fuscous, and white; beneath white; greater quill feathers and tail rufous, with transverse spots. Gmel.

This bird is of the size of the common European king's fisher: the bill and eyes are black; band across the eyes, with the legs and claws brown. Buffon calls it *gip-gap*. It is *gip-gap* of Buffon; and the *Braslian king's fisher* of English writers.

BRASILIENSIS, a species of **MEROPS**, of a fine red colour, variegated above with fuscous and black; wings and tail pale blue. Gmel. &c.

This is the *Braslian bee-eater* of Latham; *merops rouge et bleu* of Buffon; *merops* of Buffon; and *merops brasiliensis* of Seba. The length of this bird is nine inches. As the name implies, it is an inhabitant of Brasil.

BRASILIENSIS, the species of **ANAS**, called by English writers the *maraca duck*. The colour of its plumage is fuscous; beneath cinereous and glossy; between the eyes and beak is a yellowish or ochraceous spot; chin white; tail wedge-shaped and black. This is a native of Brasil.

BRASILIENSIS, a species of **ARDEA**, with a smooth head; body blackish, dotted with yellow; quill and tail feathers, with the bill and legs blackish. Gmel. Briss.

This is a bittern of large size, measuring two feet eight inches. Brown, in his Natural History of Jamaica, calls it the *clucking hen*. It is named *foca* by Marcgraave; by Buffon *onore des bois*. Inhabits Brasil and South America in general.

BRASILIENSIS, a species of **EMBERIZA**, described specifically by Gmelin, as having the crown, collar, and body beneath yellow; back, wings, and tail greenish, variegated with fuscous and yellow.

Inhabits Brasil; its size that of the common sparrow. Latham names it the *Braslian bunting*. Ray has it under the title of *guirani haemgata*. It is *le guirnegat* and *lruant du Brasil* of Buffon.

BRASILIENSIS, a species of **TURDUS**, of a black colour, beneath rusty yellowish; rump ferruginous; tail somewhat wedged, and having the outer feathers totally white, and the rest white only at the tips. Gmel. *Obs.* Across the wings is a white stripe; legs brown.

This is the yellow-bellied thrush of Latham.

BRASILIENSIS, a species of **TANAGRA**, of a small size, being about six inches in length, that is found in Brasil. The general colour is black, beneath white; throat and rump blueish; face and breast black. Gmel.

Obs. The beak is blackish; head blueish. Called by Latham *turquoise tanager*. Marcgraave has it under the name of *guirani gencia*; and Buffon, those of *turquin* and *tanagra bleu du Brasil*.

BRASILIENSIS, in *Zoology*, a species of **RANA**, or toad of a yellowish ash-colour, with waved red spots; beneath greenish. Laur. Inhabits Brasil.

BRASLAW, in *Geography*, a city of Lithuania, in the palatinate of Wilna, on the side of a lake, which communicates with the Dwina; 76 miles N.N.E. of Wilna. N. lat. 55° 30'. E. long. 27° 20'.

BRASMA, in the *Medical Writings of the Ancients*, a name given by Dioscorides and others to a light, empty, and good for nothing kind of black pepper. This was no peculiar kind of pepper, but the same as *Peperum* has well observed, it was the same with the pepper we now frequently meet with, which has decayed upon the plant. Diosc. lib. 2. cap. 109.

VOL. V.

BRASPARS, in *Geography*, a town of France, in the department of Finistère, and chief place of a canton, in the district of Châteaulin, 8 miles N.E. of Châteaulin.

BRASS, or **LATTEN**, *Laiten* *Faune*, Fr.; *Messing* G. This very important alloy is a mixture of copper and zinc in various and uncertain proportions, so intimately united as to form a homogeneous malleable yellow metal, applicable to a vast variety of purposes in the arts, and capable of being wrought in various ways with the greatest facility.

Mere fusion will scarcely produce a perfect union between copper and zinc; for the latter metal, being highly volatile and combustible, readily takes fire, and burns off at a heat necessary to melt the copper; and hence, when the metals are simply melted together, before an uniform alloy can be obtained, the proportion of zinc is every moment lessening by its volatilization, and would continue to fly off in this manner, by the continuance of the fusion, till at last scarcely any thing but the copper would be left behind. In order, therefore, to combine copper with as much zinc as it can take up, so as to retain its malleability, the very ingenious process of *dry cementation* has been resorted to in the manufacture of brass, which is performed by strongly heating small pieces of copper in close vessels with zinc in the state nearly of vapour, whereby it is thoroughly penetrated with the zinc, and unites with it into a perfect alloy.

Zinc being a volatile metal, it can only be procured from its ores by sublimation; and the process of obtaining it (which will be described at length under that article), is to heat strongly a mixture of the native oxyd with charcoal in a close vessel, with no other exit for the vapour than a tube dipping its further end in water. As soon as the charcoal reduces the oxyd to the metallic state, the zinc rises in vapour, passes through the tube, and is condensed in the water. A similar reduction takes place in brass-making, only, instead of conveying the vapour of the zinc out of the crucible, in which it is formed, copper is inclosed in the same vessel, which being then thoroughly heated, readily absorbs the zinc as soon as reduced to the metallic state, fixes it, contracts a very intimate union with it, and the result is perfect brass.

Brass is made in many countries, but no where more extensively and better than in England, in which both the materials are in great abundance. The ores of zinc are several species of *calamine*, and of *blende* termed by the miners *black jack*, which are found abundantly in Devonshire, Derbyshire, and North Wales, accompanying the lead ores, and in other places. These are chiefly oxyds or carbonated oxyds of zinc, and require a previous calcination before they are fit for brass-making. At Holywell, in Flintshire, the calamine, which is received raw from the mines in the neighbourhood, is first pounded in a stamping mill, and then washed and sifted, in order to separate the lead with which it is largely admixed. It is then calcined on a broad shallow brick hearth, over an oven heated to redness, and frequently stirred for some hours; or, in some places, a conical pile is composed of horizontal layers of calamine alternating with layers of charcoal, and the lowest layer is of wood in large pieces, with intervals left for the draught of air through the centre of the pile, to maintain the combustion thoroughly.

The calamine being fully calcined is then ground in a mill, and mixed at the same time with about a third or fourth part of charcoal, or in some places with pit-coal, which last, however, injures the malleability of the brass. This mixture is then put into large cylindrical crucibles, along with alternate layers of small bits of copper, consisting either of the clippings of copper plates, or of copper shot, made by melting any refuse pieces of this metal, and pouring it into

G g

cold

cold water, which divides it into very small rounded shot-like fragments. Powdered charcoal is put over all, and the crucibles are covered and luted up. The brass furnace has the form of the frustum of a hollow cone, or a cone with the base downwards, and the apex cut off horizontally. At the bottom of the furnace is a circular grate, or perforated iron plate, coated with clay and horse-dung, to defend it from the action of the fire. The crucibles stand upon the circular plate, forming a circular row with one in the middle. The fuel, which in England is coal, is thrown round the crucibles, and is thrown into the furnace at the upper part of it, or the truncated apex of the cone. A perforated cover, made of bricks or clay, and kept together by iron bars, is fitted to this opening. This cover serves as a register to regulate the heat; so that when it is to be increased, the cover is to be partly or entirely removed, and a free draught admitted to the external air, which passes along an underground vault to the ash-hole, through the holes in the circular grate betwixt the crucibles, and through the upper mouth, along with the smoke and flame, into an area, where the workmen stand, which is covered by a large dome with a chimney to conduct the smoke out of doors. To diminish the heat, the register cover is put on the mouth of the furnace, leaving thereby no other exit for the smoke and flame than the holes of the cover. The time requisite for heating the crucibles varies considerably in different works, being determined chiefly by the nature of the calamine or other ore of zinc employed, and also by the size of the crucibles. In the great way, at least ten or twelve hours are required. At Holywell about twenty hours are employed.

During the process, and especially towards the latter end, part of the reduced zinc which escapes, being absorbed by the copper, finds its way in vapour through the crucible lids, and burns around them with the beautiful blue flame and white smoke peculiar to this volatile metal.

The heat required for brass-making is somewhat less than what is necessary to melt copper, for brass is more fusible than copper, and the zinc is able to penetrate copper when kept at a full red heat. When the brass is judged to be made, the heat is increased to fuse the whole down into one mass at the bottom, and the crucibles are then removed, and the melted brass poured out into moulds. At Holywell, six crucibles are used to one furnace; and the quantity of brass procured from them all is sufficient to fill one of them. This makes a single large brass plate, which is manufactured in the same way as copper plate. Or, more accurately, from forty pounds of copper and sixty pounds of calamine, about sixty pounds of brass are obtained, besides that a considerable quantity of zinc burns off in the process above-mentioned.

The above is the usual process of making brass in most parts of England, and is essentially the same wherever this alloy is manufactured, but with some variation as to the choice of ingredients, their proportions, the time of fusion, and other smaller circumstances. In Goslar, in Saxony, instead of a native calamine, the *cadmia*, or sublimed oxyd of zinc is used, which is collected in a particular part of the chimnies of the reverberatory furnaces, in which the lead ores and blendes are roasted. The proportions of the ingredients also vary considerably. According to Swedenborg, they are in Goslar, 30 parts of copper, 40 to 45 of *cadmia*, and twice the volume of charcoal; in many of the manufactories in France, 35 of copper, 35 of old brass, 40 of calamine, and 20 to 25 of charcoal; in Sweden, 30 of copper, 20 to 30 of old brass, and 46 of calamine, with charcoal sufficient; or 40 of copper, 30 of old brass, and 60 of calamine; in this country, generally about 40 of cop-

per, and 60 of calamine. The product of brass varies also; but it seems to be in few places so great as in some of the works of England, where, as already mentioned, 40 pounds of copper increase to 60 pounds of brass. This superior quantity is ascribed to the smallness to which the copper is previously reduced by pouring it melted into water, which, it seems, is not always practised elsewhere, and probably too to the goodness of the calamine.

At Stolberg, near Aix la Chapelle, where brass is made to a very great extent, the furnaces are cylindrical, and each contains eight crucibles arranged in two tiers of four each. The crucibles are fifteen inches high, twelve inches deep, and eight or nine wide. The proportions are 40 pounds of copper, 65 of calamine, and double its volume of charcoal. After the fire has been kept up for twelve hours, a workman takes off with an iron trowel all the scum and charcoal which swim upon the liquid, and when cooled form a mass called *arkeß*. This, examined by a glass, is found to consist of calamine and copper particles cohering together, but not completely united. The brass resulting from this first process is coarse, brittle, and unequal in texture, and requires a second fusion, before it is fit to be wrought. For this purpose the same crucibles are again employed, and are filled, first with three handfuls of the mixture of calamine and charcoal, over which are put two or three pounds of the impure brass broken in pieces, then more calamine and charcoal, with a piece of the *arkeß*, and over all the calamine and charcoal powder. They are then heated strongly for two hours, after which the brass is fit to be cast into plates.

A single fusion, where the fire is kept up long enough, and the materials are good, is certainly sufficient to make good malleable brass; but it is probable, that the finest sorts undergo a second operation with fresh calamine and charcoal. Some secrecy is, however, observed by those individuals who have the reputation of making the very finest article.

In the laboratory, by way of experiment, brass may be made in a much shorter time by using the same materials, that is to say, copper-shot buried in a mixture of calamine and charcoal, putting the crucible in a wind furnace, and heating slowly for half an hour, till the zinc begins to burn off in blue flame round the cover of the crucible, and then raising the fire, and heating briskly for an hour longer. This process of cementation of copper is also shewn very neatly by a somewhat different management, as given by Cramer. Put the mixture of calamine and charcoal into a crucible; cover it with a thin layer of clay, over which, when dry, lay a thin plate of copper, and cover the whole with fine charcoal powder, and a luted cover to the crucible. Apply heat gradually, and the vapour of the reduced zinc will rise through the floor of clay, will penetrate the red-hot copper above it, and convert it gradually into brass, which, at the end of the operation, will be found lying melted upon the stratum of clay; and the increase of weight, which the copper will be found thus to have gained, will afford a good practical test of the goodness of the calamine, and its fitness for brass-making in the great way.

Brass is wrought into plates by casting and laminating. At Stolberg the plates are first cast into a mould formed of two blocks of hard granite five feet long, three and a half broad, and eight inches thick. These are placed one above the other, and the upper one is raised by a pulley, and smeared with cow-dung previous to casting. To give the plate the requisite thickness, hoops of iron of different dimensions are adapted to the under stone, so as to confine the melted metal, and regulate its thickness. The stones are

are gently inclined before the metal is run into them. These plates are afterwards laminated and manufactured in a thousand different ways.

The most important properties of brass, compared with copper, are the following: its colour is much brighter, and more approaching to gold; it is more fusible than copper, as is seen from the circumstance, that less than a copper-melting heat is sufficient for the making of brass; it is less subject to rust, and to be acted on by the vast variety of substances which corrode copper; and lastly, it is equally malleable when cold, and more extensible than either copper or iron; and hence is peculiarly fitted to be made into wire. Brass, however, is only malleable when cold. By hammering, brass is found to become magnetic, perhaps only from the particles of the iron hammer which may have been beaten into its surface; but this makes it necessary to use unhammered brass about compasses-needles, and similar magnetic apparatus. The expansion of brass has been very accurately determined, as this metal is most commonly used for mathematical and astronomical instruments, where the utmost precision is required. Mr. Smeaton found that 12 inches in length of cast brass at 32° , expanded by 180° of heat, (or at the boiling point of water,) 225 ten thousandth parts of an inch: brass wire in the same circumstances expanded 232 parts; brass 46 parts, with one of tin, expanded 229 parts. The expansion of hammered copper is only 204 parts, but that of zinc is 353; so that brass holds a middle place in this respect between its two component metals.

The zinc is readily separated from brass by fire. When brass is heated strongly in open vessels to at least a copper-melting heat, the zinc of the brass takes fire, and slowly burns away. If this is continued long enough, little else is left but copper, though still retaining a small portion of zinc, which no further continuance of the heat will entirely separate.

Some kinds of very fine brass, it is said, are not made by cementation in the way already described, but by a more speedy and direct union of copper and zinc, care being taken to prevent the access of air to the materials while in fusion. Very fine brass may also be made in the small way, (and doubtless also in manufacture,) by mixing the oxides of copper and zinc, and reducing them together. This plan is ingenious, and the intimate mixture of the two metals, the great object in brass-making, is probably more accurately obtained in this way than even by the common process of cementation. The following experiment on this plan is given by Sage: Mix together 50 parts of oxyd of copper, remaining after the distillation of verdigris (which is a very pure oxyd) with 100 parts of lapis calaminaris, 400 parts of black flux, and 30 parts of charcoal powder; melt together, till no longer any blue flame is seen to burn round the top of the crucible. When cold, a fine button of brass is found beneath the scoria, weighing a sixth more than the copper obtainable from the oxyd of this metal reduced in the same way, but without the calamine. This brass has a very fine colour, like gold. On this experiment M. Sage observes, that a sixth increase of weight gained by the copper, is the proportion which constitutes the finest brass, and that which copper will always retain, however long kept in fusion, provided the access of air is prevented, as in this case, by the alkaline scoria. When the copper retains a fifth of zinc, the colour is not so fine; and any quantity above a sixth will be expelled by the heat, even when the alloy is covered; and, on coming to the air, the zinc will burn. Hence the cessation of the zinc flame is in this experiment the proof, that the copper now retains no more than a sixth of zinc, and is fine brass.

The analysis of brass is a point of some consequence, and several modes have been proposed, some good, others defective.

Brass may, in some degree, be analysed by strongly heating in an open vessel, as above mentioned. The zinc then burns off, and when no more flame is given out, the copper is supposed to be pure. But Dizé has found that this mode is very uncertain; so that no two assays of the same sample correspond, for it is not easy to tell when all the zinc is burnt off that can thus be volatilized; and the increase of weight, caused by the oxidation of part of the copper, throws a further uncertainty on this method.

Neither will a simple solution of brass in the sulphuric, or any other acid, and crystallization, answer the purpose; for, though much of the crystallized sulphat of copper may readily be picked out from the sulphat of zinc, the perfect separation of the two kinds of crystals is impracticable, and at last one species becomes mixed with a portion of the other, even in the respective crystals.

M. Dizé proposes the following methods:

1. Dissolve the brass in nitric acid, which takes up the copper and zinc, and leaves any tin with which it is often alloyed. Decompose the clear nitrated solution by pot-ash, redissolve the precipitate in sulphuric acid, and add a piece of clean bright iron to the solution, previously diluted with six parts of water. The copper is thus precipitated in the metallic state, and the solution now holds sulphat of iron, and sulphat of zinc. These M. Dizé proposes to separate by gallic acid, which slowly precipitates the iron, and leaves the zinc. Lastly, the sulphat of zinc may be decomposed by a carbonated alkali, and the quantity of zinc in the carbonat may be estimated according to proportions, which will be presently mentioned.

This method is useful, but the separation of the iron from the zinc by the gallic acid, is excessively tedious. Sulphuretted hydrogen gas would be much shorter, and to be preferred.

2. Dissolve brass in nitric acid, dilute with six parts of pure water, and immerse in the solution a cylinder of bright clean lead. The copper speedily separates in the metallic state round the lead, which last takes its place in the solution. As this advances, the liquor loses its blue colour; and when all the copper is separated, it becomes slightly yellow. To determine, however, whether all the copper is separated, add a fresh clean piece of lead, and boil the solution for some time. This now contains nitrat of lead, and nitrat of zinc. Sulphuric acid will precipitate thence the lead in the form of an insoluble sulphat, and the nitrated zinc may then be decomposed by a carbonated alkali. On this precipitation, however, there are some observations to be made. Copper, when dissolving in nitric acid, absorbs nearly $\frac{1}{4}$ of its weight of oxygen; but lead, under the same circumstances, absorbs only $\frac{1}{8}$. Hence (as Vauquelin remarks on this subject of the analysis of brass) 100 parts of copper dissolved in nitric acid would require, for their disoxygenation, (which takes place whenever one metallic oxyd in solution is precipitated in a metallic form by another metal immersed in it,) full 250 parts of lead, which last is of course oxidated in proportion as the copper precipitates in the metallic form. But this large quantity of oxyd of lead cannot be held in solution by the nitric acid, except this is largely in excess; and this explains why, as M. Dizé has observed, a portion of oxyd of lead is apt to form at the latter end of the process, and to mix with the copper, so as to require a subsequent operation to get the copper free from it. Nor will an excess of acid ensure the purity of the precipitated copper; for M. Vauquelin finds that

if 50 grains of pure copper are dissolved in nitric acid to excess, and then precipitated by metallic lead, of which about 220 grains are requisite, the cupreous precipitate weighs 138 grains instead of the original 50 grains, and therefore is not pure copper, but an alloy of this metal, with a very large proportion of lead. This method, therefore, of analysing brass is highly erroneous, unless the supposed copper precipitate be separately treated, in order to free it from the large proportion of lead with which it must be alloyed.

The following methods are given by Vauquelin :

3. Dissolve a given quantity of brass in nitric acid, put it in a well-closed bottle, and add caustic pot-ash to excess, so that there shall be a sensible alkaline taste in the liquor; shake the mixture well, and keep it a short time in digestion. By this simple process the oxyd of copper is precipitated by the alkali, but the oxyd of zinc is re-dissolved in it; and if the liquor be now filtered, the alkaline solution of zinc passes through clear, and the oxyd of copper is left behind. This oxyd is brown, and nearly metallic in appearance. When thoroughly washed, and gently dried, it contains 65 per cent. of metallic copper. If one is assured by a previous assay, that the brass only contained copper and zinc, when the quantity of copper is thus obtained, that of the zinc may be inferred from the difference between the copper, and the weight of the brass employed; or else the alkaline solution of zinc may be supersaturated with sulphuric acid, so as at first to precipitate, and afterwards to re-dissolve the zinc, after which this metal may be precipitated as a carbonat, by adding carbonat of pot-ash or soda. A very trifling quantity of copper passes into the alkaline solution of the zinc, occasioned by a small portion of ammonia formed by the nitrated metals when the caustic alkali is added, which takes up this atom of copper. If necessary, the copper might be again precipitated by heating the alkaline solution, so as to expel the ammoniac; but not to boiling, otherwise some of the zinc would separate from the alkali, and cause a greater error.

4. Dissolve brass in sulphuric acid, dilute with 20 times as much water, and immerse a stick of zinc exactly weighed. The copper soon precipitates completely in the metallic state, which is to be well washed and weighed. The solution now contains only the zinc of the brass, and the zinc dissolved out of the stick of metal immersed. By weighing the undissolved stick of zinc, and precipitating the whole by carbonat of pot-ash or soda, an easy calculation will give the portion of zinc belonging to the brass: or, more simply, this may be inferred from the copper obtained, and the quantity of brass originally employed.

It only remains, on the subject of analysis, to give the metallic contents of carbonat of zinc. Dizé dissolved 100 parts of zinc in nitric acid, precipitated it by carbonated soda, and this product, well washed and dried, now weighed 180 parts. Hence 100 parts of carbonat of zinc thus obtained, contain 55.5 of metallic zinc.

On the other hand, Vauquelin found that carbonat of zinc obtained from the sulphat by carbonated pot-ash, well washed and calcined in a crucible to expel all the carbonic acid, contained 69 per cent. of metallic zinc. Hence the carbonat obtained by Dizé, it is obvious, must only have been dried at a low temperature, probably that of boiling water; and from either of the above data the quantity of zinc may be estimated: or else the carbonat or oxyd may be mixed with charcoal, and strongly heated in an earthen retort, without the access of external air, by which the zinc will be reduced, and will distil over, and condense in the cool neck of the retort in the metallic state.

Analysis shews a vast variety in the proportions of the different species of brass used in commerce; nor is it easy to determine whether the perfection of this alloy depends on any certain proportion of the two metals, or the mode of manufacture. In general, the extremes of the highest and lowest proportion of zinc are from 12 to 25 parts in the hundred. Even with so great a quantity of zinc as 25 per cent., the ductility of brass is not injured, provided it be manufactured with care, though zinc itself is scarcely malleable. In proof of this, Dizé analysed a specimen of a remarkably fine brass, which is made at Geneva for escapement wheels, and other nicer parts of watch-making. This metal unites great beauty of colour to a high degree of ductility; and the bars that are perfect fetch a very high price with the watch-makers of this town, so celebrated for this delicate manufacture. This brass was found to consist of 75 of copper, and 25 of zinc. Probably, too, the copper was Swedish, or of some other very superior kind. The common brass of Paris appears to contain no more than about 13 per cent. of zinc. The English, probably, contains more zinc.

The use of brass is of very considerable antiquity; but from the inaccuracy of the ancient descriptions, and their ignorance of the true nature of zinc and its ores, much uncertainty prevails on this subject. Most of the genuine relics of antiquity of this kind are composed of various mixtures of brass, with tin and other metals, and are rather to be termed *bronzes*. For this and the other yellow alloys of copper, see COPPER.

Keir, in a note to the article brass in Macquer's dictionary; Watson's Essays; Sage in J. Phys. vol. xxxviii.; Dizé in ditto, vol. xlviii.; Repertory, vol. xiv.; Vauquelin in An. Ch. vol. xxviii.; Encycl. Meth.; Original, &c.

BRASS, in *Antiquity*. See *Æs*.

BRASS, in a more extensive sense, includes copper, and all the mixtures or alloys of copper with other minerals. In which sense, brass amounts nearly to the same with the Roman *æs*, and the French *airain*.

BRASS-lumps, or BRASSES, in *Mineralogy*, a common name among the colliers for the masses of pyrites that are found to accompany, more or less, the different kinds of coal.

BRASS d'Or, in *Geography*. See CAPE BRETON.

BRASS, Sr. Bay of, lies east by north from cape d'Aguillas, on the east side of the cape of Good Hope. S. lat. 34°.

BRASS island, one of the smaller Virgin islands, situate near the N.W. end of St. Thomas's island, on which it is dependent.

BRASS town, a town of America, in the state of Tennessee, situate on the head waters of Hiwassee river, about 100 miles south from Knoxville. Two miles S. from this town is the "Enchanted mountain."

BRASS wire. See WIRE.

BRASSA. See BRESSAY.

BRASSAC, a town of France, in the department of Puy de Dôme, and chief place of a canton in the district of Issoire, seated on the Allier; 3 leagues S. of Issoire.

BRASSAC de Belfourtas, a town of France, in the department of the Tarn, and chief place of a canton in the district of Castres; 4 leagues E. of Castres. The town contains 1149, and the canton 4190, inhabitants; the territory includes 195 kilometres and 5 communes.

BRASSAU. See CRONSTADT.

BRASSAVOLA, ANTONIO-MUSA, in *Biography*, professor in medicine and philosophy at Ferrara in Italy, who flourished in the early part of the 16th century, was a diligent investigator into the properties of medicines, both simple and compounded. He was educated under Manardi and Leoncini,

Leonici, two celebrated professors at Ferrara, but finished his studies at Paris. On his return, he was made physician to Hercules II. his sovereign, to whose daughter he dedicated one of his works. As he soon came into great request in his profession, and had acquired considerable knowledge in botany, and other parts of natural history, to which he had, in a particular manner, turned his attention, he was able, from his own experience, to correct several errors of his teachers, on the nature and qualities of drugs. The first work by which he became known, is "Examen omnium simplicium medicamentorum, quorum usus in publicis officinis est." Romæ, 1536, fol. This work has been frequently re-printed. In the course of it he examines the qualities of some poisonous drugs, and their effects on dogs, and other animals. He twice saw a cartilage, he says, of the form of a cross, in the hearts of two flags. He had received manna from Syria, but preferred the Calabrian. He shews that calcined mercury had been early given in the cure of the lues venerea, though then disused. "De medicamentis tam simplicibus, quam compositis, quæ unicuique humori sunt propria," Tiguri, 1555, 8vo.; containing many valuable observations, principally from experience, on the effects of various purging medicines. He effected the cure of a maniacal complaint, in a person of rank, by the use of black hellebore, which had been many years disused and proscribed. "Examen omnium syruporum, quorum publicus usus est," Lugduni, 1540, 8vo. This, as well as several other of his works, is written in the form of a dialogue, between himself and an apothecary. In the commencement, the apothecary gives an account of his manner of treating his wife, from whom he exacts the same implicit submission that Petruccio requires from Catherine, on their wedding-day. When retired to their chamber, he says, he threw a pair of breeches on the ground, and giving his bride a stick, similar to one he held in his hand, insisted on her contending with him who should thereafter wear them; and having then conquered her, he had taken care to keep up his authority. The doctor reproves his guest, and gives him some good rules for his future conduct. He afterwards, and in succession, published "Examinations of the compositions of electuaries, pills, lozches, trochiscs, &c." besides "Commentaries on parts of the works of Hippocrates," "A Complete list of Galen's works," "A Treatise on the venereal disease, on the use of China root, guaiacum, &c." in all of which he has many original observations. He died, according to Carrere, in 1554. His son,

BRASSAVOLA, JEROM, published, in 1590, "De officiis medicis libellus," 4to. Ferrara. In this he treats largely on the duties of physicians, on their conduct in consultation, on the signs from which the prognostics in diseases may be drawn; also, "In primum Hippocratis aphorismorum librum expositio," 4to. Ferrara. Haller. Bib. Med. Botan. Eloy Dict. Hist.

BRASSBRIDGE, THOMAS, of Northampton, published, in 1578, "The poor man's jewel," "A treatise of the pestilence, and a declaration of the virtues of the herbs carduus benedictus, and angelica," 8vo. London. Haller. Bib. Botan.

BRASSE, in *Ichthyology*, a species of PERCA.

BRASSI, in *Geography*, a town of France, in the department of the Nievre, and chief place of a canton, in the district of Clamecy; 10 miles E. of Corbigny.

BRASSICA, in *Botany*, is derived by C. Bauhine from *βραχμα* or *βραχμα*, which he says signifies to devour, because it is eagerly eaten by cattle; but this is a sense in which the Greek word does not appear to be used by ancient writers. Linnaeus derives it from the same word, and rightly rendering

it to boil, supposes the plant was so called from its being a common pot-herb. Scaliger conjectures that it was originally written *πρασινης*, from *πρασινα*, a division or bed in a garden. But as the word was not known to the Greeks, who first called the plant from which Linnaeus has named the genus *ραψανος*; and afterwards *ραψανη*, it is probably of Latin origin. By Varro and Feltus it is derived from *πραξια*, on account of its being cut off from the stem. This seems forced, and the etymology must be allowed to be altogether uncertain. Lin. gen. pl. 820. Reich. 884. Schreb. 1096. Juss. 238. Gært. 434. Tab. 143. La Marek Pl. 565. Smith Flor. Brit. 311. Clafs, *tetradynamia filiquosa*. Nat. ord. *filiquosa* or *cruciformes*. *Crucifera*, Juss.

Gen. Char. *Perianth* four-leaved, erect, a little converging. Leaves lanceolate-linear, concave channelled, gibbous at the base, erect, parallel, deciduous. *Cor.* four-petalled, cruciform. *Petals* subovate, flat, expanding, entire, gradually lessening into claws about the length of the calyx; nectariferous glands four, ovate, one between each of the shorter stamens and the pistil, and one between each of the longer stamens and the calyx. *Stam.* Filaments fix, awl-shaped, erect, of which two opposite to each other are the length of the calyx, and four longer. *Anthers* erect, acuminate. *Pist.* germ, columnar, the length of the stamens; style short, the thickness of the germ: stigma capitate, entire. *Pericarp.* silique long, rather round, but flattened on each side, and in some species quadrangular, two-celled; partition prominent at the apex, two-valved, valves shorter than the dissepiment. *Seeds* many, globular.

Ess. Char. *Cal.* erect, a little converging. *Seeds* globular. Dissepiment prominent. Nectariferous glands four.

It is distinguished from *sinapis* by its firm and close calyx, and from *raphanus* by its siliques not being articulated. Its distinctive character is however very obscure, and some of its species might be referred to other genera.

* *Siliques* slender, four-angled, with a very short permanent style.

Sp. 1. *B. orientalis*, Linn. *perfoliata*, La Marek. "Stem leaves cordate, embracing the stem, smooth; root leaves, rough, very entire." Root annual, spindle-shaped, small, white. Stem generally branched at the base, about a foot high, round, smooth, glaucous. Leaves glaucous, very entire, obtuse: root leaves obovate: stem leaves alternate: flowers small: petals white or yellowish, narrow: siliques very long, erect. A native of Spain, France, &c. and rarely in England on the coasts of Suffolk, Essex, and Suffex. 2. *B. austriaca*, Jacquin Aust. Tab. 283. "Leaves cordate, embracing the stem, very entire, smooth. Siliques deeply furrowed." Distinguished from the foregoing by its furrowed siliques and yellow flowers. Willden. Dr. Smith deems it only a variety of the former. Corn-fields in Austria and Thuringia. 3. *B. campestris*, Linn. "Root and stem slender, leaves cordate-acuminate, embracing the stem; lower leaves lyrate, toothed, somewhat hispid." Smith. Root annual, spindle-shaped, small. Stem erect, branched, round, smooth, rather glaucous: upper stem leaves alternate, very entire, smooth; lower a little toothed, lowest and especially the root ones, lyrate, toothed, and waved, hispid beneath at the veins; all glaucous, and paler beneath. Leaves of the calyx scarcely cohering, a little spreading. Petals yellow, three times larger than those of the *orientalis*. Siliques erect, round, obsoletely quadrangular, reticularly veined, torulose, with an awl-shaped beak, quadrangular at the base, striated. A clearly distinct species. Smith. A native of Europe, and plentiful in some parts of England. La Marek considers both the *campestris* and the *austriaca* as varieties of the *orientalis*. 4. *B. arvensis*, Linn. Mant. "Leaves embracing

embracing the stem, spatulate, waved, the upper ones cordate, entire." *Root* perennial. *Stem* a foot high, smooth, branched, zigzag, perennial near the root. *Leaves* smooth, very obtuse, a little fleshy. *Calyx* close, smooth, often a little coloured. *Flowers* spreading, emarginate, violet, with purple veins. South of Europe in corn-fields. 5. *B. alpina*. "Stem leaves heart-arrow-shaped, embracing the stem; radical leaves ovate; petals erect." Lin. Mant. *Root* perennial; *stem* about two feet high, not branched, with few leaves; *lower leaves* petioled, entire; *flowers* small, white. Switzerland, Germany, Dauphiny, and Spain.

* *Siliques with a cylindric, rather obtuse style.*

6. *B. Napus*. Rape or Navew. Linn. "Root caulescent, spindle-shaped; leaves smooth, upper ones cordate-lanceolate, embracing the stem, lower ones lyrate, toothed." Smith. *Root* biennial, *calyx* spreading, allied to sinapis. *Flowers* yellow; *siliques* finally spreading, torulose. Corn fields; and ditch banks in England and other parts of Europe. 7. *B. Rapa*. Turnip. Linn. "Root caulescent, orbicular, depressed, fleshy; radical leaves lyrate, rough; stem leaves very entire, smooth." Smith. *Root* biennial; *stem* erect, branched, round, smooth. *Root leaves* unequally toothed, deep green; *stem leaves* cordate-lanceolate, embracing the stem, a little glaucous; *flowers* yellow; *siliques* cylindrical. La Marck makes the *Napus* and *Rapa* one species under the trivial name *asperifolia*, and alleges that the Linnæan specific characters drawn from the root afford no real distinction. Ditch banks in England, &c. 8. *B. oleracea*. Linn. Cabbage. "Root caulescent, round, fleshy; all the leaves smooth, glaucous, waved or lobed." Smith. *Root* biennial, from a span to a foot long, scarred. *Flowers* large, lemon-coloured. *Siliques* torulose. 9. *B. richeri*. Villars. Allioni. "Leaves petioled, oblong, a little toothed; root caulescent." Willd. *Root* perennial; *stem* leaves very entire. Mountains of Dauphiny and Piedmont. 10. *B. cratica*. Willd. "Stem shrubby; leaves roundish, crenate, petioled, smooth." La Marck. *Root* perennial. *Stem* about a foot high and an inch thick. *Leaves* glaucous, a little fleshy, from three to four inches long, and from two to three broad. *Petioles* channelled, from one to two inches long. Discovered by Tournefort in Crete and the islands of the Archipelago. 11. *B. suffruticosa*, Willden. "Stem somewhat shrubby; leaves glaucous, a little fleshy, very entire, ovate-oblong, attenuated at the base." *Root* perennial; *stem* branched, erect, smooth, round, a foot high. *Leaves* smooth, petioled, obtuse. *Flower* violet, reticularly veined; *siliques* slender, erect, smooth, round, allied to *B. arvensis*, but differs in the shrubby stem, and petioled leaves, attenuated at the base. On arid mountains in the north of Africa. 12. *B. chinensis*, Linn. Amæn. "Leaves oval, nearly entire, floral ones embracing the stem, lanceolate; *calyx* longer than the claws of the petals." *Root* biennial; *lower leaves* large resembling those of cynoglossum, but smooth. *Flowers* yellow. *Siliques* a little flattened. China. 13. *B. violacea*. Linn. "Leaves lanceolate-ovate, smooth, undivided, toothed." *Root* biennial. *Leaves* tough, not esculent. China. 14. *B. subbafata*. Willd. "Radical leaves smooth, runcinate; stem leaves lanceolate, very entire, somewhat hastate." *Root* annual; *stem* erect, branched. *Racemes* with few flowers; *flowers* yellow; *siliques* slender, round, erect. Islands of the Archipelago. 15. *B. polymorpha*, Murray. "Lower leaves linear-lanceolate, pinnatifid-toothed; upper awl-shaped, entire." Willden. *Root* perennial. 16. *B. teretifolia*, Willden. "Leaves fleshy, round, smooth, pinnate; pinnules distinct." *Root* long, branched, crooked; *stem* smooth, branched, a foot high; leaves glaucous, smooth; soft pinnules unequal. *Flowers* in racemes pedicelled. *Calyx*

coloured; leaves close, linear. *Corol* large, violet; laminae obovate, entire; *siliques* slender, smooth, two inches long. many-seeded. Moist sandy ground in the north of Africa.

* *Eruca*. *Siliques with a sword-shaped style.*

17. *B. Tournefortii*, La Marck. "Leaves runcinate, hispid; stem hispid; siliques torulose, smooth, spreading, with a very long beak." Gouan. *Root* annual, small, fibrous. *Stem* slender, generally simple, almost naked near the top. *Leaves* oblong; upper ones almost linear. *Flowers* small, pale yellow, in racemes. *Siliques* peduncled. Cultivated in the royal garden at Paris, and supposed to come from Spain. 18. *B. Erucastrum*, Linn. "Leaves runcinate-pinnate; stem hispid at the base; flowers without veins." La Marck. *Root* annual, spindle-shaped. *Stems* several, about a foot and half high, a little branched, slightly striated. *Root-leaves* prostrate on the ground. *Stem-leaves* alternate, one to each branch, a little decurrent, glaucous, often with a few hairs; petioles furrowed above. *Flowers* in a loose, terminating raceme. *Peduncles* alternate, one-flowered. *Corollas* yellow. *Siliques* spreading, obtusely quadrangular. Barren places and walls in the south of Europe. 19. *B. Eruca*. Linn. "Leaves lyrate; stem hairy; flowers pale, with coloured veins." La Marck. *Root* annual. *Stem* two feet high, angular, branched. *Leaves* green, petioled. *Calyx* erect; claws of the petals erect, long; laminae broad, roundish. *Siliques* on short peduncles, pressed to the stem. South of Europe. 20. *B. pinnatifida*, Willden. "Leaves pinnatifid, segments ferrate, siliques cuspidate, four-sided." *Stem* a foot and a half high, smooth, sometimes hispid at the base. *Flowers* pale yellow, nerved. *Siliques* smooth, acuminate. North of Africa. 21. *B. elongata*, Willden. "Leaves petioled, the lower sinuate, pinnatifid, hispid, the upper smooth, toothed; siliques torulose, four-sided, cuspidate." *Root* biennial. *Stem* smooth. *Racemes* very long, loose. *Siliques* little longer than the peduncle; valves half as long as the dissepiment. Waldstein. Barren land in Hungary. 22. *B. Cheiranthus*, Willden. "Leaves petioled, pinnatifid, dentate, hispid; siliques torulose, with a flat beak." *Root* biennial; siliques one-seeded. Dauphiny and Piedmont. 23. *B. vesicaria*, Linn. "Leaves runcinate, siliques hispid, covered with a swelling calyx." *Root* annual, spindle-shaped. *Stem* hairy, branching. *Leaves* lanceolate, toothed, smooth above. *Racemes* erect, terminating. *Flowers* yellow, with darker veins. *Calyx* at first cylindrical, afterwards inflated. *Siliques* short, oval, or elliptic, hispid backwards. 24. *B. lyrata*, Willden. "Leaves hispid, the root ones lyrate, stem ones toothed; siliques oblong, compressed." *Stems* half a foot high, simple or branching, several rising from the root, with few leaves. *Stem-leaves* small, oblong, petioled. *Flowers* violet, veined. *Siliques* short, hispid. Sandy deserts in the north of Africa. 25. *B. crassifolia*, Willden. "Leaves pinnatifid, segments linear." Vahl. In Egypt, about the pyramids; found by Forskal.

The first five species are cultivated merely for curiosity. They should be sown early in the spring, on a bed of light earth, and when they are sufficiently grown, thinned but not transplanted. They will flower in June, ripen their seeds in August, and afterwards sow themselves, requiring no farther care except weeding. Those species that are cultivated in the garden or field, for the use of the kitchen or cattle, or for other purposes, are the *B. Napus* or Navew, under the name of coleseed or rape, (see COLESEED;) a variety of the *B. rapa*, or TURNIP, (which see;) the cabbage; the cauliflower; and broccoli; the turnip cabbage and turnip-rooted cabbage. We may here observe, that the cabbage has been reclaimed from its wild state, and cultivated as a valuable esculent vegetable, from the remotest antiquity. It was well known to Theophrastus, and is men-

tioned by all the succeeding Greek and Latin authors who have written on the natural history of plants, or on subjects of rural economy; but, like all other cultivated plants, it has gradually undergone so many changes, and assumed so many permanent varieties, that it is not easy to form a description which will apply to the whole. We may, however, observe in the general, says Duchesne, who has written a particular treatise on it, that it has always a fleshy, cylindric, ascending caudex; a branched, smooth, and leafy proper caulis or stem; alternate, smooth leaves more or less green, or tinged with red or violet; the lower ones petioled, runcinate at their base, and more or less sinuate; the upper ones simple, smaller, and often embracing the stem; and flowers rather large, yellow or nearly white, in upright, loose, and terminating racemes, succeeded by nearly cylindric siliques.

The numerous varieties are divided by Mr. Miller into three grand families. 1. Those which grow in a natural way, without forming the leaves or stalks into a head, comprehending the wild colewort, the green colewort, the borecoles, and the turnip cabbage. 2. Those which form their leaves into a head, and to which the English gardeners exclusively apply the term cabbage. 3. Those which form their stalks into a head, as the cauliflower, and the different kinds of broccoli.

Duchesne throws them into six divisions. 1. The wild colewort, unaltered by cultivation. 2. The improved kinds, which do not form a head, or undergo any remarkable change in the stalk or root. 3. The proper cabbages. 4. The cauliflower. 5. The turnip-cabbage. 6. The turnip-rooted cabbage.

I. The wild colewort unaltered by cultivation.

Our English botanists agree in considering the sea cabbage, the *maritima arborea* seu *procerior ramosa maritima* of Morrison and Ray's Synopsis, as the parent stock. But Duchesne places this plant under his second division; though surely with little propriety, for he allows, at the same time, that it grows wild on the coasts of England and France. Notwithstanding this inconsistency, the arrangement is implicitly adopted by La Marek and Bosc. Ray asserts that the sea cabbage is perennial, and supposes (Hist. Plant.) that the *brassica rubra vulgaris* of John Bauhin is only a land variety of it. Hudon, Robson, Withering, (1st edit.) and even Dr. Smith, make it biennial. Miller, who, according to Mr. Martin, seems to confound it with the napo-brassica or turnip-cabbage, says, that it grows naturally on the sea-shore near Dover; that it has a perennial branching stalk, in which it differs from all the others; that the leaves are inclining to a purple colour, and are placed alternately on the branches, (exactly agreeing in this respect with the description given by J. Bauhin). He insists that it is a distinct species, having always found the seeds to produce the same plant, with this difference only, that in good ground the stalks will be much stronger than in poor; and adds, that the young shoots, after they are much frozen, are very sweet and good, but at other times are strong and stringy. He observes, afterwards, that the perennial colewort is little cultivated in the gardens near London, as not being so good for the table, unless in very hard froit; though it is very hardy, will grow two years before it runs up to seed, and will afterwards produce many side shoots, continuing in poor land three or four years, but in a rich soil not so long. La Marek and Bosc, adopting the description of Duchesne, confirm the opinion of Ray and Miller. In France several other kinds have been grafted on this stock; and though the produce has not been of long duration, it has always been very remarkable. Upon the whole, it seems

probable, that the perennial colewort of Miller is the only improved variety of the sea cabbage, and that the French botanists are right in seeking for another origin of our common cultivated biennial kinds.

The plant which Duchesne thinks the parent of the common garden colewort, the borecoles, true cabbages, &c. is what he calls *brassica cleracea arvensis*, which he describes as growing from a small, fibrous tap-root, about 15 or 18 inches high when wild, but rising to the height of four or five feet when cultivated, and having a branched stem, with small sinuated leaves more or less deeply divided; the lower ones lyre-shaped, the stem ones heart-shaped, elongated and sessile. It is much cultivated in the Netherlands, and especially about Lille, for the use of cattle, and for the sake of an excellent oil compressed from its seeds, which must not be confounded with the oil of the navew, or rape oil of England. It is sown in July, should be transplanted about the middle of September, and ripens its seeds about the middle of the July following. If designed for cattle, it should be sown in June, and the leaves may be plucked in November; but as it is hardy, it is better to preserve it till other kinds of green forage begin to fail. After winter, if its stem be cut some inches above the ground, it will produce a second crop of leaves for spring use.

II. Of the cultivated improved kinds which do not form a head, or undergo any remarkable change, either in the stalk or root, the principal are the common green colewort, or Dorsetshire kale of the English gardeners; and the borecoles or curled coleworts. The common green colewort is cultivated in France, and in some parts of England, to feed milch cattle and sheep, but is not used in the kitchen till it is tendered by froit. It is nearly superseded in the gardens about London by the sugar-loaf cabbage plants, which, from December to April, are the sweetest greens yet known. The borecoles are more esteemed than the common colewort, as being more delicate and equally hardy: but like it they are tough and bitter, till they have been exposed to froit. (See the next article.)

III. The proper cabbages, whose leaves form a head.

The effect of cultivation upon this variety is confined to the lower leaves, which are large, roundish, and nearly entire; and are set so close together, that they lie upon each other like the scales of a bulb; and increasing in compactness as they increase in size, prevent, for some time the development of the flowering stem, and its branches. (See the next article.)

Cabbages were a favourite esculent vegetable with the Romans; and as the late excellent Mr. White has observed, must have been known, in some of their varieties, to our Saxon ancestors, since the month of February was called by them *sproutale*. They are still in universal use, but are often productive of flatulence and indigestion. The winter cabbages are most wholesome, especially when they have been tendered with froit. They are said to be improved in this respect at an earlier season, by being kept some time after they are gathered, and suffered to wither a little before they are dressed. An agreeable pickle is sometimes made of them, by cutting them into six or eight pieces, according to their size, putting them for a few moments into boiling water, and then plunging them in vinegar, which, especially at first, should be occasionally changed, throwing in a little salt each time. In this form they are an excellent antiscorbutic, and are found a valuable sea-store. The Germans and other northern nations have a still more salutary and pleasant preparation, which they call *four-croust*. With an instrument made for the purpose, they cut the head of a large variety (*brassica capitata maxima*) into small shreds,

and

and then lay them on a cloth to dry in the shade. They afterwards put these shreds into a common cask open at one end, and if it has contained wine or vinegar, it will be more favourable to the necessary fermentation, otherwise the inside should be rubbed with a little leaven of old sour-crust. The cover of the open end should be strong, that it may sustain a large weight, and should have a handle fixed in the middle that it may be readily put on and taken off. A quantity of very fine sea salt should be procured, in the proportion of two pounds to twenty cabbages. A layer of this salt is first evenly spread at the bottom of the cask; on this is placed a layer of the shreds six inches thick. A man in strong boots, well washed and very clean, then gets into the cask, and treads down the mass till it is reduced to the thickness of three inches. Similar layers of salt and shreds of cabbage are put in and trodden down in their turn, till the cask is nearly full, but the last layer must be of salt. Some large fresh cabbage-leaves are then laid on, and covered with a wet cloth; and on the cloth is put the cover of the cask pressed down by heavy weights, to prevent the crout from swelling and rising during the time of its fermentation. A seasoning either of juniper berries, or, which is much better, of caraway seeds, is mingled with the cabbage, but not with the salt, and an empty space of about two inches is left at the top. The shreds are soon deprived of part of their vegetable juice by the pressure. This fluid, which naturally rises to the top, is green, turbid, and fetid, and is drawn off by means of a cock placed two or three inches below it. A new brine is then added, which also soon becomes foul, and is drawn off in the same manner. After these operations have been continued twelve or fifteen days, more or less, according to the temperature of the place, the liquor will remain clear and sweet: but care must be taken that there be always about an inch of brine at the top, and that no space be left between the cover of the cask and the cabbage, which will otherwise acquire a putrid offensive smell. Sour-crust, well made, and well kept, has a very pleasant acid taste, especially if it be washed after it is taken from the cask, and mixed, before it is served up, with a little vinegar. It has been found highly serviceable in long voyages, as a preservative from the scurvy. For the IVth, Vth, and VIth divisions, see the next article.

BRASSICA, in *Gardening*, comprehends cabbage, borecole, turnip cabbage, cauliflower, broccoli, cole, or rape, and turnip; and of course affords some of the best esculent vegetables of the kitchen garden.

The species chiefly cultivated are such as follow; viz. the *B. oleracea*, or common cabbage, which has a biennial root, and upright, fleshy stalk, of oblong roundish leaves, which in some varieties closely cabbage into large compact heads; but in others they spread loose and open.

The varieties of this are the common heading cabbage, with a roundish, oblong, closely cabbaged head, of roundish or oblong, plane, entire leaves; the Savoy cabbage, with a roundish and oblong closely cabbaged head, of roundish, crumple-curled leaves; the fimbriated open cabbage, or borecole, having a tall stem, crowned by an open loose head, of oblong cut, fimbriated-curled leaves, spreading open but never cabbaging; the Siberian borecole, Scotch cole or kale, with a strong stem, crowned by a large open head, of oblong, roundish, broad, thick, cut, curly leaves, not cabbaging; the green, common, open colewort, having a short stem, crowned with an open head of oblongish plane leaves, not cabbaging; the turnip-cabbage, with the stalk and root swelling, turnip-shaped, being crowned by a head of open oblongish leaves, never closing to cabbage; the clustered

brassica, or cauliflower, with an upright shortish stalk, crowned by an open head of oblong, narrow, plane, entire leaves, not cabbaging, but having a large clustered flower-head in the centre; and the Italian cabbage called broccoli, having an erect robust stalk, crowned by a large open head of oblong, dark, and light-green plane leaves, not cabbaging, but affording a clustered flower-head in the centre, in the manner of a cauliflower.

B. Napus, navew, rape, or cole, has a spindle-shaped biennial root, and oblong, lyre-shaped, deeply divided, sinuated, smooth leaves, not cabbaging; the stem leaves being oblong and cordate. This is seldom cultivated in the garden, but is valuable as a field crop; the culture, application, and use of which will be described hereafter. See *COLE*.

B. Rapa or turnip, produces a large round fleshy annual root, crowned with oblong, cut, sinuated, rough leaves.

As these plants are mostly considered among gardeners as different, and as requiring different modes of culture, they may be treated of under separate heads.

Of the *B. capitata* or common heading cabbage, the varieties are numerous, and all denominated cabbages, from the circumstance of their inner leaves turning in closely over one another, till by degrees they form a large, compact, globular, or oval head, some of them attaining a very large size. And as some of them are in perfection in summer, and others late in autumn, they are sub-divided into summer and autumn cabbages.

Of the early summer kind the varieties are the small, roundish, early cabbage, and the larger, oblong, early cabbage. The first comes early in May, and the second about the middle, or latter end; both of them soon become very hard, and crack; and, therefore, no considerable quantity should be raised, where the use of the family is only regarded.

Of the sugar-loaf kind the varieties are the early dwarf sugar, the large, and hollow sugar-loaf. The first is a small, longish, pyramidal cabbage, which comes in early in June, and is very sweet while young, but soon grows hard. The second is a large, pyramidal, hollow cabbage, that comes in about the end of June, and is in full perfection in July and August, seldom growing hard or cracking. It is a fine family and market cabbage.

The early Yorkshire cabbage is a roundish, oblong, heading cabbage of a moderate size, growing close, hearting quickly, and cabbaging early in summer, as in May, June, or July, &c. It is an exceeding good, tender-boiling, sweet-eating cabbage, proper to cultivate with the large sugar-loaf kind, &c. as a principal, early, and general summer crop, and for autumn and winter use as young light cabbages.

The early Battersea cabbage is a roundish-oval-heading, rather smallish cabbage, that heads quick, comes in early, and is excellent for use while moderately young, or of middling light growth, before it becomes very hard.

The early Russia cabbage is a small roundish cabbage that comes in about June and July, heads very fast, and soon grows hard; but if used while young and hollow is very sweet and tender.

Of the autumn and winter kinds the principal sorts are the common round white cabbage, which is a large middle-sized, roundish, very white cabbage, that is in perfection about August and September, and which gradually acquires a degree of hardness. It is hardy enough to endure the winter.

The long-sided cabbage is a large, oval, and roundish hollow cabbage, which never grows hard, is exceedingly sweet and tender, and in high perfection in August, or September and October.

BRASSICA.

The drum-head, or great flat-topped cabbage, is a very large spreading cabbage, generally very broad, and flat at top, and pretty close and firm. It is in perfection in September, and will continue till Christmas, or longer.

The hollow cabbage is a large, roundish-oval, hollow cabbage, which seldom grows hard, is sweet tasted, and comes into perfection from August to October.

The musk cabbage is a middle sized, roundish, hollow, very tender, crisp-eating cabbage, of a musky scent. It is in perfection from August or September till Christmas.

The giant, or great Scotch cabbage, is an admirable large roundish cabbage, heading very close and hard, arrives to perfection in September and October, and will continue all winter. It is principally valued as a field cabbage for feeding cattle; but eligible also occasionally for family use.

The American cabbage is a very large roundish cabbage, principally for field culture.

The Devonshire cabbage is an exceedingly large very good cabbage, eligible both for the purposes of the two last sorts, and as a profitable domestic cabbage, about the end of autumn and in winter.

The red cabbage is a middle-sized, roundish, thick-leaved cabbage, heading very hard, the whole of a red colour; the darker the red, and the more thick and fleshy the leaves, without any white in the ribs and veins, the more valuable. It is in perfection from autumn until the end of winter, as well as all the spring months till May; esteemed principally as a choice pickle, and to eat raw as a salad.

All these sorts or varieties of cabbage are biennial, being raised from seed, and attaining perfection the first year; and the second shooting up into stalk, to flower, and seed, soon after wholly perishing.

Both the summer and winter kinds are raised from seed sown annually in beds of common earth, from which they must be afterwards transplanted. The chief periods of sowing are autumn and spring; those plants raised in the autumn arrive at perfection early the following summer; and the spring-raised plants cabbage the same year in summer and autumn, and attain full perfection. But the larger autumn sorts, sown in the spring, do not in general cabbage so soon in autumn, or to so large a size as the autumn-raised crop, planted out chiefly in the latter-end of that season or the beginning of winter, or partly early in the following spring, but will be cabbed in good perfection in August and September. It is of course always proper to sow some in both the autumn and spring seasons.

Method of culture in the summer kinds.

In the culture of these plants, for the early and first general summer crops, the proper sorts are the dwarf and other small earlier kinds, which it is necessary to observe should only be sown in small portions; larger supplies of the Battersea, or which is probably better, the large sugar-loaf, and Yorkshire, being put in, the former to come in early as in April and May, and the others to succeed them in June and July. Some of the early Russia cabbage may also be provided.

Thus the autumn sowing serves for the early and first main spring and summer crops of the following year, and the spring sowing for succession crops in summer and autumn. Where the autumn sowing has been omitted, care should be taken to put some seed in as early in the spring as the weather will permit, as the beginning or any time in February, or early in March, in a warm situation for the purpose of early cabbages.

In order to raise an early and general summer crop of any or all of these sorts, a suitable quantity of good fresh seed should

be sown precisely about the first or second week in August; as if sown earlier, the plants are apt to run up to seed in spring; and if sown much later, they do not acquire due strength before winter.

For this purpose a spot of rich ground in an open exposure is to be carefully prepared, by digging it nearly one spade deep, and dividing it into four feet wide beds; sowing the seed immediately, each sort separately, and raking it in evenly. If the season proves showery, the plants will rise in ten or twelve days; but if dry weather prevail, it is necessary to water the beds frequently, both before and after the plants appear, and to keep them clean from weeds. When the plants have leaves of an inch or two in breadth, it is proper to prick out a quantity of the larger plants from the seed-bed into nursery-beds, in order that they may acquire due strength, previous to their being planted out for good in October, and the following spring. In this intention, dig over an open spot of the best ground, and divide it into beds as before, raking the surface smooth; then prick out the plants in rows six inches distant, and three or four inches apart in the lines, giving them a full watering, which, if dry weather succeeds, must be repeated occasionally.

The plants may remain in this situation, some till October or November, and the principal part till February, March, or April in the following year, at each of which periods a quantity of the stoutest should be transplanted into the places where they are to remain to cabbage; good ground in an open exposure being allowed them, which, if well dunged, and dug in about a spade deep, will be the better. The plants are mostly put in by line and dibble, in rows: the small early kinds at two feet distant, and about one and a half in the lines; but the large sugar-loaf and Yorkshire kinds should be set two feet and a half distant every way. A double quantity of these sorts should be planted, for the supply of a family; as the small early kinds seldom continue long before they grow hard.

But in planting crops of early or summer cabbages, either in autumn or spring, some may occasionally be planted closer than these distances advised for the principal standing crops, in order to admit of thinning out for use, by degrees, in young small growth, and a portion also planted in rows at only eighteen inches, as under, by a foot in the row.

It is necessary to observe, that, as the autumn plantings sometimes suffer by the severity of frost or other causes in winter, the deficiencies should be made good occasionally from the plants in the nursery beds.

Those that have remained in these beds all the winter should be planted out in February, if the weather be temperate and open, where they are to remain, though, if much cut by the winter frost, it is better to let them remain until March or April to become strong. When the winter happens to be so severe as to cut off most of the autumn-raised plants, recourse must be had to an early spring-sowing in February or March; the sooner the better.

Where constant successions of perfectly young cabbages are required through the summer and autumn seasons, it is necessary to perform spring and summer sowings, to succeed those of the autumn-raising. Some seed of the large sugar-loaf and Yorkshire cabbage should be sown in February, March, or the beginning of April, and smaller portions in May, managing them as already directed, which will furnish supplies of young cabbages in July, August, and September, &c. A small crop may also be sown in June, or early in July, to plant out for successions of small young cabbages, or good cabbage coleworts, in the latter end of autumn and early part of winter.

All the culture cabbage crops require, after being planted

BRASSICA.

out where they are to grow, is hoeing the ground over occasionally between them in dry weather to destroy weeds, and loosening the surface of the earth, in order to encourage the growth of the plants; and when they have advanced a little, drawing some earth once or twice about the bottoms of their stems, to strengthen the plants and forward them; as in forward springs the earliest sorts will often make efforts for heading the latter end of April or early in May; if anxious to have them as forward as possible, some of the best may be assisted, by tying their leaves moderately close together with an osier twig, or piece of bafs, which promotes their cabbaging, whitens them internally, makes them more crisp and tender, and causes them to be ready for use a week or ten days earlier. In cutting summer cabbages it is proper to permit some stalks to remain to produce crops of sprouts, which they afford abundantly. These may either be gathered while young and green, or some left to stand for forming little heads, either of which are in many instances preferred to other summer greens; for this purpose sugar-loaf and Yorkshire cabbage-stalks should be preferred.

Method of culture in the autumn kinds.

In the culture of these sorts it is necessary to consider those of the white or green kinds, and the red separately. These sorts are adapted principally for autumn and winter use, as they rarely attain any degree of perfection before August; and some of the larger kinds not till September and October, but continue in excellent condition till Christmas, or sometimes till the end of winter, some of the sorts arriving at a great bulk. When used while young, or before they grow hard, they are excellent for culinary use. The season for sowing all the late kinds is, as has been observed, either autumn or April; but to have a large succession, it is necessary to sow some seed at both seasons, those sown in autumn and the first week in August arriving at perfection early in the following autumn, as August and September; and the spring sowing coming in about the beginning or middle of September, or towards Michaelmas, though they seldom attain any tolerable perfection till the end of October. They are very fine in November and December, but rarely attain so large a growth as the autumn-raised plants.

The same method of putting the seed in, and pricking out the plants, is to be observed, as in the summer kinds. The time for planting out the autumn-raised plants is, for a few October or November, but for the principal part February, or early in March; and for the spring-raised plants, May and June. All of them must have an open exposure of well dunged ground, and the plants set in rows two feet and a half at least distant; and for the larger kinds, a yard distant each way should be allowed.

All the culture they need is that of hoeing, to extirpate weeds, and drawing earth about their stems, which is an essential piece of culture in the whole cabbage tribe of plants.

The red cabbage is principally valued for pickling, and occasionally for being shred small and eaten as salad, sometimes also for stewing. It attains perfection in autumn and winter.

The culture which it requires is nearly the same as in the former sorts. The seed may be sown in autumn and spring; but as it is a late cabbage, the spring-raised plants do not acquire the full size so soon in the proper season as those sown and raised in the preceding autumn; though it is generally proper to sow some seed in both these seasons, in order to obtain a longer succession.

It is most advisable to sow the main crop in autumn, or in the beginning of August, as in that case the young plants will be fit to prick out in September or October in nursery-beds, They should stand four or five inches asunder, and be

watered if the weather be dry. The plants are to remain till they acquire a proper growth for planting out where they are to grow, some either the same year in November or beginning of December, and the rest in the spring following; or the whole till that season, as February or March. In either case, it is necessary to allot an open situation of good mellow ground, which should be well dug over and manured with dung; a quantity of the strongest plants being then drawn from the nursery-bed, should be planted out in rows at not less than two feet and a half distance every way. After being thus planted out where they are to stand, they only require the culture of occasional hoeing in their advancing growth in spring, and beginning of summer, to destroy the rising weeds, and loosen the surface of the ground, and at the same time drawing a little earth about the lower parts of their stems. They will by this means advance in their growth in a spreading open manner at first and towards autumn, gradually forming closing hearts in the centre, and increase to large cabbaged-heads in full perfection in September and October, &c. continuing firm for six months or more, being hardy enough to resist the severest frosts. Not only a spring sowing is necessary to have a succession to the autumn sown main-crop ready, if wanted in winter, and the following spring, but also to continue longer in the latter season before they shoot for feed. If the sowing for a main-crop in autumn has been omitted, some seed must be sown in the spring, as in February or early in March, but not later than that month.

The young plants may be pricked out in April or beginning of May four inches asunder, and occasionally watered, continuing a month or five weeks to gain some tolerable strength, and then planting them out two feet and a half asunder, where they are to grow, giving them the necessary culture of hoeing, as in the former-mentioned crops. They cabbage in moderate heads about September and October, and continue increasing in size during November, if the weather be open, and are proper for use in that season, and continue good late in the spring till April and May.

In order to obtain a spring sown crop as forward as possible for finally planting out, some seed may be sown in February, in a moderate hot-bed, and the young plants pricked out in March or beginning of April, in a warm situation, or in a frame, if an unkindly season happens, to have occasional protection, with glasses, &c. in cold nights and sharp cutting weather, to continue them forward in proper growth for setting out in April or beginning of May, and thereby they not only cabbage sooner but in greater perfection and size in autumn.

For the field culture and modes of application of this plant in feeding cattle, see CABBAGE.

Method of culture in cabbage coleworts.

Cabbage coleworts are almost generally substituted in place of common green coleworts, which, though valuable on account of their hardiness in being proof against frost, yet, as table greens, are apt to boil tough and be rank tasted, being greatly inferior to the former. What were formerly understood by coleworts were such cabbage-greens as never closed or cabbaged, but always remained quite open and green to the heart, and were raised for autumn, winter, and spring use as open greens; but at present cabbage plants, while they continue open and green, or just forming little central hearts, are mostly denominated coleworts, and are the most sweet and tender greens that can be cultivated for autumn and winter eating, continuing fine all the spring till summer cabbages are ready. For winter and spring supplies, a considerable quantity of these coleworts should, always be

be raised in autumn, and occasionally in spring and summer, for summer and autumn coleworts, such as some of more early and close-growing, quick-hearting cabbage-kinds, as these, even in their young state, will generally have small closing hearts; and what are not used in their young colewort growth may be permitted to stand to grow to proper full-headed cabbages. For this purpose, any of the smaller or moderate sized sorts of white or green heading cabbages may be cultivated, though it is most advisable, as just observed, to fix upon some of the early or summer kinds, as being of a more close-hearting growth, more tender, and sweeter than the larger sorts. The most eligible of these are the sugar-loaf, Yorkshire, and Battersea cabbages, though the sugar-loaf kind generally surpasses all the other sorts for eating.

The proper time for sowing the seed in this view is any time in July, for the autumn and winter crop; but to have them continue, without running for spring drawing, some should also be sown the beginning of August, as in cabbages, as by this means the plants will continue in a colewort state all the spring months till May, when such as remain advance in growth to heading cabbages, either to cut young in small hearts, or to stand and form proper cabbaged heads as may be required. But where a succession of coleworts is wanted all summer and autumn, it is proper to sow some of the same sorts also in the spring, in February, March, or beginning of April, and in June and July to plant out at different times, and thus provide coleworts and small-hearted young cabbages throughout the summer months.

In raising these different crops of coleworts, some seed for each should be sown in an open situation, moderately thick, raking it in evenly; and when the leaves of the plants are two or three inches broad, the plants should be set out where they are to stand, in rows a foot asunder, and half that distance in the rows: all the culture they afterwards require is, to have the ground occasionally hoed to destroy the weeds and loosen it about the plants. When the plants are as large as a full grown cos lettuce, they are of proper size to be drawn as coleworts.

In drawing them for use, especially the spring crops, where there is a large quantity, every other row may be taken, permitting the intermediate ones to stand to cabbage, cutting for use the every other plant in the remaining rows, according as they form little hearts, leaving the others to cabbage more perfectly.

Method of culture in the Savoy kinds.

The Savoy is a variety of the cabbage, which, with care, always retains its difference from seed; it admits of some varieties, all of which have crumply curled leaves, and head or cabbage to a large size. The principal varieties are the common green Savoy, the large green Dutch Savoy, the yellow Savoy, the round-headed Savoy, the oval-headed Savoy, and the sugar-loaf Savoy, which are all excellent for autumn and winter use.

They are propagated by seeds sown at two or three different times, from the beginning of February till the middle of April; and for the very early autumn crop, a sowing may be made in August. Each sowing should be made in an open situation, and the seed raked well in. When the plants have leaves an inch or two broad, and stand thick in the seed bed, it is proper to prick out a quantity of them on separate beds three or four inches distant, to acquire strength against the time of planting them out finally. Some of the autumn raised plants may be set out in October, or the following months, if the weather be open, and wholly in the beginning of spring; and those raised from early spring sowings should be planted out finally as soon as the plants are of proper

growths. The general crops of the later spring-raised plants may be planted out occasionally, as ground is cleared, from May till August; those planted out early being set two feet and a half distant every way, and the next crop about two feet; but the latter plantings need not be planted at more than a foot and a half distant.

It is sometimes customary to plant out the summer crops of these plants between rows of forward beans, peas, kidney-beans, caul-flowers, early cabbage, and other plants, that stand distant in rows, and are soon to come off the ground; as by this practice some ground is gained; but the plants are generally finest when they are planted out in a clear open spot of ground, previously well dug over for their reception. In performing the summer plantings, it is of much advantage to chuse moist weather for the work, otherwise watering must be practised several times till the plants have stricken fresh root.

All the culture that is afterwards required is, to hoe them well, to destroy the weeds, and to draw a little earth up to their stems occasionally.

Method of culture in the borecole kind.

In the borecole varieties of cabbage, the plants are open, never closing to form a head or cabbage. They possess a peculiar degree of hardiness, so as almost to bid defiance to the severest winter. The sorts mostly cultivated are the green curled borecole, the red curled borecole, the thick-leaved curled borecole, and the finely fringed borecole. They mostly rise with a thick stalk a yard or more in height, surmounted by a large head of thick leaves; in some spreading horizontally every way, being finely fringed and curled; but there are others that grow more contractedly. In all the sorts the stems produce numerous fine sprouts early in spring, closely surrounding them for some length, and which, as well as the principal or main top heads, boil exceedingly green and tender. The main heads come in for use in autumn and winter, and the sprouts early in the spring.

They are raised by sowing seed annually from March to the middle of April, for the main crops; and a smaller portion, in the beginning of May for a succession. They should all be sown in open situations, not too thick, and the seed raked in. A quantity of the plants, when the leaves are an inch or two broad, should be pricked out on beds four or five inches asunder, to remain five or six weeks, so as to obtain a proper degree of strength for the late crops to be selected out finally in June and July for the main crops, in rows two or three feet and a half asunder; and for the late crops, early in August, placing these in rows two feet apart and eighteen inches in the rows. Moist weather should, if possible, be chosen for this purpose.

A small crop may also be sown in autumn, or about the beginning of August, to stand the winter in young growth, and be planted out early in the spring, in order to be of the largest full size in the following autumn.

For the field culture of these plants, and their application as the food of cattle, sheep, &c. see BORECOLE.

The Siberian borecole, or Scotch cole, is a sort, some of which grow with very tall stems and large open heads; others more robust, with shorter stems and larger heads of broad curly leaves; in some sorts, spreading; in others, standing erect. These sorts are not so generally esteemed as the common borecoles to cultivate in the garden in any considerable crops; they, however, boil tolerably tender and good in the winter, and the stems furnish young sprouts after the main tops are gathered; so that they might be cultivated for winter and spring use. They also answer well in the field. See BORECOLE.

There are some perennial varieties of the borecole kind,
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with variegated leaves, which are cultivated as plants of ornament and curiosity. There are others also of a somewhat perennial shrub by nature, rising with tall branching stems, furnished with leaves all the year round; of which some are curiously variegated, the plants continuing several years. Those with variegated leaves make an highly ornamental and curious appearance.

These sorts are propagated and continued principally by planting the offsets, slips, and slips of the side shoots, in the spring or summer seasons, watering them till they become well-rooted.

The common or green colewort is a hardy biennial plant of the open-headed kind, with a short stem producing a head of largish, oblong, plane, entire leaves, generally of a green colour. It is a very hardy plant, and was formerly cultivated for winter greens, but, till severely pinched by frost, is tough, rank-tasted, never boiling so fine and tender as the cabbage coleworts, for which reason it is rarely cultivated now for the table. They may be raised for winter use by sowing the seed in July, as directed for cabbage coleworts.

The Anjou cabbage or colewort is a plant of the borecole kind, which grows tall, and produces very large open heads. It is raised as the preceding kinds, but must be planted out at a much greater distance.

Brussels sprouts, or *chou de Milan*, is a dwarf, perennial, open colewort, very productive of sprouts all the year round. It is raised by seeds, as in the other open coleworts, and by the perennial roots, the smallest bit of which will grow and increase very fast.

Method of culture in the turnip cabbage kinds.

This is a singular variety of cabbage, having its stalks swelled globularly, like a great turnip, and crowned by a large tuft of leaves, which never close or cabbage. The sorts are the turnip cabbage, with the turnip above the ground; and the turnip cabbage, with the turnip under the ground. The plants rise and grow for some time, as in the common open colewort kind, till they form bulbs. It is the globular or turnip part of the plant that is used, being sometimes sliced in soups, and by some used as common turnips; but unless employed when quite young, they are rank and unpalatable. They are much recommended for culture in fields, as a green food for cattle and sheep; their chief merit is their hardiness, as they are capable of withstanding the hardest winter. See TURNIP CABBAGE. These plants are propagated by seed sown annually in March, April, and June, being set out in an open situation, in rows two feet asunder, keeping them clean from weeds, and throwing a little earth about the bottom of the stems occasionally. The turnip part will be fully grown by Michaelmas, and continue all winter for use. They may likewise be sown where the plants are intended to remain, and be hoed out to proper distances. This last is probably the best method of cultivating field crops.

Method of culture in the cauliflower kind.

The cauliflower is supposed to be a variety of some of the sorts of common cabbage, brought up to its present improved state by diligent culture. Mr. Miller insists that the cauliflower is specifically distinct from the common cabbage; because, in a course of fifty years' experience, he could never find the least appearance of one approaching the other; because they are so different in their leaves, when the plants are young, as to be easily distinguished; and because the common cabbage puts out one upright stem from the centre, which afterwards divides into several branches; whereas the cauliflower sends out many flower stems from the part that is eaten, which is a compact collection of the heads of these

stalks, dividing afterwards into so many stems, and branching out into many spreading shoots, so as to form a large spreading head when in flower, but never rising pyramidically like the cabbage. Bose, however, asserts, that though in a well cultivated soil it may be kept from degenerating, by being properly watered, it will become a common cabbage, if neglected. It was first brought to England from the island of Cyprus, and, in the course of the last century, has been so much improved in our kitchen gardens, that most parts of Europe are now supplied with English seeds.

The varieties are the early cauliflower and the late cauliflower, which are alike in their growth and size, only the early kind comes in about a week before the other, provided the true sort can be obtained, of which, however, there is no certainty, unless by sowing the seed from the earliest sorts, as is the practice of the London kitchen-gardeners, who are always in possession of an early and a late kind of the former, of which they are very careful. Both the varieties are of a delicate nature, being generally too tender to resist the cold of the winter season, without the occasional aid of glasses, or other means. Those who are curious in the culture of the cauliflower, have generally three or four crops in the year; as an early summer crop, a main summer crop, a late summer crop, and an autumn or Michaelmas crop.

The proper season for sowing the above crops are, for the early summer-crop, about the middle of August; the plants which rise in the same season are to be pricked out, and preserved through the winter, under bell glasses, hand glasses, frames, or other conveniences, which, being planted out in spring, arrive at perfection the ensuing summer, from May to July and August. For the late summer crop to succeed the above, the seed must be sown in February, or early in March, but not later than the first week in April, the plants being set out in May to come in for use in August and September. And for the Michaelmas or autumn crop, the sowing should be performed about the middle of May, the plants being set out in July. These are ready after Michaelmas, and the following month, come to perfection gradually in October, but are never so large, fair, or perfectly headed as the summer crops.

In the culture of the early and main summer crops, great attention is necessary to procure good seed, such as is not more than a year old, and which has been saved from the best sorts. For the purpose of raising them in the greatest perfection, a bed of the richest light earth, in the full ground, in a free exposure, is to be prepared at the proper period, by digging it well over neatly, one spade deep, and breaking the surface fine, then, either sowing the seed on the surface, and raking it in evenly and lightly; or first, raking the surface smooth, and then sowing the seed, sifting light earth over it to a quarter of an inch in thickness. When the weather is dry, gentle waterings in the evening are necessary, both before and after the plants appear; and if very hot dry weather, it is advisable to shade the bed moderately with mats in the heat of the day. The plants generally appear in a week or ten days. All the culture necessary afterwards, is occasional watering and weeding, until towards the latter end of September, when their leaves will be an inch or two broad; a quantity of the best plants should then be pricked out, in four feet wide beds of rich earth, in rows three or four inches distant, rejecting all crooked and black-shanked plants. As soon as they are planted, a moderate watering should be given, which, when dry weather prevails, should be moderately repeated. The plants must remain there till about the end of October, when they should be transplanted into their winter quarters, some being planted out under hand or bell glasses for the earliest crops; others

BRASSICA.

others into garden frames, to be occasionally protected by glasses till planted out in the spring.

The plants intended to be wintered in frames may also, occasionally, be pricked out from the seed bed at once into the frames to remain. For the plants to be cultivated under glasses, a proper bed of the richest mellow ground should be provided in the best defended and warmest part of the garden, in a free exposure to the full sun, being well dunged with the best rotten dung, such as that of old cucumber or melon beds, or any other of similar quality, spreading it equally over the ground at least three or four inches thick, and the whole then regularly trenched in one good spade deep, burying the dung equally, then forming the ground into beds a yard wide, with foot-wide alleys for the convenience of going in to raise, and set off and on the glasses, &c. The plants are then to be put in, allowing three to each glass, though the London gardeners often plant more; but two of the best are enough to be left to come to perfection. At the time of planting them, a quantity of the handsomest, straight, clear-shanked plants should be chosen, which being ready, a line should be stretched along the middle of the beds, and at every yard distance, and three plants put in a triangle, six or seven inches apart; a little water being given afterwards, and the glasses put on, which should be kept close about ten or twelve days. When the plants have taken fresh root, prop them up on the sunny side, about three inches high, with forked sticks, pieces of brick-bat, or wooden pegs, fifteen inches long, three or four notches being made an inch or two above one another to receive the edge of the glass, sticking them in the ground. The glasses, by this means, may be readily propped higher or lower, or on any side as occasion may require. During winter the glasses should be kept almost constantly over the plants, only keeping them tilted on the props in mild weather, on the warmest side, for the admission of air; but in fine, mild, dry days they may be set quite off, which if the plants be forward in growth, should be practised at all opportunities, lest by too constant glassing they be drawn up to flower in their small winter growth, and be rendered useless. The glasses must always be put over the plants at night; and when cutting winds or frosty weather prevail, they should be kept as close down as possible, and long litter laid down close about the lower part of each glass, raising it higher as occasion may require.

In their spring culture, they must be thinned out, about the beginning or middle of March, to one stout plant or two at most under each glass, though in large bell-glasses the market gardeners frequently leave more, for the sake of having the advantage of the glasses, to bring as many as possible to early perfection. The others should be planted out into another place, as a piece of rich, well-dunged ground, the plants being raised with the point of a trowel, to preserve the fibres of the roots, being planted two feet and a half distant each way, water being given to settle the earth about them.

The plants under glasses should have the earth directly made good about them, and a little mould drawn up about their stems, continuing to cover them occasionally with the glasses, which must now be raised considerably on props, in proportion to the advanced growth of the plants, not omitting to let them have the benefit of the full air in mild days, and that of warm showers, by occasionally setting the glasses wholly off. But the glasses are to be continued occasionally over the plants until the middle or latter end of April, or longer, if it be necessary. When the plants are so far advanced that their leaves press against the glasses, they should be raised, by forming a border or ridge of earth round each

hole of plants, three or four inches high, on which ridge of mould the glasses should be set, continuing to prop up one edge occasionally as before, and according as the plants advance in growth, raising them on every side three or four inches in height; as the length of the days and warmth of the weather now increase, the plants grow freely, and require as much free air and scope to grow in as it is possible to allow them; at the same time being careful to continue to expose them occasionally to the full air in fine days and moderate warm showers, always carefully defending them in the nights, and in cold rains or boisterous weather, until the weather becomes warm, and the plants are grown too large for the glasses; then they should, by degrees, be fully exposed night and day, so that by the middle or latter end of April they may be wholly discontinued. At this period, if the weather be not hot and dry, moderate waterings will be of utility in promoting the progress of the plants, as well as increasing their size and strength. Towards the latter end of May some of the forwardest plants may probably shew flower, at which period they should be examined daily; and whenever a flower appears to be advanced in growth, turn down some of the inward leaves over the head, to screen it from the sun's rays, rain and full air, in order to preserve it more white and close, as when fully exposed to the weather it generally changes the fine white colour to a yellowish hue, and occasions the head to open before it acquires perfection. The excellence of the cauliflower consists not only in size but in the whiteness, and compact curdy-like growth of the head; such as have a frothy, loose appearance being inferior in value. It is in its utmost perfection of growth when the outward parts of the head begin to open and expand, after which the whole soon divides and shoots up to flower and seed.

In gathering or cutting cauliflowers, the flower head should mostly be cut off with some inches of the stalk, together with most of the surrounding leaves, which should be trimmed down nearly equal to the circumference of the head, especially when for present use; but if required to keep a few days, and such as are intended for market, should have the full leaves to continue, and be trimmed off as wanted. As the stalks of these plants never produce sprouts as in those of the cabbage kind, they should be moved as soon as the head is cut.

In the culture of the plants for the main summer crop, which have been preserved in frames or other places during the winter, in order to be planted out in the spring, it is necessary to observe that the plants should, during the winter, be every day in mild, open, dry weather, exposed fully to the free air by shoving the glasses entirely off, but they should always be drawn on again towards the evenings, and in excessive rains; though if this happen in the day, and the weather be mild, one end of the glasses may be raised on props three inches high, for the admission of plenty of fresh air, as the plants must not be kept too close in mild weather, as they would run up weakly and tender, or be forwarded too much in growth, and forced into small button-flowers. They only need protection from frost and immoderate rains while in the frames, their decayed leaves being picked off, and search made for slugs, which often attack the plants in frames and hand glasses. When the weather is very frosty, the glasses should always be kept close, to protect the plants; and, if very severe, the additional protection of covering them at night with dry, long litter or garden-mat, should be attended to, being laid round the outsides of the frames.

In open, mild weather, as the spring approaches, the plants should be inured by degrees to the full air, by taking the glasses off entirely every day, and gradually leaving them
fully

BRASSICA.

fully exposed at night in the more advanced part of the spring, to harden them for their removal into the places where they are to remain. From the latter end of February to the beginning of April, according to the weather and condition of the plants, all those which have been wintered either in frames or other ways should be planted out where they are to remain. An open spot of the best ground should be chosen for this purpose, which should be previously dunged, and dug over, as directed for the early crop; the plants being put in by a line, two feet and a half distant every way, watering them at planting, and in dry, warm weather, repeating it two or three times, till they have taken fresh roots.

In planting this crop, it is sometimes the practice of market gardeners, who have occasion to make every advantage of their ground, to sow a thin crop of radish and spinach between the rows of cauliflower plants; but the practice is not much to be recommended. In May and June, when the plants have attained considerable growth, the ground should be well hoed, to cut down all weeds, drawing earth about the stems of the plants; and when the latter month proves very hot and dry, occasional waterings may be of great utility, basons being formed round the plants for that purpose. In July this crop will be in full perfection, continuing in succession until the middle of August, when it will be succeeded by the late summer crop.

In order to the culture of the late summer crop, it is necessary to raise a proper supply of plants in spring, to be planted out in April or May, to arrive at perfection in August and September, in time to succeed the autumn raised crops. The seed for this crop may be sown any time in February, but not later than the first week in March; and, in order to forward the plants as much as possible, it is proper to sow the seed on a slender hot-bed, made for one light box eighteen or twenty inches in depth, of hot dung, covered with light, rich earth, four or five inches in thickness. The seed should be sown on the surface, and covered a quarter of an inch deep with fine mould; the glass being then put on occasionally, and light sprinklings of water given, raising the glass daily for the evaporation of the steam and admission of free air. The plants will rise in a few days, at which time admit the air freely, by tilting the glass, and by taking it wholly off in fine warm days, and when there are moderate showers. In dry weather, give frequent light waterings. When the plants have leaves an inch broad, prick them out; and if some of them are put upon another moderate hot-bed, it will forward them considerably. From the end of April to the middle of May, some of the forwardest plants may be fit to plant out, which should be in an open spot of rich, well-dunged ground, as in the former crops, and in dry weather they should have frequent waterings, till they have taken good root. The necessary culture afterwards is only occasional hoeing to destroy weeds; and when the plants are somewhat advanced in growth, drawing the earth about their root-stems.

In the culture of the Michaelmas crop, some seed must be sown about the middle of May, on a bed of common earth; and when the plants have leaves an inch or two broad, they should be pricked out three or four inches asunder, to remain until the middle or latter end of July, then planted out as in the other crops, supplying them occasionally with water till rooted. They begin to show heads towards the end of October, which will continue a great part of December, or sometimes in mild weather till Christmas. But this crop depends greatly on the state of the autumn after Michaelmas, which, if moderately dry and warm, tolerably large, handsome cauliflowers are often

produced in November; but if wet and cold, the heads are mostly small, irregular, and ill-coloured.

The method of culture in the broccoli kind.

This is another supposed variety of the common cabbage, which has different sorts, that in their growth, habit, and eatable parts, much resemble the cauliflower, all of them forming roundish heads in the centre of their leaves, composed entirely of a compact collection of numerous buds or ends of advancing shoots.

They are annual-biennial plants, as they attain perfection in the same year, in the early sown crops; but in the later sowings, stand all the second season, when, after producing heads, they shoot up into stalk, ripen, seed, and wholly perish.

They are cultivated principally for autumn, winter, and spring use, these being the seasons of their production in the best perfection, being obtained in the different crops by a spring and summer sowing in March, April, and May; those of the former months generally furnishing heads in autumn and winter, and that of the latter principally after Christmas, and all the spring months, in which they are commonly rather superior to the foregoing in the production of larger and more perfect heads. They are so hardy as to resist the cold of an ordinary winter, though very severe frost often affects such as are weak, or grow in exposed cold soils, especially the sort called cauliflower broccoli. The chief sorts and varieties are the early-purple, which is a moderate growing darkish green plant, producing smallish purple heads, but earlier by a fortnight or more than the others; and of which there are the purple, the green, and the blue, often rising from seed of the same plants. This sort is proper for the first crop, which, if sown the latter end of March, or more generally in April, and a succession crop in May, and planted out in June and July, comes in for use from Michaelmas till Christmas; and when their heads are gathered, the stalks produce plenty of fine sprouts.

The late purple is a large robust-growing darkish green plant, producing a large purplish head like a cluster of buds, being generally much larger, and more perfectly headed than the former sorts, and very delicate eating; of this there are the common purple headed, the dwarf purple, the blue broccoli, the brown broccoli, the green broccoli, and the yellowish broccoli; all of which frequently rise from the same seed, though that of the true purple kind is superior both in size and perfectness of heading, as well as delicacy of eating; and with care in sowing the seed, the sorts may be continued. This and all its varieties, by sowing in April, May, and beginning of June, and planting out the plants in July and August, may be obtained for use from about Christmas until the beginning or middle of May, but they are always in the greatest perfection, in regard to size, in February, March, and April; and after the main head is cut, the stalks produce abundance of side shoots, or sprouts, terminated by small heads, which eat as sweet and tender as the principal ones. The white, or cauliflower broccoli, is a curious variety. The plants are of robust growth, and lightish green colour, each forming a close white head in the centre, sometimes as large as a middling cauliflower, and greatly resembling them in every state of growth, and for delicacy of eating, they are equal to the finest summer cauliflower. This sort admits of no varieties, except in degrees of whiteness, though the whitest generally assumes somewhat of a yellowish hue. By sowing the seed in March, April, or May, and planting out the plants in June, July, and August, heads may be obtained for use all winter and spring; but those that appear about March, and beginning or middle of April,

BRASSICA.

April, are considerably the largest and fairest heads. The black broccoli is a tall growing plant, of a blackish green colour, which for the most part produces smaller and less perfect heads, being somewhat open and feebly like, but possesses the property of being so hardy as seldom to be injured by the severest frosts. There are of this black or dark-headed, the brown and the blue, all sometimes from the same seeds. They are proper for cultivation to stand the winter by way of reserve to serve for spring use, sowing the seed early in May, and planting out the plants in June, and beginning of the following month. All the different sorts or varieties are raised from seed sown in the open ground. The principal season for sowing the main crops of all the varieties, is March and April for the autumn and winter productions, and May and the beginning of June for the principal successive crops to come in for the spring supplies. Some may be occasionally sown so early as February, or beginning of March, of the cauliflower broccoli, as also any of the purple kinds, in order to obtain an earlier autumn production of small heads in the latter end of August, or beginning of September, and beginning of October. The seed should be sown in an open exposure, where the plants rise much stronger than on narrow borders under walls. Each sort should be sown separately, moderately thick on the surface, and raked in lightly; the plants appear in ten or twelve days, occasional waterings being given them in dry weather; and when the plants have leaves an inch or two broad, it is proper to prick them out in a nursery bed three or four inches apart, giving them water as soon as planted, and occasionally till they have taken root, in which bed let them remain a month or six weeks, where they may acquire due strength; by this means they are short, and of robust growth, and will be considerably better prepared for transplanting where they are to stand, than those which remain in the seed bed. The time of transplanting them where they are to remain, is June, July, and August, and beginning of September, according to the time they were sown, or are desired for use. The plants should have an open situation, and as good ground as the garden affords; which, if it have the addition of dung, will be advantageous, digging it in neatly one good spade deep, and directly putting in the plants, for which work a moist time is beneficial. They are to be planted in rows two feet and a half asunder, and two feet distant in the lines; but for those that are planted late in August and September, two feet at most are sufficient, and eighteen inches distant in the row. As soon as planted, they should be watered; and if dry weather prevail, the watering should be repeated every other day, till the plants have got root. After the plants have taken root, their further culture is to keep them clear from weeds, by hoeing the ground occasionally; and when they have advanced a little in growth, to draw some earth, or hoe about their stems, which, if repeated once or twice, will be of great advantage in promoting their growth. In gathering broccoli for use, attention must be had that the heads have attained their full growth, but they should be cut while they remain close, and before they begin to divide, and assume a feebly-like appearance, and with about six inches of the main stalk to each head, as the upper part of the stalks eats exceedingly sweet and tender, but, previously to its being dressed, it must be peeled, or divested of the outer rind.

Saving seed in all the sorts. In order to have good and perfect seed of any of the above sorts of plants, some of the best of each kind should be selected, and left to run up to seed. In the cabbage sort, this is effected either after their heads have been cut, or by letting them remain without being cut. In the first way the stems which have the

strongest shoots may be left to seed where they stand, or be planted up to the necks in good earth in an open sunny exposure in the autumn, or beginning of winter; and in the latter, the same methods may be pursued. And when the plants have seeded, great attention should be bestowed to support them well with sticks till the seed is perfectly ripened, which is generally the case about the end of July, or in the following month.

Where seed of the different varieties is wanted, the plants for this purpose of the different sorts should be cultivated at as great distances as possible from each other, in order to continue them perfect without degenerating.

When the seed begins to ripen, it should be gradually collected by cutting off the ripened stems, to prevent the birds from devouring it. These, after they have been exposed a little to the sun, may be threshed to get out the seed, which, sufficiently dried, should be put up in bags, and marked.

In the cauliflower kinds, some of the best and most perfect plants of the earliest crop should be left to run up to seed in the situations where they stand, being supported as in the cabbage sort, and occasional waterings given when the season is dry, to prevent the mildew. The seed should be collected and managed in the same manner as above. It is mostly in a state to be gathered about September. Fresh seed should be gathered annually, as it cannot be depended upon when old.

In the broccoli kinds, the best plants of the early spring crops must be selected, and left to stand with their heads perfect, the side shoots being only taken off. The seedling plants of the different varieties should be at considerable distances from each other.

Method of culture in the turnip kind. All the varieties of the turnip are annual-biennial; as if sown early in spring they attain perfection, run up to flower, ripen seed, and totally perish the same year; and when sown in summer and autumn, they also attain perfection the same season, and stand without running to stalk till next spring; then wholly run up for seed, and finally terminate their growth in the autumn following.

The sorts chiefly cultivated are the early Dutch turnip, which is an orbicular, moderate-sized, handsome, white turnip, coming early to perfection, very sweet and tender when young, and a very fine garden turnip for the early and summer crops; though when it is old, it is apt to become stringy.

The early white stone turnip is a round, moderate-sized, neat, white turnip, that comes in early, and is very good in its young and middle growth. It is very proper for garden use as an early and first general crop. Of this sort there are the large later turnip, and the early red stone turnip.

The white round turnip is globular and large, being proper for the garden and the field, to succeed the two former sorts.

The green topped turnip is large, round, and remarkable for having its outer coat green at top, and a great part of the root growing above ground. It is excellent for a general crop in gardens, to draw for the table when of middling growth; and also valuable in the field.

The red topped turnip is large, and of a globular form, having its outer skin red at top. From its very large size, it is also adapted to field culture.

The yellow Dutch turnip is moderately large, and frequently oblong, the skin and flesh being of a yellow colour.

The oblong white turnip is largish, and strikes considerably into the ground.

The tankard turnip is large, oblong, and cylindrical, of quick growth, the root generally standing above ground. It is a good field turnip, but not proper for the garden.

The large Norfolk turnip is large and round, but mostly cultivated in fields.

The hardy Russian turnip is middle sized, dark coloured, very hardy, and continues long in spring without running. It is proper for sowing as a moderate garden crop for winter and spring.

The long rooted French turnip is long, small, and spindly rooted, but of little merit. The purple turnip is roundish, small, early, and purple coloured, but grown mostly for curiosity. In general use the early Dutch turnip is the best for the early and first general summer crops, as it generally arrives to perfection a fortnight, at least, sooner than most of the other sorts; and, by an early sowing in spring, may be obtained by the beginning of May. Next to this is the early stone turnip for an early and first general summer crop, and the common round white turnip to sow for a main summer crop, all of which may be continued in perfection the whole summer and autumn, by performing three or four different sowings from March until July, so as to have crops regularly succeeding one another.

For the autumn and winter crops the white round, the green topped, and the red topped kinds, are the hardiest. From their magnitude they are to be preferred to all others for field culture.

These roots may be obtained for use eight or ten months in the year, as from about the middle of May till the beginning or middle of March; after which time they begin to shoot into stalk for seed.

The method of propagation in all these sorts, is by sowing the seed in situations where the plants are to remain, as they do not admit of being transplanted with success. The common season for sowing is any time from the beginning of March, until the latter end of July; but to have a long and regular succession, it is necessary to make four or five different sowings at proper intervals, from the latter end of February till the middle of August. The most proper soils for the culture of this root are those of the more light and mellow kinds; as on strong land the roots frequently acquire a stringy texture, and rankness of taste. In garden culture, the necessary space of ground to sow at a time, for the supply of a family, is from about two to six, eight or ten rods, according to circumstances; the proper quantity of seed for each sowing may be from one to two or three ounces; but for large field crops, the common allowance is about two pounds to an acre. The ground should be prepared for the seed by digging it well over, one spade deep, and breaking it as fine as possible on the surface, the seed being sown while the ground is fresh stirred, especially when there is hot or dry weather. A moist season for sowing is of great importance. In this culture the seed is mostly sown broad cast, scattering it moderately thin, with a regular cast and evenly spreading hand, afterwards raking it evenly in. It is of much advantage, when the weather is hot, to steep the seed a few hours in water before it is sown, as by that means it germinates more quickly, and there is less danger of the plants being destroyed by the fly. See FLY and TURNIP.

In the after-culture of the turnip, all that is requisite is, when the plants have two or three leaves, or are about a month old, to thin them out to six, eight, ten or twelve inches distance, and clear them from weeds, which is most effectually done by the hoe, and is best performed in dry weather. At the same time the weeds should be removed,

and the surface earth well stirred, as this will prove highly beneficial to the growth of the crops. The very earliest crops need not be thinned to more than five or six inches distance, especially if it is intended to begin drawing the roots as soon as they begin to turnip. In three or four weeks after hoeing, the plants will mostly begin to turnip; and in five or six weeks some may be fit to draw for use. In the markets these roots are exposed clean washed, and neatly bunched up, in number from twelve to fifteen or eighteen, according to their size in each bunch, and disposed of to the retailers by the dozen of bunches.

The field culture of these plants, and their different applications in the feeding and supporting different sorts of live stock, will be given hereafter. See TURNIP.

Saving seed. To obtain good seed, some of the best roots of the autumn and winter crops must be left to run up to stems, which mostly produce ripe seed about July, or the following month. It should be collected and managed in the same manner as in the cabbage sorts. And in order to obtain seed of the different varieties as perfect as possible, the plants of such varieties should be at considerable distances from each other.

BRASSICA Brassiliana, C. Bauh. Pinax. See *ARUM esculentum*.

BRASSICA Marina, J. Bauh. &c. See *CONVOLVULUS Soldanella*.

BRASSICA Maritima, C. Bauh. Pin. See *CRAMBE maritima*.

BRASSICA Monensis, Hudson and Withering. See *SYMBRIUM monense*.

BRASSICA Muralis, Hudson and Withering. See *SYMBRIUM tenuifolium*.

BRASSICA Spinosa, C. Bauh. Pin. See *BUNIAS Spinosa*.

BRASSICA Sylvestris, Boeckne. See *ARABIS Turrita*. C. Bauh. Pinax. See *TURRITIS Glabra*.

BRASSICÆ, in *Entomology*, a species of *CHRYSOMELA*, that inhabits Germany. The prevailing colour is deep black; wing-cases pale, testaceous with all the margin, and a band in the middle black. Fabricius, &c.

BRASSICÆ, a species of *STAPHYLINUS*, of a ferruginous colour; head and body black; wing-cases punctated; antennæ very thick and hairy. Scopoli. Found on the cabbage in Europe.

BRASSICÆ, a species of *PHALÆNA* (*noctua*), the wings of which are clouded with cinereous; a black hook connected with the first spot. Linn. Fabr. &c.

BRASSICÆ, the species of *APHIS*, that infests the common cabbage. Linn. Fabr.

Obf. It is *Pediculus brassicæ* of Frisch.

BRASSICARIA, a South American species of *PHALÆNA*, of the *noctua* section; the wings of which are indented, variegated, and marked with a common gold testaceous spot; posterior wings white.

BRASSICARIA, an insect of the genus *MUSCA*, the colour of which is black: abdomen cylindrical; second and third segment rufous. Fabr.

This is *Musca cylindrica* of Degeer. A variety of this species is mentioned by Fabricius, which has the abdomen ferruginous, with a black dorsal line at the base. Donovan. Brit. Inf. &c.

BRASSIDELIC ART, a term used by Paracelsus, to denote a method of curing wounds by the application of the herb *brassidella*, or *ophioglossum*, on the fresh wound.

BRASSIOLIS, in *Entomology*, a species of *PAPILIO* (*Heliconius*), that inhabits Surinam. The wings are fuscous; anterior ones spotted with yellow; posterior pair radiated beneath

beneath with sanguineous. Fabr. *Papilio bellona* of Cramer. Inhabits Surinam.

BRATENBRUNN, **SZELES-KUT**, in *Geography*, a walled and well-inhabited town of Hungary, in the circle below the Danube, and district of Odenburg, under the jurisdiction of the Esterhazy family.

BRATHYS, in *Botany* (*Epilobus*, or *Sparg.*), the name of a plant in Dioscorides, a genus instituted by Linnaeus the son for a plant found by Mutis, in New Granada, and taken up from him by Schreber (937) Jussieu (254), and Mr. Martyn, but referred by Dr. Smith (Plant. icon. 41.) to the genus *hypericum*, in which he has been followed by La Marek, Boic, and Willdenow. See *HYPERICUM Brathys*.

BRATSKOI, in *Geography*, a town of Siberia, in the province of Irkutsk, and the circle of Ilimsk, on the river Angara; 140 miles N.E. of Nishnie-Udiask.

BRATSKOW, or **BAKOW**, a town of European Turkey, in Walachia, situate in a fertile and pleasant country, and the residence of a Roman catholic bishop.

BRATTELEN, a plain of Switzerland, near Basle, where, in the year 1444, 1500 Swiss withstood the whole army of France, consisting of 30,000, till they were all cut to pieces, except 16 who escaped, and 30 who were found alive on the field of battle. See **BASLE**.

BRATTLEBOROUGH, a considerable township, and post town of America, in Windham county, Vermont; having 1589 inhabitants, seated on the west bank of Connecticut river, about 28 miles E. of Bennington, 61 N. of Springfield in Massachusetts, and 311 from Philadelphia. N. lat. 42° 52'.

BRAVA, one of the Cape de Verde islands, on the coast of Africa, the land of which is high and mountainous, producing, however, oranges and lemons in great abundance, and furnishing excellent wine. The inhabitants are somewhat more than 500, and they cultivate maize, gourds, figs, water-melons, and potatoes; they also breed horses, cows, asses, goats, and hogs. This island yields a considerable quantity of saltpetre, and the mountains are supposed to be rich in metallic ore, especially copper, as there are several vitriolic springs. The coast abounds with fish. The circuit of the island is about 4 leagues; and it is about the same distance W.S.W. from Fuego. We learn from sir George Staunton's account (Embassy to China, vol. i. p. 136.), that this island is a better and safer place for ships to be supplied with water and provisions than the island of St. Jago, as it has three harbours, one called Puerto Forno on the east side, from which vessels must warp, or be towed out by boats; the Puerto Fajendago to the west; and the Puerto Ferreo to the south, which is the best for large ships, and into which runs a small river. N. lat. 14° 54'. W. long. 24° 45'.

BRAVA, a sea-port town of Africa, on the coast of Zanzibar, being the capital of a small republic or aristocracy, bounded within the kingdom of Magadoxo, and at its southern limit, by seven Arabian brethren, who fled hither from the tyranny of their king Lacah, one of the petty monarchs of Arabia Felix. Here they found a convenient and delightful situation, bounded on each side by a river, whence some have affirmed it to be an island. This district does not extend far from the coast, as it chiefly depends on the commerce of the capital, which is situated on a bay, formed by the mouth of the northern branch of the river, about the distance of somewhat less than one degree from the equator. Brava, which is now a small town, was once large and populous, and carried on a considerable trade in gold, silver, silk, cotton, and other cloths, elephants' teeth, gums, and other drugs, particularly ambergris, with which this coast abounds. The

houses were large and well-built, in the Morecco style; and the town was strong and fortified, and accounted one of the most celebrated and frequented marts on the Habessin coast. The people were mostly Mahometans, but under the protection of the kings of Portugal, to whom they annually paid a small tribute. This payment, however, they resisted; upon which Tristram de Cugna, admiral of the Portuguese fleet, bound for India, having set on shore at Melinda three ambassadors sent by king Emanuel to the emperor of Abyssinia, proceeded to Brava, situate about 200 leagues northward of Melinda; and, after some previous negotiations, assaulted the city. After a severe conflict between the besiegers and the garrison, consisting of 4000 men, the latter retreated into the city, and shut the gates against the enemy. The siege was prosecuted, and the city was at length taken and plundered of a large and valuable booty. Many of the besieged were slain and wounded, and many taken prisoners; but most of them were released. The Portuguese, on this occasion, perpetrated many atrocious acts of cruelty; and Cugna, having plundered the city, set it on fire, and it was quickly reduced to ashes. After this, Brava became tributary to its destroyers; but it was never able to recover its pristine grandeur and liberties. Brava appears to have been the *Elisina* of Ptolemy, which was only 1 degree from the line. N. lat. 0° 45'. E. long. 44°.

BRAVA Pereira. See **PEREIRA Brava**.

BRAUBACH, in *Geography*, a town of Germany, in a prefecture of the same name, in the circle of the Upper Rhine, and principality of Hesse-Darmstadt, seated on the Rhine opposite to Rees; 10 miles W. of Nassau, and 18 N.W. of Mentz. Near this place is a very valuable salmon-fishery.

BRAVINIO, in *Ancient Geography*, a town of Britain, in the twelfth route of Antonine's Itinerary; supposed to be Ludlow.

BRAULIO, in *Geography*. See **BRALIO**.

BRAULS, in *Commerce*, Indian cloths with blue and white stripes; otherwise called "turbants," because they serve to cover those ornaments of the head, particularly on the coast of Africa.

BRAUN, **GEORGE**, in *Biography*, Lat. *Braunius*, archdeacon of Dortmund, and dean of Notre Dame in gradibus at Cologne, lived to the beginning of the 17th century, and published a "Latin oration against the fornicating priests," 1566; the "Life of Jesus Christ," and that of the "Holy Virgin," and "A Controversial Treatise against the Protestants," printed at Cologne in 1605, 8vo.; but his chief work is the "Theatrum Urbium," comprised in several folio volumes. Gen. Dict.

BRAUNAU, in *Geography*, a town of Bohemia, in the circle of Konigingratz, belonging to the abbey of Benedictines of the place.

BRAUNAW, a fortified town of Germany, in the circle and duchy of Bavaria, seated on the river Inn. It was formerly the residence of the elector palatine of Bavaria; but ceded to the house of Austria by the treaty of Teschen in 1779; 8 leagues S.W. of Passau. N. lat. 48° 10'. E. long. 13° 3'.

BRAUNECK, or **BRAUNEGG**, a town of Germany, in the Tyrolese, and bishopric of Brixen; 16 miles N.E. of Brixen.

BRAUNER-GEYER, in *Ornithology*, Cramer's name of the Austrian kite, *falco austriacus*.

BRAUNER-MALDERGEYER of Cramer, is the black kite, *falco ater*.

BRAUNFELS, in *Geography*, a town of Germany, in the circle of the Upper Rhine, belonging to the count

Solms, with a castle fortified in the ancient manner; 5 miles east of Wetzlar.

BRAUNSBURG, a town of Prussia, in the bishopric of Ermeland, seated on the Passarge, which, at a little distance, discharges itself into the bay called Frische-haf. It was built in the year 1255, and derives its name from Bruno, bishop of Prague. In 1461, the inhabitants expelled the Polish garrison, and afforded an asylum to the bishop of Ermeland, who had declared for the knights of the Teutonic order. It was formerly one of the Prussian great cities, and sent representatives to the senate or council of state; but it is now under the jurisdiction of the bishop. It is large and populous, and carries on a good trade. Braunsberg is divided into the Old and New Town; 32 miles S.W. of Königsberg. N. lat. 54° 20'. E. long. 20° 7'.

BRAUNSBURG, a town of Germany, in the circle of Westphalia, and county of Wied Runkel; 4 miles N.E. of New Wied.

BRAUNSDORF, a town of Germany, in the circle of Upper Saxony, and circle of Erzgebirg; 11 miles N.E. of Freyberg.—Also, a town of Germany, in the archduchy of Austria; 6 miles E. of Meissau.

BRAUNSELEFFEN, a town of Moravia, in the circle of Olmutz; 16 miles N.N.E. of Olmutz.

BRAUNSWIG, a town of Germany, in the circle of Lower Saxony, and duchy of Holstein, serving as a faux-burg to Kiel, and one mile north from it.

BRAVO, JOHN, in *Biography*, a native of Castile, practised medicine at Salamanca, the latter part of the sixteenth century, with distinguished reputation; he was also professor in medicine there, and much resorted to and esteemed by his pupils. His works are “De hydrophobia natura, causis, atque medela,” Salam. 1571, 8vo.; “De saporum et odorum differentiis, et causis,” 1583, 8vo.; “De curandi ratione per medicamentum purgantem exhibitionem,” 1588, 8vo.; “De simplicium medicamentorum delectu,” 1592, 8vo. He also published, agreeably to the fashion of the times, commentaries on the works of Galen and Hippocrates.

BRAVO, JOHN, professor of medicine and surgery in the university of Coimbra, in Portugal; published, in 1605, “De medendis corporis malis per manuales operationem,” 12mo.; “De capitis vulneribus,” fol. 1610. He died in 1615.

BRAVO, GASPARD, of Aguilar del Campo, in Old Castile, physician to Philip IV. and to the Inquisition, took his degree of doctor in medicine at Valladolid, where he taught medicine and surgery the middle of the 17th century; and was author of “Resolutionum medicarum circa universam totius philosophiæ doctrinam,” 1649, Lugduni, folio; “Consultationes medicæ, et tyrocinium practicum,” Coloniae, 1671, 4to.; “Operum medicinalium, tomus tertius,” Lugduni, 1674, folio. The author treats in these volumes of the physiology and the pathology of fever; of the effects of bleeding, purging, and of sudorifics; of the use of the Peruvian bark, lately introduced into practice, which he commends: and, among his consultations, he gives an account of the disease and death of Philip IV. of Spain, Haller. Bib. Med.

BRAVO, RIO, in *Geography*, called also *Del Norte*, or of the northern star, the principal river of Spanish North America, which, as far as its sources can be conjectured, has a course of about 1000 British miles; but its whole circuit probably exceeds that of the Danube. It discharges itself into the gulf of Mexico. N. lat. 25° 40'. E. long. 97° 30'.

BRAVO! Ital. a word which needs no explanation. It is an Italian exclamation of applause, which all Europe has adopted.

If, in a theatre, the Italians approve a musical composition, and dislike the singer, though they hiss the performer,

they afterwards cry out *bravo pure il maestro*; and on the contrary, when they hiss the composer, immediately after they discriminate, if the singer is a favourite, and exclaim *bravo Marchese*, or *brava la Banti*; and if a composer is a plagiarist from the well-known works of a favourite author, the critics cry out *bravo Pasello!* or *bravo Cimarosa!*

BRAURONIA, in *Antiquity*, a feast held every fifth year in honour of Diana, surnamed *Brauronia* from *Brauron*, a village near Athens, where the famous statue of that goddess, brought from Scythia Taurica, was preserved till it was taken away by Xerxes.

The ceremony of the Brauronia was managed by ten men, from their office called *ἱεροποιοί*; the victim offered was a goat, and it was customary for certain men to sing one of Homer's Iliads during the service: other ministers at the solemnity were young virgins, from five to ten years of age, habited in yellow, and consecrated to Diana, under the denomination of *Ἀετοί*, i. e. bears, which they derived from this circumstance. A bear, having become tame and tractable, was admitted to eat and play with the *Phlenidæ*, the inhabitants of a borough in Attica; but a young maid being too familiar with it, the bear tore her to pieces, and was afterwards killed by the brethren of the damsel. Hence a fatal pestilence ensued, for staying which an oracle advised them, in order to appease the anger of Diana, occasioned by the destruction of the bear, to consecrate virgins to her in memory of it. The Athenians obeyed the mandate of the oracle, and enacted a law, that no virgin should be married till she had undergone this ceremony. Potter. Arch. Græc. lib. ii. cap. 20.

BRAVUM, in *Ancient Geography*, a town of Spain, placed by Ptolemy in the Tarragonensis, in the country of the Murbours.

BRAVURA, Ital. is a musical term, as *Aria di Bravura*, implies a style of air, with which in modern times Miss Davies *Ingletina*, the Gabrieli, the Agujari, Madame Le Brun, Madame Mara, and Mrs. Billington, have made us perfectly acquainted. M. Ginguin, in the Encycl. Meth. has described and apologized for *execution*, with much taste and feeling. “We admire (says he) the warbling of birds, in tones which we cannot appreciate or understand; the nightingale, blackbird, thrush, canary bird, and lark, charms us with their divisions; the measured intervals and varied melodies exquisitely performed by sweet and flexible voices, supported and enriched by harmony, may afford a delight of a superior kind, in human tones, which can insinuate themselves into the inmost recesses of the heart; to which words can never penetrate, however impassioned, or tuned by numbers.”

BRAUWEILER, in *Geography*, a prefecture and abbey of Germany, in the circle of the Lower Rhine, and electorate of Cologne; 7 miles W.N.W. of Cologne.

BRAUWER, or **BROUWER**, ADRIAN, in *Biography*, a Flemish painter of great eminence, was born of obscure parents at Oudenarde, as some say, or, according to Houbraken, at Haarlem, in 1608; and obtained instruction in his art from Francis Hals, for the profit of his labour. In this situation he manifested such superior powers, that Hals employed him in a garret apart from his other scholars, assigning to him hard labour and a scanty diet, and selling his performances for high prices. From this state of close confinement and harsh treatment he eloped, and went to Amsterdam, where his works were known and esteemed. Having become master of 100 ducatoons, which he received for a single piece, he became frantic with joy, and spent it at a tavern in ten days. From this time his usual abode was a public house; and he worked only when he was urged to it

it by necessity. As soon as he had finished any piece, he offered it for sale; and if it did not produce a stipulated price, he burnt it, and began another with greater care. Possessing a vein of low humour, and engaging, both sober and drunk, in many droll adventures, he removed from Amsterdam to Antwerp, where he was arrested as a spy, and committed to prison. This circumstance introduced him to an acquaintance with the duke d'Artemberg, who, having observed his genius, by some slight sketches drawn with black lead while in custody, requested Rubens to furnish him with materials for painting. Brouwer chose for his subject a group of soldiers playing at cards in a corner of the prison; and when the picture was finished, the duke himself was astonished, and Rubens, when he saw it, immediately pronounced that it was the performance of Brauwer, and offered for it the sum of 600 guilders. The duke, however, retained it, and gave the painter a much larger sum. Upon this, Rubens procured his release, and received him into his own house; but, uninfluenced by gratitude to his benefactor, he stole away, and returned to the scenes of low debauch, to which he had been formerly accustomed. Being reduced to the necessity of flying from justice, he took refuge in France; and, having wandered through several towns, he was at length constrained by indigence to return to Antwerp, where he was taken ill, and obliged to seek relief in an hospital; and in this asylum of self-procured poverty and distress he died in his 32d year. Rubens lamented his death, and procured for him an honourable interment in the church of the Carmelites.

Such were the talents of Brauwer, that, in the course of a dissipated life, he attained to distinguished excellence in the style of painting which he adopted. His subjects were taken from low life, and copied after nature; such as droll conversations, feasts, taverns, drunken quarrels, boozing and disputing at cards, or surgeons dressing the wounded. His expression, however, is so lively and characteristic; the management of his colours so surprizing; and truth was united with exquisite high finishing, correctness of drawing, and wonderful transparency, to such a degree, that his paintings are more valuable, and afford higher prices, than many works of the most eminent masters. Some of his best works are found at Dusseldorp. His drawings are dispersed in the various cabinets of Europe. Several of his designs have been engraved; and we have some few etchings by himself of subjects usually represented in his pictures, which are signed with the initials of his name, H. B.; Adrian being spelled with an H. Pilkington. Strutt.

BRAUX, in *Geography*, a town of France, in the department of the Ardennes; 5 miles N. of Charleville.

BRAWALLA. See **BROWALLA**.

BRAWN, in the *Culinary Art*, signifies the flesh of a boar, boned, rolled up, or collared, boiled, and lastly pickled, for the winter's use.

The method of preparing it is as follows:—After the flesh has been sprinkled with salt, and the blood drained off, it is to be salted a little, and rolled up as hard as possible. In this state, it is to be boiled in a copper or large kettle till it is so tender as to admit of a straw's being run through it; and then set by thoroughly to cool. When it is cold, it is to be put into a pickle, prepared by adding to every gallon of water a handful or two of salt, and as much bran of wheat; boiling these ingredients together, and then draining the liquor as clear as possible from the liquor. When the liquor is quite cold, the brawn is to be put into it.

Brawn is made only of the stiches, without the legs; the oldest boars are chosen for this use; it being a rule, the older the boar, the more horny the brawn.

There is also brawn of pig, which is made by scalding, drawing, and boning the beast whole, except the head; then cutting it in two collars, soaking it in brine, seasoning, rolling, putting it into a cloth, binding it up, boiling it, and when boiled, hooping it up in a frame.

BRAXEY, in *Veterinary Science*, a disease of sheep, which is distributed into the dry, colic, and watery braxeys. The dry braxeys seems to be cold and inflammation in the bowels, owing to the taking in with the food some loaf-frost, or to a change in the blood arising from the removal of the animals from a poor to a rich keep. The colic braxeys is merely the colic, from obstructed intestines. The watery braxeys is supposed to be the "red water," as it arises from the usual cause, and is attended with the similar symptom of suppression of urine. In this latter case, instead of using turpentine and other strong diuretics, the surest and safest course is to puncture the bladder, without wounding the guts, and thus to draw off the urine, afterwards covering and healing the wound.

BRAY, **SIR REGINALD**, in *Biography*, an English politician and ingenious architect of the 15th century, was the second son of sir Richard Bray, one of the privy council to king Henry VI., and descended from an ancient family, who accompanied William the conqueror into England, and flourished in the counties of Northampton and Warwick. In the first year of Richard III., Reginald obtained a general pardon, probably, on account of the part he had taken from personal and hereditary attachment to Henry VI.; and he was recommended as a person of sober and prudent policy, to those who favoured the advancement of the earl of Richmond, afterwards king Henry VII., to the throne. In the service of this prince, both before and after his accession, he was steady and active; and his zeal was recompensed by a variety of honourable appointments. He was made a knight banneret, probably at the battle of Bosworth, a knight of the bath at the king's coronation, and afterwards a knight of the garter. He was also constable of the castle of Oakham in Rutlandshire, joint chief justice with lord Fitzwalter of all the forests south of Trent, high treasurer, chancellor of the duchy of Lancaster, high steward of the university of Oxford, and a member of the privy council. In the 10th year of the king's reign, he had a grant for life of the Isle of Wight at the annual rent (says Camden) of 300 marks. He received many other marks of the royal bounty and favour; and died August the 5th 1503, possessed of a very great estate; and his remains were interred in the chapel at Windsor. Notwithstanding the wealth he acquired, and the activity with which he officiated as minister during 17 years, under a sovereign, who was suspicious in his temper, and extorted large sums of money from his subjects, historians concur in giving him an excellent character. They represent him as the father of his country, a sage and grave person, a fervent lover of justice, and one who would often admonish the king when he did any thing contrary to justice or equity. His piety and charity were also conspicuous in the usual exercises of the times, in which he lived.

Of his skill in architecture, he gave sufficient evidence, in building the chapel of Henry VII. in Westminster abbey, which was conducted under his direction, and in completing the chapel of St. George at Windsor, to which he was a liberal benefactor. As he died without issue, he bequeathed the bulk of his fortune to Edmund, the eldest son of his younger brother John, who was summoned to parliament in 1530, as baron of Eaton Bray; and he also left considerable estates to Edward and Reginald, younger brothers of Edmund. From Edward, the manor of Shire Vachery

and Cranley in Surry, which was given to sir Reginald upon the execution and attainder of lord Audley, descended to the Rev. Geo. Bray, who possessed it in 1778. Reginald settled at Barrington in Gloucestershire, where the male line of that branch became extinct, about fifty years ago. Biog. Brit.

BRAY, THOMAS, a learned and pious divine of the 17th century, was born at Marton in Shropshire in 1656, and after finishing his school education at Oswestry, was admitted into Hart-hall, in the university of Oxford, where he made considerable proficiency in those studies, which were adapted to the ecclesiastical profession, for which he was intended. Being under a necessity of leaving Oxford, on account of his circumstances, soon after he had commenced bachelor of arts, he entered into holy orders; and by his assiduity in discharging the duties of his profession, as well as by his exemplary behaviour, he obtained the patronage of lord Digby, who presented him to the living of Over-Whitacre in the county of Warwick, generously augmented for his sake, by the addition of the great tithes, and in 1690, to the rectory of Sheldon, which he retained till within a quarter of a year of his death. In 1693, he took his degree of master of arts in Hart-hall, Oxford. At Sheldon, he composed his "Catechetical lectures," published in 1696, which were not only well received by the public, but the means of recommending him to Dr. Compton, bishop of London, who fixed upon him as a proper person for modelling the infant church of Maryland in America, and establishing it upon a solid foundation. In 1696, he was appointed commissary for this purpose, with a salary of 400*l.* per annum. Determined on active and useful service, whatever present sacrifices might attend it, he intimated his readiness to accept the office, on condition of being encouraged and aided in providing parochial libraries for the ministers who were to be sent to the churches of this colony. This scheme of parochial libraries he extended to all the colonies and plantations in America and the West Indies, and also to the factories in Africa; and he connected with it another design, which was that of establishing lending libraries in every deanery throughout England and Wales, out of which the neighbouring clergy might borrow books; and where they might have an opportunity of consulting them, with regard to all matters that pertained to literature in general, and to their own office in particular. The plan became popular, and many libraries were founded, both at home and abroad. With a view of promoting the utility of these libraries, and of directing the missionaries in the prosecution of their theological studies, Mr. Bray published two books, one entitled "*Bibliotheca parochialis, &c.*" and the other, "*Apostolic charity,*" a discourse upon Daniel xii. 3. preached at St. Paul's at the ordination of some protestant missionaries, intended for the plantations; to which is prefixed, "*A general view of the English colonies in America, &c.*" About this time, viz. in 1696, Mr. Bray took the degree of doctor in divinity, though his circumstances would hardly allow of the expence attending it; thinking that this title and honour would give authority to his advice, and serve to promote the benevolent purposes which he wished to accomplish. In 1698, he made some unsuccessful exertions in order to procure a public fund for the propagation of the gospel in foreign parts; but failing in his main design, his efforts availed for the purpose of forming a voluntary society, which was afterwards incorporated by royal charter. See SOCIETY. Ever since his appointment to the office of commissary for Maryland, he had received no emolument from it; but he had expended his time and money in promoting those important objects, to which he was zealously devoted; and,

therefore, some of his friends endeavoured to dissuade him from prosecuting his design of going abroad, and to accept of two valuable preferments which were offered to him at home, which were those of sub-almoner and the donative of Aldgate in London. But persisting in his purpose, and finding that his presence was necessary, he set sail for Maryland in 1699, and arrived thither in March of the following year. He immediately applied to the object of his mission, visited the province, and took measures for the re-establishment of the church, which had been for some time in a very unsettled state. Having obtained a bill from the assembly for this purpose, he came over to England to solicit the royal assent; and, notwithstanding the objections that were urged by those who were to be thus compelled to contribute towards the maintenance of a clergy, from whose services they were to derive no benefit, he succeeded in procuring a law, framed according to his wishes. Dr. Bray, after his return in 1701, published his "Circular letters to the clergy of Maryland." In 1706, he accepted the donative of Aldgate, which was again offered to him; and, in 1712, he published his "Martyrology, or papal usurpation," fol.; a work consisting of extracts from the treatises of celebrated authors, arranged and digested into a kind of regular history. He had provided materials for a second volume; but being obliged to lay aside the prosecution of his design, his martyrological memoirs, both printed and MS. were bequeathed by his will to Sion college. Such was the zeal of Dr. Bray for the conversion of the negroes in the West Indies, that he took a voyage to Holland to solicit king William's encouragement of the design; and on this occasion, he was introduced at the Hague to an acquaintance with a M. d'Allone, whom he interested in the execution of his object, to such a degree, that he left a considerable legacy towards its completion. Dr. Bray, having met with great success in his establishment of parochial libraries, devoted much time to this business; and for the purpose of impressing the minds of those who are designed for the ministry, with a due sense of the importance of Christian knowledge, he reprinted the excellent treatise of Erasmus, entitled "*Ecclesiastes.*" In 1727, he made a casual visit to Whitechapel prison; and so much was he affected by the contemplation of the wretched state of those who were confined in it, that he exerted himself in procuring contributions for their relief, and that of other prisoners; and he represented their deplorable condition with such effect, as to induce the house of commons to institute inquiries, which were very important and beneficial. To the suggestions and exertions of Dr. Bray, always directed by a pious and benevolent spirit, many charitable institutions in the metropolis and in other places were much indebted; particularly the society for the reformation of manners, that for founding charity schools, and that for the relief of poor profelytes. Having entrusted the accomplishment of his various charitable and public spirited plans to proper managers, this good man, happy in the review of a life, that had been devoted to important and useful purposes, and animated by a well-founded hope, with regard to futurity, closed his course of service, February the 15th 1730, in the 73d year of his age. Mr. Whiston bears honourable testimony to Dr. Bray, of whom he says, "that he esteemed him, though not as one of the greatest abilities, as by far the most useful clergyman, and the most indefatigable promoter of religion, and of the pious designs and societies which conduce to it, he ever knew; that he always honoured and assisted him, both in the review of his catechetical lectures, and his many other charitable and Christian attempts; and, that he heard him comforting himself near his

his death, with those numerous good works he had so heartily promoted." "Dr. Eray's opinion," says one of his biographers, "that civilizing the Indians must be the first step, in any successful attempt for their conversion, is a proof of his good sense, and of the just ideas he entertained on the subject." Biog. Brit.

BRAY, SOLOMON DE, a portrait painter, was born at Haarlem in 1597, or, according to Descamps, in 1579, and is reckoned among the good artists of his time. He died in 1664. Pilkington.

BRAY, JACOB DE, an historical painter, the son of the former, was born at Haarlem, and is said by Descamps to have died some weeks before his father, in 1664; but other writers affirm, that he was alive in 1680. He distinguished himself by his drawings, as well as his paintings. At Amsterdam, there is a picture by this artist, in which David is represented playing before the ark; that is much commended. The colouring is so well managed, that it appears as fresh as if it had just come from the easel. His drawings on vellum and paper, finished in red and black chalk, are very fine and highly valued. Pilkington. Strutt.

BRAY, in *Geography*, a sea-port and post town of the county of Wicklow, Ireland, situated on the confines of the county of Dublin, from which it is separated by a small river of the same name, that abounds with excellent trout. It has two fairs, at which are sold great quantities of frieze and flannel, with sheep and black cattle. Here are an old castle, a church and chapel both newly built, and a barrack. In the neighbourhood are many fine seats that attract visitors; and it is also frequented for sea bathing, and for drinking goats' whey. Distance from Dublin, 10 miles S. by E. N. lat. 53° 13'. W. long. 6° 6'.

BRAY-bank, a narrow bank of land on the east coast of Ireland, opposite to Bray-head, at the distance of from six to seven miles from the coast, and extending about eight miles N. by E. The least water found on it was nine feet.

BRAY-head, a cape on the east coast of Ireland, near the town of the same name, which is steep, and the highest land upon that part of the coast. It is 12 miles north of Wicklow-head, and 5 miles south of Dalkey, the south point of the entrance into the bay of Dublin. N. lat. 53° 12'. W. long. 6° 4'.

BRAY sur Seine, a town of France, in the department of the Seine and Marne, and chief place of a canton, in the district of Provins, 3 leagues S. of Provins. The town contains 2030, and the canton 10,582 inhabitants; the territory comprehends 272½ kilometres, and 23 communes.

BRAY sur Somme, a town of France, in the department of the Somme, and chief place of a canton, in the district of Péronne, 3 leagues W. of Péronne. The place contains 1065, and the canton 9645 inhabitants; the territory includes 145 kilometres, and 20 communes.

BRAZE, a town of France, in the department of the Côte d'Or, 2 leagues from Dijon.

BRAZED, in *Heraldry*, the same as *Braced*, is used to express such charges as are folded or interlaced.

BRAZEEL *parisi*, in *Botany*, (Petiver). See SPICELIA ANTHELMIA.

BRAZEN *age* is used by the poets to express the third age of the world. See AGE.

BRAZEN *dish*, among *Miners*, is the standard by which the other dishes are gauged, and is kept in the king's hall.

BRAZEN *laver*, in *Jewish History*, one of the utensils of the court of the tabernacle, described in the 30th chapter of Exodus, and conveniently situated between the east end

of the tabernacle and the altar of burnt-offerings. Neither its shape nor size is mentioned by Moses; but it was probably of considerable capacity, as it served for the use of all the priests to wash their hands and feet, before they performed their ministry. It is said (Exod. xxviii. 8.), that Moses "made the laver of brass, and the foot of it of brass, of the looking-glasses of the women, who assembled at the door of the tabernacle of the congregation." Such were the ancient mirrors, made of polished brass or other metal; which gave but a dark or obscure image, in comparison of glass mirrors. Hence, it is said, we read (1 Cor. xiii. 12.) of "seeing through a glass darkly;" or rather "in, or by a glass," as *ἐν ὁφθαλμοῖς* signifies. Some have supposed, that an error has crept into the text, or an exchange of one letter for another like it, as of β , instead of γ ; and that it should be rendered, "he made the laver and its foot of a brass like the looking-glasses of the women that crouded about the door of the tabernacle;" by which we are to understand, that he made them either of the same metal, or that he gave them the same degree of brightness or smoothness. And, if what an ancient father tells us be true, with regard to the Egyptian women, that they used to go into the temple with a looking-glass in one hand, and a timbrel in the other, it will serve to illustrate the practice of the Hebrew women's wearing such an ornament when they came into the tabernacle. Tremell. in loc. Cyril. Alexand. de Adorat. in Spirit. &c. tom. i. l. 2. p. 64.

BRAZEN, or *molten sea*, an utensil in the temple of Solomon, for the size and construction of which, see 1 Kings, chap. vii. and 2 Chron. chap. iv. The water contained in it served for the washing of the sacrifices, and of the priests and Levites, before they performed the several services assigned them; and for this purpose it was drawn out by pipes and conduits. It was filled with water by the Gibeonites, who were afterwards called Nethinims.

BRAZEN *serpent*, a figure of the fiery serpent or saraph, which Moses was instructed to form and to elevate upon the top of a pole, promising the Hebrews, that all who were bitten by serpents, and should look towards this image, should be healed; as the event proved. Numb. xxi. 9. Our Saviour compares the lifting up of this serpent on the pole to his elevation, or crucifixion, upon the cross. John, iii. 14. John, xii. 32. This brazen serpent was preserved among the Israelites till the time of Hezekiah, who, being informed that the people paid a superstitious worship to it, ordered it to be broken in pieces, and by way of contempt gave it the name of "Nehushtan," i. e. a brazen bawble or trifle. 2 Kings, xviii. 4.

BRAZIER, an artificer who makes and sells pans, pots, kettles, and other kitchen utensils and brass ware.

Itinerant braziers, who go about with their tools and knapsacks, are called *tinkers*; by the French, *braziers of the whistle*, *cheuderoniers au sifflet*.

BRAZIL-wood, in *Botany*. See CASALPINIA, and P. 100.

BRAZING, the soldering or joining of two pieces of iron by means of thin plates of brass, melted between the two pieces to be joined.

If the work be very fine, as when the two leaves of broken saws are to be joined, it is to be covered with beaten borax, moistened with water, that it may incorporate with the brass-dust, which is here added; and the piece is exposed to the fire, without touching the coals, till the brass be observed to run. To braze with a still greater degree of nicety, they use a solder made of brass, with a tenth part of tin; or another, one-third brass, and two-thirds silver; or borax and rosin: observing, in all these ways of brazing,

that

that the pieces be joined close throughout; the folder only holding in those places that touch.

The method of brazing, among smiths, farriers, &c. is by beating the two pieces, when hot, over one another; this is more properly called *welding*.

BRAZZA, so called from the town of *Brazza*, in *Geography*, an island in the gulf of Venice, about 10 leagues long, and 3 broad, near the coast of Dalmatia, opposite to Spalatro, and subject to Venice. N. lat. $43^{\circ} 45'$. E. long. $16^{\circ} 19'$.

BRE', a river of Denmark, which runs into the North sea; 6 miles S. W. of Tondern.

BREA, a small island in the Pacific ocean, near the west coast of North America. N. lat. $16^{\circ} 38'$. W. long. $99^{\circ} 1'$.

BREA head, a cape on the south-west coast of Ireland, being the south-west point of Valentia island, in the county of Kerry. N. lat. $51^{\circ} 50'$. W. long. $10^{\circ} 16'$.

BREACH, in a general sense, denotes a break or rupture in some part of a fence or inclosure, whether owing to time or violence. The word is formed from the French *breche*, which signifies the same; formed of the German *brechen*, to break.

Inundations, or overflowings of lands, are frequently owing to breaches in the dikes, or sea-banks. Dagenham breach is famous; it was made in 1707, by a failure of the Thames wall, in a very high tide. The force wherewith it burst in upon the neighbouring level, tore up a large channel or passage for water a hundred yards wide, and in some places twenty feet deep, by which a multitude of subterranean trees, which had been buried many ages before, were laid bare. Phil. Trans. No 335. p. 478.

BREACH, in the *Military Art*, is an extensive aperture, gap, or opening made in any part of the works of a town, either by battering the walls with artillery or springing mines, in order to storm the place, or carry it by assault. They say, *make good the breach, fortify the breach, make a lodgment on the breach, &c.* To clear the breach, is to remove the ruins that it may be the better defended.

The ancients were not provided with means so effectual as our artillery to batter down the walls of fortified places. The catapultæ and balistæ, redoubtable as they were in the open field, or the attack of a camp, were not competent to this effect. With the Greeks, the Romans, and other nations of antiquity, it was necessary to advance close under the walls before they could make use of the ram, their principal instrument of assault. All the other operations of a siege; the construction of their aggeres or terrasses, the moving turrets, the testudoes, galleries, and vineæ, were only directed towards this principal object, that of favouring the approach of the ram towards the town. So long as the besieged maintained themselves in possession of their walls, it was not possible to make use of this formidable weapon. Most of their machines, especially such as tended to avert the effect of the ram, were disposed upon the parapet of the front attacked; and masters of their battlements, they galled the besiegers with incessant showers of darts and arrows, large stones, entire beams, burning pitch, melted lead, and every kind of missile arms. They directed their principal machines against the ram, whose force was useless the instant its equilibrium was disturbed. But as soon as the catapultæ and balistæ of the assailant had cleared the walls of the place, and the besiegers, protected by their terrasses, had filled the ditch, no obstacle remained to prevent the application of the battering ram. Its effect was inevitable the moment the vibration of the machine was undisturbed and free. The place was then reduced to the last extremity;

and if the garrison had rashly held out until the ram had struck the wall, "*si areis murum tetigisset*," no capitulation was afterwards granted, unless upon the severest terms.

The ram generally approached the place under the protection of the testudo, a kind of covered gallery, within which it was either suspended in equilibrio, or rested on a bafe, and worked by a considerable number of hands. In this situation, no tower or wall of masonry, however thick, could for any length of time resist the tremendous shock which accompanied its blows. The ram, however, was not always the method used by the ancients to effect a breach. They sometimes employed their *crymata*, subterraneous passages, or mines, which, having carried completely under the front of the place attacked, they sustained the walls by enormous beams, until the space undermined was judged sufficient, and then setting fire at the same time to all these beams, their fall infallibly brought along with it great part of the fortification, and opened a wide breach for the assailants to mount over.

Among the ancients, the art of defence, the moment that the besiegers had filled the ditch, planted their machines, and brought the battering ram up to the foot of the wall, bore no proportion to that of attack. Several means, however, were invented to prevent or lessen the effect of this last terrible machine, particularly at the siege of Platæa, in the Peloponnesian war. The besieged made use of nooses or pincers, with which they caught the head of the ram, and either drew it up to the walls, or at least disturbed its equilibrium for a considerable time, and spoiled the effect of its stroke. They also made use of a large beam, hung horizontally, by heavy iron chains, to two immense wooden levers, planted upon the battlements. This, when they beheld the ram about to commence its action, they elevated to a great height, and letting it fall suddenly upon the machine, it caused the head of the ram to plunge, and thus considerably deadened, if not entirely destroyed, the impetuosity of its blow. Even when the breach was made, the diligence of the garrison sometimes provided the means of a new defence. During the siege, it was customary to build a new wall, in form of a crescent, behind that against which the enemy directed their principal efforts. This much disheartened the besiegers, who, when they flattered themselves with having overcome all resistance, and holding the town at their mercy, were thus often obliged to recommence the prodigious labour of their aggeres, vineæ, and other machines, against the re-entering wall: a new labour equally difficult and dangerous, as in the process their flanks were laid open to the darts, stones, and other missiles of the enemy. The celebrated sieges of antiquity afford many instances of this method of protracting a defence. The sieges of Platæa, by Archidamus; of Halicarnassus, by Alexander the Great; and of Rhodes, by Demetrius Poliorcetes, are the most remarkable in the Grecian history. On the latter occasion, the town was preserved by the construction of a second wall, when the machines of the Macedonians had overthrown the first, and made a very practicable breach. At Athens, when besieged by Sylla, in his war against Mithridates, the same expedient was made use of; but without the same success. But ancient history affords no example of a siege where this mode of defence was carried to so great a length as at Saguntum, when attacked by Hannibal. Several walls were repeatedly raised one after another, to protect those parts of the town in which the Carthaginians had not got footing; and by dint of these successive inclosures, the inhabitants maintained a bloody resistance for nearly eight months: The fatal consequences of this obstinacy are sufficiently known. Guichard, Me-

meires Milit. tom. ii. Caesar de B. G. lib. ii. Thucyd. Hist. lib. ii. Arrian de exp. Alex. lib. i. Diodorus Sic. Hist. lib. xx. Plutarch in Sylla. Appian. de Bel. Mithrid. Livius Hist. lib. xxi. Polyb. de Folard. Rollin. Hist. Ancienne.

In modern warfare, breaches are sometimes effected by battering the place with cannon, sometimes by springing of mines, and oftentimes by a combination of both. In the former case, batteries for making a breach in the body of the place, and ruining the defences, are generally erected upon the covert way, after the besieged have been driven from all their exterior fortifications. As the ravelin is to be attacked first, and is flanked or defended by the faces of the bastions opposite to its ditch, the first batteries erected are to ruin the defence of the ditch, and to make breach in the ravelin. Each of these batteries should contain four or five 24 pounders at least. Sometimes the batteries raised against the ravelin are also used to batter the faces of the bastions; but as this cannot be done without breaking the wall of the ravelin too near the salient angle, it will be much better to erect batteries for that purpose, although if the faces of the protecting bastions were well enfiladed by the guns of the first parallel, firing a ricochet, there would be no occasion for any others. Whilst these batteries are erecting, fresh ones must be made to ruin the flanks of the bastions, of as many guns as can be placed opposite to them, as also some to play against the opposite faces. The best place for effecting breaches, both in the ravelin and bastions, is about 15 fathoms from the salient angle: so that battering on both sides of the angle the breach will become spacious and large; whereas, on the contrary were the breach made too near the angle, it would become too small and incommensurable.

All these batteries are made on the ridge of the glacis, within three fathoms of the covered way, which interval serves to construct the parapet or epaulement; and as the guns which are to effect a breach should fire as low as the bottom of the ditch, the embrasures must be made sloping downwards accordingly. The guns intended to make breach should always fire together, or in salvo's, and as nearly in the same place as possible, and continue so till the wall is quite pierced, which may be known by the earth's falling. They must begin firing at first as low as they can, and batter the wall nearly in an horizontal line, as far as the breach is intended to be made; afterwards fire something higher, in the same manner as before, and continue so to do till the wall tumbles down; for should they fire at first too high, the rubbish would cover the lower part of the wall, so as not to be broken afterwards, and the breach thus become impracticable. The wall being broken down as far as is necessary, the counterforts must be beat down likewise, which, as they advance farther into the earth than the wall itself, will be soonest demolished by firing at them obliquely.

The other, and the shortest way to make a breach, is to pierce the wall with guns, so as to make a hole for two or three miners to lodge themselves in it, who are sent over the ditch as soon as it is dark (in boats, if the ditch is full of water), and make three or four small mines under the parapet, which, when sprung, will at once open a breach sufficiently large, and wanting nothing but to be cleared in order to give an assault. The breach effected by battering, however, certainly costs less men than that accomplished by mines, because, in case of a dry ditch, the necessary establishments there to sustain the miner are avoided; and, if the fossé is filled with water, the ruins of the breach partly sink it up.

The breach being made, and the effects of the mine clearly distinguishable, however practicable it may appear, it is not prudent to hazard a general assault immediately after the mine has been sprung. It is necessary that it should be well examined by hardy and resolute men, who should, if possible, gain the top of the breach, reconnoitre the posture of the garrison, and discover what precautions they may have taken in different places, to counteract the effects of a storm. All breaches made in the body of a place, or in the more important outworks, should be widened as much as the ground will admit of, so as to oppose to the enemy a greater front than that by which he can advance to drive out the besiegers. A practicable breach ought to be fifteen or twenty fathoms wide. This, once made, and the ground levelled, with all materials and tools at hand, the troops destined to mount the breach disposed ready for the assault, and others drawn up to support them in case of need, the guns and mortars should begin to fire briskly on all the defences of the place which flank the front attacked, both directly, and enfilading them by the ricochet batteries; and a great number of shells and stones should be thrown into the ravelin or bastion, and its defences. This having continued for some hours, the signal is given for ceasing to fire; and the troops marching to the assault, charge the garrison vigorously, and oblige them to retire. After this, the workmen, headed by an engineer, advance to make a lodgment on the upper part of the breach, which, when partly done, the troops retire behind it, ready to repulse the besieged if they should return, which they will not fail to do as long and as often as they can. But when this lodgment is once so far advanced as to be in a condition of receiving a good number of troops, the besieged will have it no longer in their power to disturb them by open force, and therefore they will make use of their mines, as the last resource left them, if they have not been prevented beforehand, either to blow up the lodgment, or any other place where they perceive a body of men.

When the inner intrenchments have not been ruined by the bombs or mines, which may be the case when they are furnished with revêtements, or have not been sufficiently reconnoitred, other proceedings become necessary. Lodgments should be carried on by saps along the parapet, to get possession of the traverses, if the besieged have made any to shelter themselves from the ricochet batteries. These lodgments must themselves be well traversed, from the enfilades to which they are unavoidably exposed, and joined by others across the work, which serve as a sort of parallels to dislodge the garrison from their intrenchments. If the besieged are retrenched upon the two flanks of the bastion, or at its gorge, which, it is to be presumed, is the case, when the explosion of the mines does not entirely drive him out of the work, it will be expedient to make capacious lodgments on the breach, extend it by means of fourneaux and small mines, and render its access practicable and easy, even for heavy artillery, which it may be necessary to mount in battery on the top of the breach, in case that the bombs fail in driving the garrison out of their retrenchments. If there should be any pallisades placed either round these retrenchments, or serving for retrenchments themselves, they must be broken down with the guns from some battery that can play upon them; or, if this cannot be done, small mines must be carried underneath to blow them up.

These are necessary precautions against the obstinacy of a governor or garrison, who are determined to defend themselves to the last extremity, and which, on such an occasion, must never be neglected. For an assault given hastily and inconsiderately after springing a mine, and which a prudent

and

and wise governor only withstands when he finds himself enabled to do so without much risk of being forced, always costs a general some of the best and bravest foldiers in his army, and frequently deters the rest from subsequent hazardous attempts, especially if the destruction from the countermines and fougasses has been considerable. When the breach is to be carried sword in hand, it is indispensibly necessary that all the defences of the work should be ruined; the breach itself very practicable, and that, both before and during the attack, an incessant fire of cannon, musquetry, and mortars should be poured upon, and into the works enfiling that, the immediate object of the assault. The front of the attack should surpass and embrace the whole extent of the work; for, under these circumstances, the superior depth and number of the besieger's column of attack, must necessarily, as at Oczakow, Bender, Valenciennes, &c., overbalance the inefficient resistance which can be opposed by a garrison. It was from a neglect of all these precautions, that the grand attack of the confederates upon the castle of Namur in 1695 entirely failed. The columns destined to mount the different breaches began their march from too great a distance, and, although protected by a prodigious fire of bombs and artillery, the most forward never penetrated further than the middle of the breach; and they retired after sustaining a serious loss. In fact, it is almost impossible to mount a breach by assault, while any works remain, whose fire is either directed upon, or enfilades the attack.

But, on the other hand, it is equally rash in a governor to resist a storm, or hazard the lives of his garrison in fruitless attempts to maintain possession of the breach, after these works have all been destroyed, and the breach is reduced to its own defences. A place thus obstinately holding out is in danger of being taken by assault, and the garrison put to the sword, or obliged to surrender at discretion. Retrenchments, indeed, may sometimes serve to protract an unavailing resistance; but their construction should not be delayed, as is generally the case, till after a breach has been made in the body of the place, with the sole view of obtaining a better capitulation. When the siege is once formed, much time is lost in their formation; and the loss of men by the bombs thrown into the bastion is very great, besides the considerable fatigue which the foldiers experience. In the ravelins, horn-works, crown-works, lunettes, and other detached fortifications, they are of greater service, especially when the ditches are dry, and the communication with the body of the place easy; for, then it becomes impossible to carry them by the gorge. And when they have revêtements, and a fossé, the besiegers will be reduced to the necessity of bringing up artillery upon the work to batter them in breach, or to try the effect of his bombs. If the enemy adopt the method of a blinded sap, he must be very careful to cover himself from the fire of the curtain, and the faces of the bastions; and in every one of these cases, much time is lost before he can approach the body of the place.

The breach itself may also be defended to advantage. When the enemy are ready to mount, a great quantity of all kinds of combustibles are thrown at the foot of the breach, to be fired, and constantly supplied with fuel. While they are mounting, a great number of grenades must be thrown among them: sacks, glass, or earthen bottles filled with powder, and burning matches twisted round them; crows-feet, harrows, and large timbers, with long iron spikes fastened with chains, so as not to be removed, as also shells, so confined, as not to roll out of the breach. A great quantity of loose powder may also be scattered about, and fire set to it at the approach of the enemy. This being well executed, and fire arms, both great and

small, well served, together with the mortars for throwing shells and stones, will do them infinite damage, and sensibly retard the taking of the work. When the defence is exhausted, and the enemy at last are masters of the breach, the mines are fired, to destroy, if possible, their lodgment, with all the men established in it. Should this succeed, the besieged may return immediately, and clear the breach, so as to render it impracticable. Several mines should be made under one another, if the ground will allow of it, that the breach may be destroyed several times, which will sometimes dishearten the enemy's troops, put them out of all patience, and may eventually contribute to make them raise the siege, as was the case at Maastricht, when besieged by the prince of Orange in 1674.

Muller. Syst. of Mathemat. vol. vi. Feuquieres Memoires Milit. chap. xcvii. xcvi. and xcix.

BREACH of close, in Law. See CLOSE.

BREACH of covenant, denotes the non-performance of any covenant expressed or implied in a deed: or the doing of an act, which the party covenanted not to do. See COVENANT.

BREACH of duty, denotes the non-execution of any office, employment, or trust, &c. in a due and legal manner. See ASSUMPSIT.

BREACH of peace. See PEACE.

BREACH of pound. See POUND.

BREACH of prison. See PRISON.

BREACH, to batter in, *batre en brèche*. See BATTERING.

BREACH, mounting the. See MOUNTING.

BREAD ordinarily is made of the flour or meal of some farinaceous vegetable ground, and kneaded with water and leaven or yeast.

In describing the process of making bread, it is natural, in the first place, to advert to the substance or material of which it principally consists. This is the flour obtained from farinaceous vegetables, principally wheat or rye, or a mixture of both these, called in many parts of the kingdom bread-corn, converted into meal by trituration, or grinding in a mill, and separated from the husk or bran by sifting or bolting. This is composed of a small quantity of mucilaginous saccharine matter, soluble in cold water, and separable from it by evaporation, much starch, which is scarcely soluble in cold water, but capable of combining with that fluid by heat, and an adhesive grey substance, called gluten, insoluble in water, ardent spirit, oil, or ether; and in many of its properties resembling an animal substance. When flour is kneaded with water, it forms a tough paste, containing the constituent principles of flour, with very little alteration, and not easily digested by the stomach. By heat the gluten, and probably the starch undergoes a considerable change, and the compound is rendered more easy of mastication, as well as of digestion. When this dough is kept in a warm place, it swells up, becomes spongy, and filled with a number of air-bubbles, disengages at length an acidulous and spirituous smell, tastes sour, and in this state is called "leaven," from the French word "lever," to raise. Whilst the dough, or paste, is left to undergo a spontaneous decomposition, in an open vessel, the various component parts are differently affected; the saccharine part is convertible into an ardent spirit, the mucilage tends to acidity and mouldiness, and the gluten probably verges towards a state of putridity. By this incipient fermentation, the mass is rendered more digestible and light; that is, it becomes much more porous by the disengagement of elastic fluid, which separates its parts from each other, and much enlarges its bulk. The operation of baking puts a stop to this process, by evaporating a great part of the moisture which favours the chemical

chemical attraction, and probably also by still further changing the nature of the component parts. Bread, however, in this state, will not possess the requisite uniformity; because some parts may be mouldy, while others are not yet sufficiently changed from the state of dough. In order to promote an uniform fermentation, a small portion of leaven is intimately blended with a quantity of other dough; and this, by its union with the mass, and the aid of a gentle heat, accelerates the fermentation, and diffuses it through the whole mass at the same time; and as soon as the dough has acquired a due increase of bulk from the carbonic acid gas, which endeavours to escape, it is judged to be sufficiently fermented, and fit for the oven; the heat of which checks the fermentation by exsiccation, or the subtraction of its water. It is obvious, that by the fermentation of the dough united with leaven, a quantity of carbonic acid gas is extricated from the flour, but remains confined in it by the tenacity of the mass, where it is expanded by the heat, and by that expansion effects the "rising" of the dough. This is also the efficient cause of the porosity and sponginess in baked bread. The fermentation by means of leaven is thought to be of the acetous kind, because it is generally so managed, that the bread has a sour flavour or taste. This bread, raised by leaven, is usually made of a mixture of wheat and rye not thoroughly cleared of the bran, and is distinguished by the appellation of brown bread; and the practice of making leavened bread appears, from the histories of the earlier nations, and particularly from the scriptures, to be very ancient. But yeast or barm, which is the mucilaginous froth that rises to the surface of beer in the first stage of its fermentation, seems to be of modern date. This vinous ferment is used for the finer kinds of bread, commonly denominated white bread. When this is mixed with the dough, it produces a much more speedy and effectual fermentation than that obtained by leaven, and the bread is accordingly much lighter, and scarcely ever sour. The fermentation by yeast seems to be almost certainly of the vinous or spirituous kind.

Bread, if well prepared and properly baked, is materially different from flour and other farinaceous cakes; it no longer forms a tenacious dough with water; nor can starch and gluten be any more separated from it; and hence, moist probably, its good qualities result.

The Greeks, in the first ages, are said to have subsisted upon acorns and berries, and were for a long time unacquainted with the art of ploughing the earth for corn; although, according to Hesiod's description of the golden age (*Oper. l. i. v. 116.*), the earth produced corn without cultivation. When this age expired, the earth, as they imagined, became unfruitful, and men lived in a state of extreme ignorance and barbarity, till Ceres taught them the art of agriculture. The invention of making and baking bread was ascribed to Pan; and, according to Pliny (*Nat. Hist. l. xviii. c. 7.*), barley was used, before any other sort of corn, as the food of men; but in more civilized ages, barley-bread was only appropriated to the use of beasts. However, it afterwards was used only among the poor, who could not obtain any other provision. Among the Greeks their loaves were baked either under the ashes, or in the oven; and they had a kind of bread, called *μυζα*, which was made with a coarser flour, salt, and water; to which they sometimes added oil. The art of making bread was not known at Rome until A. U. C. 580. The Roman armies, on their return from Macedonia, brought Grecian bakers into Italy. Before this time the Romans (see Pliny, *Hist. l. xviii. c. 8. and 11.*) prepared their flour into a kind of pap, or soft pudding; for which reason Pliny calls them eaters of pap.

Among the ancients, we find various denominations of bread; such as 1. *Panis filigineus*, called also *mundus*, *athleticus*, *junia*, *coliphus*, and *volys*, corresponding to our white bread; being made of the purest flour of the best wheat, and only used by the richer class of persons. 2. *Panis secundus*, or *secundarius*, called also *smilaceus*, or *smilagineus*, the next in purity; being made of fine flour, from which all the bran was not sifted. 3. *Autopyrus*, called also *syncomastus*, and *confusaneus*, made of the whole substance of the wheat, without retrenching either the finer flour or coarser bran; corresponding to our household bread. 4. *Cacalaceus*, seeming to be the same with that otherwise denominated *fordidus*, as being given to dogs; *sursuraceus*, *sursureus*, or *sursurativus*, because it consisted mostly of bran; and, in the middle age, *bissus*, on account of its brownness; and sometimes also *leibo*.

There were other kinds of bread, denominated either from the uses to which they were applied, or the manner in which they were made; such as, 1. the *militaris*, which was prepared in camp by the officers and soldiers with their own hands; for which purpose some had hand-mills, and others pounded the corn in a mortar, and baked it on the coals. 2. *Clibanites*, that baked in an oven, by way of contradistinction from that baked on the hearth, or under the embers. 3. That called *subcineritius*, or *sub cinere coctus*; sometimes also *reversitius*, because it was to be turned in the baking. 4. *Nauticus*, answering to our sea-biscuit, and denominated *bis coctus*. See BISKET.

Other kinds of bread were denominated from certain qualities belonging to them; such as, 1. *Panis ficcus*, that which had been long baked; such was the *bis coctus*, naval and buccellated bread. 2. *Medidus*, a sort made of rye or bear, sometimes also of fine flour, with which they smeared their faces, by way of a cosmetic, to make them smooth. 3. *Acidus*, or sour bread, which was acidulated with vinegar. 4. *Azymus*, unleavened, or unfermented bread.

The French have also many varieties of bread; as queen's bread, alamode bread, bread de Segovie, de Gentilly, quality bread, &c. all prepared in peculiar ways by the bakers at Paris. The bread de Gonesse excels all others, on account of the waters at Gonesse, about 3 leagues from Paris; it is light, and full of eyes, which are marks of its goodness. *Pain de menage* is that which each family bakes for itself. Spice-bread, *pain d'épice*, denotes bread baked and iced over with the scum taken off sugar in refining houses; it is also sometimes made with honey, and other sorts of seasoning, and answers to what the ancients call *panis mellitus*.

Among us, bread is chiefly divided into *white*, *wheaten*, and *household*; differing only in degrees of purity. In the first, all the bran is separated; in the second, only the coarser; in the third, none at all; so that *fine bread* is made only of flour; *wheaten bread*, of flour, with a mixture of the finer bran; and *household*, of the whole substance of the grain, without taking out either the coarse bran or fine flour. Stat. 8 Ann. cap. 18. We also meet with *symmel bread*, *nanchet* or *roll bread*, and *French bread*; which are only so many denominations of the finest or whitest bread, made of the purest flour; except that in roll bread there is an addition of milk, and, in French bread, of eggs and butter also. To which may be added, *ginger-bread*, made of white bread, with almonds, liquorice, aniseed, rose-water, and sugar or treacle; and *massis-bread*, *panis mixtus*, made of wheat and rye, or sometimes of wheat and barley.

The process of making household bread among us, is thus: to a peck of meal they add a handful of salt, a pint of yeast, and three quarts of water, cold in summer, hot in winter, and temperate between the two; the whole being kneaded

in a bowl or trough by the fire in winter, from it in summer, will rise in about an hour; they then mould it into loaves, and put it into an oven to bake.

For unleavened bread, part of the flour intended for it being made into dough with warm water and a little salt, is laid in the rest of the flour an hour or more, in which time it rises to three times the bulk; then they mix and knead the whole with more water, till it be brought into a stiff dough; which being formed into loaves, is baked in the oven; though the more usual way is to take a piece of dough kneaded and leave it in the tub till next time, when they break it small and mix it with the meal, adding some yeast. Hought. Collect. tom. i. N^o. 90. p. 241.

For French bread, they take half a bushel of fine flour, ten eggs, and a pound and a half of fresh butter, into which they put as much yeast, with a manchet; and tempering the whole mass with new milk, pretty hot, let it lie half an hour to rise, which done, they make it into loaves or rolls, and wash it over with an egg beaten with milk; care is taken the oven be not too hot.

In Lancashire, and several other northern counties of England, the people have several sorts of oaten-bread: as, 1. The *bannock*, which is an oat-cake, kneaded only with water, and baked in the embers. 2. *Clap-bread*, which is made into thin hard cakes. 3. *Bitchings'-bread*, which is made of thin batter, and formed into thin soft oat-cakes. 4. *Riddle-cakes*, which are thick and four, and very little different from the hand-bover bread, which has but little leaven, and kneaded stiff. And, 5. *Jannock*, which is oaten-bread made up into loaves.

In Scotland they have pease-bread, consisting either wholly of the flour of pease, or of this and oatmeal mixed; the dough, sometimes leavened, and sometimes made only with water, is formed either into bannocks or cakes, and baked over the embers; or into what they call *baps*, i. e. a kind of flattish rolls, and baked in the oven.

In the statute of assize of bread and ale, 51 Hen. III. mention is made of wastel-bread, cocket-bread, and bread of treet; which answer to the three sorts of bread now in use, called *white*, *wheaten*, and *household bread*.

In religious houses, they heretofore distinguished bread by the names, *esquires-bread*, *panis armigerorum*; *monks-bread*, *panis conventualis*; *boys-bread*, *panis puerorum*; and *servants bread*, *panis famulorum*; or *panis servientalis*. A like distribution obtained in the households of nobles and princes; where, however, we find some other denominations, as *messengers-bread*, *panis nunciatus*, that given to messengers, as a reward of their labour; *court-bread*, *panis curialis*, that allowed by the lord for the maintenance of his household; *elemosynary-bread*, that distributed to the poor in the way of alms. Du-Cange Gloss. Lat. tom. iv.

Bread is usually made of the seeds, sometimes also of the roots, and even the pith of plants. The first bread is supposed to have been made of the plant "lotus." In some countries they make bread of acorns. See ACORNS. In the islands of Banda and Amboyna, they make a kind of bread called "saegem," or "iagoe," of the pith of a farinaceous tree, which yields a white mealy substance, that, being kneaded with water, fermented, and baked on the coals, serves the poor for bread. See SAGO. In the Caribbee islands, &c. they make bread of the root of a poisonous plant called "Manioc," probably the same with the Cassada bread, which is made of the root of the Yucca Mexicana. See MANIOC, and CASSADA. To the denomination of bread, made of roots, may also be added potatoe-bread, frequent in Ireland, and turnip-bread, used occasionally in some parts of England. Potatoes, previously peeled,

cut into thin slices, and put between folds of paper, will dry in a heat somewhat less than 35° of Reaumur's thermometer, and, when thus dried, will preserve their white colour. In this process they lose about two-thirds of their weight, and they may be then reduced to a fine powder, which indicates the presence of an amylaceous matter, and has the smell and taste of wheat. It is also nutritious, and may be kept for a long time. From these circumstances, M. Parmentier was led to attempt the making of bread with the meal of wheat, and that of potatoes, mixed in different proportions. By combining one-fourth, one-third, one-half, and two-thirds of the potatoe meal with the flour of wheat, and adding a little salt and yeast, he obtained bread that was well tasted, but which had fermented little, was brown, and covered with hard brown crusts. Bread made from the meal of potatoes alone, with the addition of salt and yeast, was eatable, but heavy, unfermented, and very brown; and apt to crumble into powder. In order to give it greater adhesion, M. Parmentier mixed with the meal a decoction of bran, or a mixture of honey and water, either of which made it lighter and more fermented; it thus also obtained a crust of a golden colour, and became well tasted, and sufficiently adhesive. He obtained also well fermented bread, of a good colour and taste, from a mixture of raw potatoe-pulp with mealy wheat, or potatoe-meal, with the addition of yeast and salt. Upon the whole, he recommends, after various trials, the mixture of potatoes, in times of scarcity, with the flour of wheat, instead of employing rye, barley, or oats, which has frequently been done; when grain is altogether wanting, he recommends the use of bread made from a mixture of the amylaceous powder of potatoes and their pulp, fermented with leaven or honey. The meal of this root, diluted with hot water, acquires a tenacious and gluey consistence. This meal, however, gives a grey colour to bread made by mixing it with the flour of wheat; but a mixture of the pulp of potatoes with the flour of wheat does not produce brown-coloured bread. M. Parmentier made bread very much resembling that of wheat, by mixing four ounces of amylaceous powder of potatoes, one dram of mucilage extracted from barley, one dram of the bran of rye, and 1½ dram of glutinous matter dried and powdered. See POTATOE.

M. Parmentier also recommends the use of the horse-chestnut for the purpose of making wholesome bread. With this view he advises taking off the skin, and pressing out the juice, and reducing the fruit into a paste, which, being diluted with water, and strained through a sieve, will yield a milky-coloured liquor, that, on being left to stand, deposits a fine powder. This powder, when dried, has neither smell nor taste, and is very fit for aliment; the mass from which it is procured retaining the bitterness of the fruit. The roots of the bryony, he says, treated in the same manner, yield a similar white powder. By the same treatment, fine, white, insipid, inodorous powders may be procured from the roots of the iris, gladiolus, ranunculus, fumaria, arum, dracunculus, mandragora, colchicum, filipendula, and helleborus: plants which grow spontaneously, and in great abundance. The roots of the gramin caninum arvense, which some naturalists have considered as the original species from which all our grain is produced, are sweet-tasted; and in order to their being prepared for bread, it is merely necessary to cleanse them, to cut them small, and to dry and pound them. The powder, he observes, does not dissolve in cold water or spirits, but is dissolved in boiling water, which it renders thick and cloudy; and, upon cooling, the whole mass obtains a gelatinous consistence. Upon a chemical analysis, it yields an acid empyreumatic oil, which possesses a singular odour, resembling that which is perceived on burning the plant.

plant. The spongy substance, calined in the air, gives a fixed alkali. From these properties, he infers, that it contains an amylaceous matter, similar to that of grain, which appears to be the nutritive part of vegetables. This amylaceous matter, formed into a jelly, and diffused in water, keeps for a long time without suffering any change. It then turns acid, and at length putrefies. M. Parmentier gives an account of the bread which he obtained from the amylaceous powders of the different vegetables above-mentioned, with the addition of potatoes and a small quantity of common leaven of grain. This bread appeared in general to be well fermented; it was of a good white colour, and free from any disagreeable odour; but to the taste it was somewhat insipid, which he supposes might be corrected by the addition of a proper quantity of salt. In order to guard against a season of scarcity, when some of these plants may not be procured, he proposes a method of preserving the matter thus obtained.

For this purpose, he advises, that bread prepared in the manner above-mentioned should be carefully dried, reduced to powder and kept in a close cask. By this means he thinks it may be preserved for a very long time, and be always ready to make an agreeable and wholesome panada, with the addition of a little butter and salt. In order to determine the degree of nourishment which this alimentary powder was capable of affording, he tried its effect upon himself; and he found that three ounces of it for dinner, and as much for supper, made into panada with water, was a sufficient quantity of aliment for a day. From his discharge by stool, while he used it, he had reason to believe, that it is almost totally alimentary. He concludes with recommending it not only as useful in times of scarcity, but as a proper substitute to sea-biscuit, and as a kind of food well adapted for armies and hospitals. *Examen Chymique des Pommes de Terre, &c. Memoire sur les vegetaux qui pourroient suppléer en temps de disette à ceux que l'on emploie communément à la nourriture des hommes, &c.*

In order to make bread of turnips, the following method is recommended in the "*Musæum rusticum et commerciale*." When turnips are plentiful, a number of them should be pulled, washed clean, pared, and boiled. When they are soft enough for being mashed, the greatest part of the water should be pressed out of them, and they should then be mixed with an equal quantity in weight of coarse wheat meal. The dough may then be made, in the usual manner, with yeast or barm, salt, water, &c. It will rise well in the trough; and after being well kneaded, it may be formed into loaves, and put into the oven to be baked. The person who made this experiment had other bread made with common meal in the ordinary method. The turnip-bread was baked rather longer than the other. When they were drawn from the oven, a loaf of each sort was cut; and, upon examination, the turnip-bread was sweeter than the other, not less light and white, with a slight, but not disagreeable, taste of the turnip. When it was tasted 12 hours after, this taste was scarcely perceptible, and the smell was quite gone off. After an interval of 24 hours, it could not be known that it had any turnips in its composition, although it still had a peculiar sweetish taste. After 24 hours, it appeared to be rather superior to bread made only of wheat flour; it was fresher and moister; and, after a week, it was still very good.

Rice will serve the purpose of making very good bread; and the method practised in Carolina is as follows: The grain is first washed by putting it in a vessel and pouring water upon it, then stirring it; and changing the water until it is sufficiently cleansed. The water is then poured

off, and the rice placed in an inclined position to drain. After being sufficiently drained, it is put, while damp, for the greater facility of pulverization, into a mortar, and beaten to powder; it is then completely dried, and passed through a common kitchen hair-sieve. The rice flour, thus obtained, is kneaded with a small proportion of Indian corn-meal, and boiled into a thickish confistence; or it is sometimes mixed with boiled potatoes; and a small quantity of leaven and salt is added to the mass. When the fermentation has been sufficiently excited, the dough is put into pans, and placed in an oven to be baked. By this process a light wholesome bread is made, which is not only pleasing to the eye, but agreeable to the taste. See *Rice*.

In Norway, they have bread made of barley and oatmeal, baked between two stones; and Bartholin says, that it keeps 30 or 40 years, and that the older it is, the more agreeable. For their great feast they use the oldest bread; and at the baptism of a child, they have bread, which had been baked probably at the baptism of the grandfather.

Dr. Townson, in his "*Travels in Hungary*," has described the mode of making excellent bread without yeast, as it is practised at Debretzin in that country. The ferment used for this purpose is made in this manner: Two good handfuls of hops are boiled in four quarts of water; this is poured upon as much wheaten bran as it will moisten; and to this are added four or five pounds of leaven. When the mass is warm, the several parts are well mixed by being worked together. It is then deposited in a warm place for 24 hours, and afterwards divided into small pieces, about the size of a hen's egg, or a small orange, which are dried by being placed upon a board and exposed to a dry air, but not to the sun; when dry they are laid by for use, and may be kept half a year. The ferment thus prepared, is applied in the following manner.

For a baking of six large loaves, six good handfuls of these balls are dissolved in seven or eight quarts of warm water; and this water is poured through a sieve into one end of the bread-trough, and after it three quarts of warm water, the remaining mass in the sieve being well pressed out. The liquor is mixed up with flour sufficient to form a mass of the size of a large loaf; this is strewn over with flour, the sieve with its contents is put upon it, and the whole is covered up warm, and left till it has risen enough, and its surface has begun to crack: this forms the leaven. Then fifteen quarts of warm water, in which six handfuls of salt have been dissolved, are poured through the sieve upon it, and the necessary quantity of flour is added, and mixed and kneaded with the leaven; this is covered up warm, and left for about half an hour. It is then formed into loaves, which are kept in a warm room for half an hour; and after that they are put into the oven, where they remain two or three hours, according to the size. The great advantage of this ferment is that it may be made in large quantities at a time, and kept for use; and on this account, it might be useful on board of ships, or in camps for armies in the field.

The quantity of bread allowed a soldier for his day's subsistence is called a ration.

For armies the bread is either baked in the park of provisions in the camp, or in the town nearest the army; for the convenience of ovens, an army ought always to have at least four days bread before-hand. In some cases, the distance of the places from whence bread is to be had, or the army's march from one country to another, obliges the general to distribute bread for six, or even for eight days; a thing never done without absolute necessity, by reason of the abuse which some soldiers make of it, who sell their bread without regard to future subsistence. For long marches

through an enemy's country, they sometimes, instead of bread, make biscuit.

BREAD, in *Domestic Economy*, serves as a nutritive aliment, in all countries where it can be obtained. The farinaceous vegetables are distributed so universally over the face of the earth, and have become to such a degree the objects of culture, that they are very generally made into bread; and as generally a portion of them is taken into the mouth along with almost every morsel of other food. By fermentation it acquires a more spongy texture, and becomes more friable, and of course more easily miscible with the saliva, and our other aliments, during the progress of mastication, which it necessarily retards, and whilst the operation of digestion is performed in the stomach. To these purposes it is adapted by being bulky without too much solidity, and by being firm without too great difficulty of solution. The best aliment of this kind is bread, made of the flour of good wheat, well fermented, thoroughly baked, with a little salt; whereas that which is not thoroughly baked, well kneaded, and without salt, is reckoned hurtful and unwholesome, as are also unleavened bread and cakes baked under the ashes. In general, the lighter the bread the better and more agreeable it is; coarse and barley bread is detestive, commonly purgative, at least to those who are not used to it. "We are willing to own," says Dr. Cullen, in his discussion of this subject, "that a farinaceous substance, formed by fermentation into a perfect bread, is the most wholesome condition in which farinaceous matters can be employed as a part of our food; and we are ready also to allow, that the unfermented farinacea, taken in immoderate quantity, especially at a certain period of life, or in dyspeptic stomachs, may be the cause of disease: but all this seems to have been exaggerated; for the morbid effects of unfermented farinacea are truly rare occurrences; and, indeed, the same unfermented farinacea are for the most part very well suited to the human economy. However considerable the use of fermented bread may be, the use of unfermented farinacea is still very great and considerable amongst almost every people of the earth. The whole people of Asia live upon unfermented rice; and I believe (says he) the Americans, before they became acquainted with the Europeans, employed, and for the most part still employ, their maize in the same condition. Even in Europe, the employment of unfermented bread, and of unfermented farinacea in other shapes, is still very considerable; and we are ready to maintain, that the morbid consequences of such diet are very seldom to be observed. In Scotland, nine tenths of the lower class of people, and that is the greater part of the whole, live upon unfermented bread, and unfermented farinacea in other forms; and at the same time I am of opinion (says this writer) that there are not a more healthy people any where to be found." In opposition to this fact it has been alleged, that this kind of diet is only safe, when used by robust and labouring people: but Dr. Cullen says, "We give it in this country not only to the farmer's labouring servants, but to our sedentary tradesmen, to our women, and to our children; and all of the latter live and grow up in good health, except a very few dyspeptics who are not free from complaints, which those also are liable to who live on fermented wheaten bread."

It is hardly necessary to say any thing of bread in reference to its medical use; however, decoctions, creams, and jellies of bread have been directed in some dispensaries. Bread, well baked, and infused or lightly boiled in water, imparts to it a deep colour, and a highly agreeable restraining taste. This liquor, used as common drink, has been sometimes beneficial in a weak lax state of the stomach and

intestines; and in bilious vomiting and purging, or the cholera morbus; of which instances occur in the Edinburgh essays, in which no other medicine was used. The use of bread, as an external application, is well known. Mr. Boyle assures us (*Phil. Works Abr.* vol. i. p. 34-39.) that he derived a menstruum from bread stronger than aqua fortis, and which would act even upon glass itself. See farther concerning bread in the writers on food and cookery; especially in Heni. Nicolai, *Tract. de Pane*. Dantisc. 1651. *Fabr. Bib. Antiq.* c. 19. § 6. Cullen's *Mat. Med.* vol. i. p. 283.

BREAD, *bonpournichole*, or *bonpournickel*, the name of a very coarse bread eaten in Westphalia, and many other places. This bread of the Westphalians still retains the opprobrious name once given it by a French traveller, of *bonpournichole*, good for his horse *Nichole*, but is by no means a contemptible kind. It is far from being peculiar to this age or country: it has been known in distant places, and in different ages, and was called by the ancients *panis furfuraceus*, or *panis impurus*, from its not being so thoroughly cleaned from the husk or bran, as the fine sorts of bread are. The wrestlers of old eat only this sort of bread, to preserve them in their strength of limbs; and we may learn from Pliny, that the Romans for three hundred years knew no other bread: and it has been said, that this coarse bread nourishes more, alluages hunger better, and generates humours less subject to corruption than the white.

The inhabitants of Westphalia, who are a hardy and robust people, and capable of enduring the greatest fatigues, are a living testimony to the salutary effects of this sort of bread; and it is remarkable, that they are very seldom attacked by acute fevers, and those other diseases which arise from an ebullition of the humours, and a malignant colliquation of the blood, and of the humours of which it is composed. It is certain that a less strong diet is more proper to weakly constitutions, and people of sedentary lives, than this; but for those who will use the necessary exercise with it, it is easy to see that it is preferable to all other kinds of bread; since it remarkably restores strength, and has another salutary effect, which is, that it renders the belly soluble: this was a quality remarked in coarse bread, and highly commended in it, so early as in the days of Hippocrates.

The Germans make two sorts of waters by distillation from this bread; the one with, the other without, the addition of a spirituous liquor: to both which great virtues are ascribed. That without any thing spirituous, is made of the juice of craw-fish, May-dew, rose-water, nutmegs, and saffron, distilled from a large quantity of this bread. This is esteemed a great restorative, and given in hectic habits. The other is distilled from this bread and Rhenish wine, with nutmegs and cinnamon. This is given in all the disorders of the stomach, vomiting, and loss of appetite, and other complaints of the same kind; and besides these, there is a spirit distilled from it by the retort, in the dry way, which, when separated from its fetid oil, is esteemed a powerful sudorific, and very valuable medicine, in removing impurities of the blood. Hoffman.

BREAD, *horse*, is made of wheat, oats, and beans, to which sometimes are added aniseed, gentian, liquorice, fennigreek, eggs, and ale; and sometimes rye and white wine are used.

For race-horses, three sorts of bread are usually given with success, for the second, third, and fourth fortnights feeding; they are all made of beans and wheat, worked with barm, the difference consisting chiefly in the proportion of the two former. In the first kind, three times the quantity of beans is used to one of wheat; in the second, equal quantities

quantities of both; in the third, three times the quantity of wheat to one of beans.

BREAD, sacramental, in the protestant churches, is common leavened bread, agreeable to the ancient practice. In the Romish mass, *azymus*, or unleavened bread, is used, particularly in the Gallican church, where a sort is provided for this purpose, called *pain a chanter*, made of the purest wheaten flour, pressed between two iron plates, graven like wafer moulds, being first rubbed with white wax, to prevent the paste sticking. See *AZYMUS*.

Ecclesiastical writers enumerate other species of bread, allotted for purposes of religion: as, 1. *Calendarius*, that anciently offered to the priests at the calends. 2. *Prebendarius*, the same with *capitularis*, that distributed daily to each prebendary or canon. 3. *Benedictus*, that anciently given to catechumens before baptism, in lieu of the eucharist bread, of which they were incapable of partaking. 4. Consecrated bread is a piece of wax, paste, or even earth, over which several ceremonies have been performed with benedictions, &c. to be set up in an *agnus dei*, or a relic box, and presented for veneration. 5. Unleavened bread, or *azymus*. The Jews eat no other bread during their passover; and exact search was made in every house, to see that no leavened bread was left. The usage was introduced in memory of their hasty departure from Egypt, when they had no leisure to bake leavened bread. 6. *Shew* bread was that offered to God every Sabbath day, being placed on the golden table, in the holy of holies.

BREAD of St. Hubert, St. Genevieve, St. Nicholas, &c. denote cakes sanctified with certain prayers and invocations of those saints, held by the superstitious to be of great efficacy in the cure of hydrophobias, agues, and other diseases.

BREAD is also used to denote certain foods made of animal, or even mineral matters, serving to supply the place of bread. In divers parts of the North, we read of fish-bread, particularly in Iceland, where dried cod is used for bread, being first beaten to powder, and made up into cakes. The like obtains among the Laplanders, whose country affords no corn; and even among the Crim Tartars. Phil. Trans. N^o 102, p. 35. Sheff. Hist. of Lapl. chap. 14. In the lordship of Moscow in Upper Lusatia, a sort of white earth is found, of which the poor, urged by the calamities of the wars which raged in those parts, make bread. This earth, dug out of a hill where they formerly worked at saltpetre, when warmed by the sun, cracks, and small globules proceed from it like meal, which ferment when mixed with meal. Some persons have lived upon it for some time. Some of this meal has been kept for more than six years. A similar earth is said to be also found near Geronne, in Catalonia. Germ. Ephem. 1764.

BREAD, in a more extensive sense, includes all the necessities of life, as food, raiment, lodging, &c.

Hence the sabbath is sometimes called in ancient writers, the *day of bread*, by reason the eucharist was then administered every Lord's day.

In this comprehensive sense the term bread seems to be used in the petition of the Lord's prayer. Matt. vi. 11. In this passage *ἡμεῖς ἀφ' ἡμῶν*, denotes "sufficient bread," or a competency. The word *ἡμεῖς* is one of the ἀπ' αὐτῶν ἀπομνημονεύματα, and is found in no Greek author prior to the Evangelist. The composition is of *ἡμεῖς* and *ἡμεῖς*, *q. d.* proper, or sufficient for support; and it is not improbable, that *ἡμεῖς ἡμεῖς* should by degrees have coalesced and become *ἡμεῖς*, as it now stands in the MSS. The petition exactly corresponds to that in Agur's celebrated prayer, in the O. T. קִי הָאֵלֹהִים: Prov. xxx. 8. Compare Gen. xlvii. 22. with Luke xv. 12.

The Syriac version has "the bread of our need." See Mede's works, vol. i. Diff. xxviii. p. 168.

BREAD, assise, or assize of. The price and weight of bread are regulated by the magistrates according to the price of wheat; and the assise of bread, beer, ale, &c. is granted to the lord mayor of London and other corporations. Stat. 51 Hen. III. St. 1.; and 51 Hen. III. St. 6. Sec. also 2 and 3 Ed. VI. c. 15. But the statute of 31 Geo. II. c. 29. containing regulations concerning the assise of bread, and for preventing adulteration, repeals so much of stat. 51 Hen. III. entitled "Assisa panis et cerevisie," as relates to the assise of bread, and the stat. 8 Ann. c. 18., and all amendments by subsequent acts; and re-enacts the same with additions and amendments. This statute enacts, that the assise be set, in all places to which the right of so doing extends, with a regard to the price of the grain, meal, or flour, in the adjoining markets, and with a reasonable allowance to the bakers for their charges, labour, and profit. In order to direct the magistrates in making this allowance, they are to take notice, that the peck loaf of each sort of bread is to weigh, when well baked, 17lb. 6oz. avoirdupois weight, and the rest in proportion; and that every sack of meal, or flour, is to weigh 200 cwt. and 2 quarters, neat; and that from every sack there ought to be made, at an average, 20 such peck loaves of bread. By 38 Geo. III. c. 62. it is enacted, that the magistrates, before they set the assise of bread, shall add to the average price, per quarter of wheat fit for making wheaten bread, 5d. on account of the additional duty on salt, so as to increase such average price 5d. per quarter; and in settling the assise, they shall use such increased average price as if it were the real average price of wheat, so long as such additional salt duty shall continue. By 31 Geo. II. c. 29. s. 3. no person shall make or sell, in any place where the assise is set, any sort of bread, except wheaten and household (otherwise brown) bread, and such sorts of bread as shall be allowed in the assise; and the offender against this part of the statute, upon conviction by his own confession, or the oath of one witness, before any magistrate or justice within the limits of their jurisdiction, shall forfeit, not exceeding 40s. nor less than 20s.

In every place where an assise is set, the assise and weight of the several sorts of bread there made are set according to tables, calculated for the purpose.

TABLE of the Assise and Price of Bread made of WHEAT.

Price of the bushel of wheat taking.	WEIGHT.				PRICE.							
	The penny Loaf.		Quarter Loaf.		Half peck.		Peck Loaf.					
	Wheaten.	Househ.	Wheaten.	Househ.	Wheaten.	Househ.	Wheaten.	Househ.	Wheaten.	Househ.	Wheaten.	Househ.
s. d.	oz. dr.	oz. dr.	s. d.	oz. dr.	s. d.	oz. dr.	s. d.	oz. dr.	s. d.	oz. dr.	s. d.	oz. dr.
2 9	22	4 29	4 0	3 1	2 1	0 6 1	4 3	1 0 1	0 9 1	0 9 1	0 9 1	0 9 1
3 0	20	4 27	1 0	3 1	2 1	0 7 0	5 1	1 1 1	0 10 1	0 10 1	0 10 1	0 10 1
3 3	18	9 25	4 0	3 1	2 1	0 7 1	5 1	1 3 0	1 1	1 1	1 1	1 1
3 6	17	6 23	3 0	4 0	3 0	8 0	6 1	4 1	1 0	1 0	1 0	1 0
3 9	16	6 21	6 0	4 1	3 1	0 8 1	6 1	1 5 1	1 1	1 1	1 1	1 1
4 0	15	4 20	4 0	4 1	3 1	0 9 0	6 1	1 6 1	1 1	1 1	1 1	1 1
4 3	14	4 19	1 0	4 1	3 1	0 9 1	7 1	1 7 1	1 2 1	1 2 1	1 2 1	1 2 1
4 6	13	9 17	15 0	5 0	3 1	0 10 1	7 1	1 8 1	1 3 1	1 3 1	1 3 1	1 3 1
4 9	12	12 17	1 0	5 1	4 0	10 0	8 1	1 9 1	1 4 1	1 4 1	1 4 1	1 4 1
5 0	12	1 16	6 0	5 1	4 0	11 0	8 1	1 11	1 5	1 5	1 5	1 5
5 3	11	9 15	7 0	6 0	4 1	0 0	9 2	0 1	6	0 1	6	0 1
5 6	11	2 14	10 0	6 1	4 1	0 0	9 2	2 1	1 7	1 7	1 7	1 7

BREAD.

TABLE of the Assise and Price of Bread made of WHEAT.

Price of the bushel of wheat and baking.	WEIGHT.				PRICE.							
	The penny Loaf.		Quartem Loaf.		Half peck.				Peck Loaf.			
	Wheat.	Househ.	Wheat.	Househ.	Wheat.	Househ.	Wheat.	Househ.	Wheat.	Househ.	Wheat.	Househ.
s. d.	oz. dr.	oz. dr.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
5 9	10 8	14 4	0 6	1 0	5 1	1 1	0 9	2 2	1 7			
6 0	10 2	13 9	0 7	1 0	5 1	1 0	1 0	2 3	1 8			
6 3	9 11	13 1	0 7	1 0	5 1	2 0	1 0	2 4	1 9			
6 6	9 4	12 10	0 7	1 0	5 1	3 0	1 1	2 6	1 10			
6 9	9 0	12 1	0 7	1 0	5 1	3 1	1 1	2 7	1 11			
7 0	8 11	11 9	0 7	1 0	6 1	4 1	1 0	2 8	2 0			
7 3	8 7	11 2	0 8	1 0	6 1	4 1	1 0	2 9	2 1			
7 6	8 3	10 11	0 8	1 0	6 1	5 1	1 1	2 10	2 2			
7 9	7 14	10 6	0 8	1 0	6 1	5 1	1 1	2 11	2 3			
8 0	7 10	10 2	0 9	1 0	6 1	6 1	1 1	3 0	2 4			
8 3	7 5	9 15	0 9	1 0	7 1	7 1	1 2	3 2	2 4			
8 6	7 2	9 9	0 9	1 0	7 1	7 1	1 2	3 3	2 5			
8 9	6 15	9 4	0 10	1 0	7 1	8 1	1 3	3 4	2 6			
9 0	6 13	8 15	0 10	1 0	7 1	8 1	1 3	3 5	2 7			
9 3	6 9	8 12	0 10	1 0	8 1	9 1	1 3	3 6	2 7			
9 6	6 7	8 8	0 10	1 0	8 1	9 1	1 4	3 7	2 8			
9 9	6 4	8 5	0 11	1 0	8 1	10 1	1 4	3 8	2 9			
10 0	6 1	8 2	0 11	1 0	8 1	11 1	1 5	3 10	2 10			
10 3	5 15	7 15	0 11	1 0	8 1	11 1	1 5	3 11	2 11			
10 6	5 13	7 12	1 0	1 0	9 2	1 6	1 6	4 0	3 0			
10 9	5 11	7 9	1 0	1 0	9 1	1 6	1 6	4 1	3 1			
11 0	5 9	7 5	1 0	1 0	9 2	1 7	1 7	4 2	3 2			
11 3	5 6	7 3	1 0	1 0	9 2	1 7	1 7	4 3	3 3			
11 6	5 5	7 2	1 1	1 0	10 2	2 1	1 7	4 4	3 4			
11 9	5 2	6 15	1 1	1 0	10 2	3 1	1 8	4 5	3 4			
12 0	5 1	6 13	1 1	1 0	10 2	3 1	1 8	4 7	3 5			
2 3	4 15	6 10	1 2	1 0	10 2	4 1	1 9	4 8	3 6			
12 6	4 14	6 8	1 2	1 0	10 2	4 1	1 9	4 9	3 7			
13 9	4 13	6 5	1 2	1 0	11 2	5 1	1 10	4 10	3 8			
13 0	4 11	6 4	1 3	1 1	11 2	5 1	1 10	4 11	3 8			
13 3	4 9	6 3	1 3	1 1	11 2	6 1	1 10	5 1	3 9			
13 6	4 8	6 1	1 3	1 1	11 2	7 1	1 11	5 2	3 10			
13 9	4 7	5 15	1 3	1 1	11 2	7 1	1 11	5 3	3 11			
14 0	4 5	5 13	1 4	1 1	12 2	8 1	1 12	5 4	4 0			
14 3	4 4	5 11	1 4	1 1	12 2	8 1	1 12	5 5	4 1			
14 6	4 3	5 9	1 5	1 1	12 2	9 1	1 13	5 6	4 2			

The persons authorized to set the assise weight of bread, when wheat is above the price of 14s. 6d. the highest price of a bushel of wheat, together with the baker's allowance in the table, should observe, that the respective weights of the several assised loaves will decrease in the same proportion as the prices of the bushel of wheat, together with the allowance for baking, increases; and that such weights may be deduced from the present table as in the following examples: 1. Required the weight of the twelve-penny wheaten loaf, when the price of the bushel and baking is 16s. The weight in the above table opposite to 8s. estimated in the mode above directed, is 5lb. 11oz. 8dwt. But the price of the bushel and baking being now twice as much, the weight of the loaf can only be half what it then was, viz. 2lb. 13oz. 12dwt. 2: Required the weight of the twelve-penny wheaten loaf, when the price of a bushel of wheat and baking is 16s. 3d. The weight, when the price of the bushel and baking is 16s., is 2lb. 13oz. 12dwt.; and the weight, when the price of the bushel and baking is 16s. 6d., is 2lb. 11oz. 14dwt., and these two added together give 5lb. 9oz. 10dwt., and, therefore, one half the weight at 16s. 3d. is 2lb. 12oz. 13dwt.

For the price of the peck loaf, and its subdivisions, it should be observed, that the price increases in the same proportion as the price of the bushel of wheat, together with the allowance for baking, e. g. 1. Required the price of the peck loaf wheaten bread, when the price of the bushel and baking is 16s. The price of such loaf by the table, when the bushel and baking is 8s. is 3s. 0 $\frac{1}{2}$ d.; consequently at 16s. it must be double or 6s. 1d. 2. Required the price of the peck loaf when that of the bushel and baking is 16s. 3d. The price when that of the bushel and baking is 16s. is 6s. 1d.; at 16s. 6d. 6s. 4d.; and adding these, we have 12s. 5d. one-half of which, or 6s. 2 $\frac{1}{2}$ d. is the price at 16s. 3d. See 39 and 40 Geo. III. 74.

The assise is to be set in avoirdupois weight; and the prices of grain, meal, or flour, allowed to be made into bread in London, shall be determined by the public sale in the London markets during the whole market, and certified on oath before the court of mayor and aldermen, on some certain day in every week, by the meal-weighers or persons appointed by the said court; and entered in writing, under their hands, in some book provided by the city, and kept at the town-clerk's office. On the next day after such price shall be certified, the assise and weight of all sorts of bread for sale, and also the price, shall from time to time be set by the said court, or mayor, and remain in force until a new assise in London shall be set. As soon as it can conveniently be done, the assise so set shall be made public in the manner directed by the said court. But before any advance or reduction shall in any week be made by the said court or mayor in the price of bread, the meal-weighers or persons duly appointed shall return the prices of grain, meal, and flour, in writing, to the common hall of the company of bakers, so that the said company may, on the morning of the next day after every such return and entry, and before any assise be set, have an opportunity to offer to the said court or mayor their objections against any proposed advance or reduction. In other cities and towns corporate this business shall be conducted and settled by the court of mayor and aldermen, if there be any, or by the mayor, bailiff, or chief magistrates, or by two justices in such towns and places which have no such mayor, bailiffs, aldermen, or chief magistrate. In places within counties at large, two justices are authorized to set the assise. Bread of different denominations, such as six-penny, twelve-penny, and eighteen-penny loaves, and peck, half-peck, and quarter of a peck loaves,

By the preceding table, if the price of wheat is 5s. a bushel (Winchester measure) and the allowance of the magistrates to the baker, for baking, is 1s. 6d., the weight and price of the several loaves will be found opposite to 6s. 6d. in the first column. The weight of loaves of any size may be estimated from that of the penny loaf by simple addition; e. g. the fixpenny loaf weighs six times as much, &c.; and the wheaten loaves are three-fourths of the weight of the household loaves; and if the magistrates allow any of the white loaves of the price of one penny or twopence, they are to weigh three-fourths of the weight of the wheaten loaves of the same price. The prices of the household loaves are always three-fourths of the prices of the wheaten loaves.

loaves, shall not be allowed to be made or sold at the same time in the same place, under a penalty of forfeiting not more than 40s. nor less than 20s. at the pleasure of the magistrate, upon conviction of the offender. After the assize has been set, no alteration shall be made in it till the price of corn alters 3d. a bushel. Officers appointed to make returns, and offenders against the due execution of this act, shall forfeit a sum not exceeding 5l. nor less than 20s.: and dealers in corn refusing to disclose the real prices of grain, meal, or flour, publicly sold, or knowingly giving a false price, shall, on conviction by confession, or the oath of one witness, forfeit not more than 10l. nor less than 40s. Bakers of bread made of other grain besides wheat, according to order, are required to conform to the assize, on pain of forfeiting not more than 5l. nor less than 40s.

The statute 36 Geo. III. c. 22. contains regulations for making mixed bread, and enacts that persons in any place whatsoever, whether any assize of bread has been set or not, may make and sell peck, half-peck, quartern, and half-quartern loaves, made of the whole produce of wheat, deducting only 5lb. of bran per bushel; or made of any sort of wheaten flour mixed with meal, or flour of barley, rye, oats, buck wheat, Indian corn, pease, beans, rice, or any other kinds of grain, or potatoes, in such proportions and of such prices as the maker or seller shall deem reasonable. Every loaf of such mixed bread shall have upon it a mark. It is required by 31 Geo. II. c. 29. § 21. that the several sorts of bread made for sale shall be well made, and no alum, or mixture in which alum is an ingredient, or any other ingredient or mixture whatever, (except only the genuine meal or flour, which ought to be put therein, and common salt, pure water, eggs, milk, yeast, and harm, or such leaven as is allowed by those who set the assize, or by any magistrate or justice within his jurisdiction,) shall be used in making any dough or in the preparation of bread, on pain that the offender, (other than a servant or journeyman), upon conviction by confession, or the oath of one witness, shall forfeit not more than 10l. nor less than 40s. or be committed to prison or house of correction for any time not exceeding one calendar month, nor less than ten days, at the pleasure of the magistrate. A servant or journeyman, upon conviction, shall forfeit not more than 5l. nor less than 20s. or be committed to prison as aforesaid. The magistrate before whom such offender has been convicted, may apply the money forfeited for causing the offender's name, place of abode, and offence, to be published in some newspaper, printed or published near the place where the offence shall have been committed. The adulteration of meal, or knowingly exposing it to sale, incurs a forfeiture of not more than 5l. nor less than 40s. If bread sold, or exposed for sale, be deficient in weight according to the assize, the offender, formerly liable to the assize, shall now forfeit not more than 5s. nor less than 1s. for every ounce wanting; and for every defect less than an ounce, not more than 2s. 6d. nor less than 6d. such bread being complained of, and weighed before a magistrate within 24 hours after the same shall have been baked or exposed to sale, within the bills of mortality, or within three days in any other place. It has been observed, that bread loses weight by keeping: so Bartholine concludes from some experiments that the diminution was nearly 1-4th in six months. Bakers are obliged under a penalty, not more than 20s. nor less than 5s. to mark their wheaten bread with a large Roman W, and their household bread with an H. No person shall sell bread for a greater price than that ascertained by the assize, or refuse to sell such bread at the stipulated price, under a penalty of forfeiting for every such offence not more than 40s. nor less than 10s. By 2 and 3 Edw.

VI. c. 25. if a baker shall conspire not to sell bread but at certain prices, every such person shall forfeit 10l. for the first offence; and if not paid within six days, he shall be imprisoned twenty days, and have only bread and water for his sustenance; for the second offence, 20l. or the pillory; and for the third offence, 40l. or the pillory, and loss of an ear, and becoming infamous. Bread inferior to wheaten shall not be sold for a higher price than household bread, under a penalty of 20s. By 31 Geo. II. c. 29. and 32 Geo. II. c. 18. magistrates may grant warrants for searching houses, in order to examine bread deficient in weight, or unconformable in any respect to the statute and assize, and for seizing the same; and also, upon information given on oath, for searching mills and other places, where adulterated meal is concealed, and for seizing the same. Every miller, baker, &c. who has in his possession unlawful ingredients for the purpose of adulterating meal or bread, shall forfeit not more than 10l. nor less than 40s.; and out of the forfeiture may be published the name of the offender, his place of abode, and his offence in some newspaper, printed or published in or near the place where the offence was committed. Persons obstructing such search and seizure shall forfeit not more than 5l. nor less than 20s.

By a general clause in the act 31 Geo. II. c. 29. § 34. all penalties and forfeitures, when recovered, shall be paid to the informer; and by 32 Geo. II. c. 18. one moiety of such penalties as are not particularly disposed of shall be given to him who shall inform and prosecute; and the other moiety, together with all penalties and forfeitures incurred in the weighing, trying, or seizure of any bread by any magistrate, shall be applied, for the better execution of the act, according to the pleasure of the magistrate. Prosecutions under this act are limited within seven days after the commission of the offence, by 33 Geo. III. c. 37. The statute 3 Geo. III. c. 11. contains certain regulations and provisions in case no assize is set. By 13 Geo. III. c. 62. a standard wheaten bread was ordered to be made of such flour as is the whole produce of the grain, the bran or hull only excepted, and to be marked SW. This bread is made and sold, though no assize be set, of the weight and in the proportions following: viz. that every standard wheaten peck loaf shall weigh 17lb. 6oz. avoirdupois; every half-peck loaf 8lb. 11oz. and every quartern loaf 4lb. 5½oz.; and every peck loaf, half-peck loaf, and quartern loaf shall always be sold as to price in proportion to each other respectively; and that when wheaten and household bread, made as the law directs, shall be sold at the same time, together with this standard wheat bread, they be sold in proportion to each other as follows: viz. that the same weight of wheaten bread which costs 8d. shall of this standard wheaten bread cost 7d. and the same weight of household bread shall cost 6d; or 7 standard wheaten assized loaves shall be equal in weight to 8 wheaten assized loaves, or to 6 household assized loaves of the same price, as nearly as possible. The magistrates may, when they think proper, fix the assize of this standard wheaten bread, according to tables calculated for the purpose. The bakers and sellers of it shall be liable to all the penalties of the former acts. See the tables 39 and 40 Geo. III. c. 18. and c. 74. Burn's Justice, vol. i. and iv.

BREAD, *Indian*, or *Cassava*. See JATROPHA MANIHOT.

BREAD, *St. John's*. See CERATONIA SILIQUA.

BREAD, *swine*, *panis porcinus*, a denomination given to truffles.

BREAD, *fove's*, a name applied to the herb cyclamen.

BREAD-ROOM, in a ship, that which is set apart to hold the bread. The boards of the bread-room should be jointed and caulked, and also lined with tin plates, for the greater preservation.

preservation of the bread. It is also proper to warm it well with charcoal for several days before the bread is put into it, since nothing is more injurious to bread than moisture.

BREAD, *fruit-tree*, in Botany. See ARTOCARPUS.

BREAD, *nut-tree*. See BROSIMUM ALICASTRUM.

BREADALBANE, or BRAIDALEIN, in *Geography*, a district of Perthshire, Scotland, including a tract of country measuring about 32 miles from east to west, and 13 in its broadest part from north to south. This mountainous country forms part of the Grampian hills, and is supposed to have been anciently called Albania; whence the Highlanders still denominate themselves Albinich; and the duke of York receives his title of Albany from this place. The name Braid-Albainn, in the Gaelic tongue, signifies the highest part, which corresponds with this portion of country, as some rivers that take their rise here, run partly into the eastern and partly into the western oceans. Flax is the principal article of cultivation. Some years back, when premiums were offered for the greatest crops, from 80 to 120 hogsheads of linseed were annually sown; and each peck yielded two stones of dressed flax. Next to this, oats and potatoes are mostly cultivated; and from the latter some strong spirit has been distilled, which is found to be cheaper than that made from grain. Bread and starch are also made from this root. Corcar, or the lichen omphaloides, an article of commerce, is obtained in abundance from the rocks, and is sold mostly to dyers. Pennant's Tour in Scotland, 4to. vol. iii.

BREADTH. See LATITUDE, DIMENSION, AREA, &c.

BREADTH, *Hair's*. See HAIR.

BREADTH, *Finger's*. See FINGER.

BREADTH, *Hand's*. See HAND.

BREADTH, in *Ship-building*, the breadth of a ship at any particular place, as the *extreme breadth*, which is the greatest breadth, being at the main frame, the *top-timber breadth*, the *breadth at the main or wing transom*, &c. The breadth and curvature of all the frames are laid down on the body plan, or plane of projection; those of the fore-body being on the right hand side of the middle line, and the frames in the after-body being on the left hand side of the same line; from whence the frames are transferred to the mould loft. See BODY-plan, and SHIP-building.

BREADTH-sweeps. Of these there are two; the *lower* and *upper*. The centre of the lower breadth-sweep is in the line that represents the height of the extreme breadth of the timber. If there is a part of the timber straight, the centre of the sweep will be in the lower line. From this centre extend to the point that limits the half breadth of the timber in the same line; and with that radius describe a circle downwards, till it comes near the floor sweep. The centre of the upper breadth-sweep is in the line that represents the extreme upper height of the breadth of the timber; from which a circle must be described to pass through the point that limits the half-breadth of the timber in the same line, and produced upwards at pleasure to form the top-timber.

Half BREADTH of the Floor, is the distance of the centre of the floor sweep from the middle line in the body plan at the main frame; which will always be less than the distance between the point where the straight line, drawn from the side of the keel to touch the back of the floor sweep, is from the middle line. This last may be called the true half-breadth of the floor, which in sharp ships will be above the rising line.

Half-BREADTH Plan, or *Floor Plan*, or, as it is frequently called, the *horizontal plan*, contains the several

half-breadths of every frame of timbers at different heights; ribbands, water-lines, &c. are also described on this plane.

Height of BREADTH lines, are two lines named the *upper* and *lower* heights of breadth. These lines are described on the plane of elevation to determine the height of the broadest part of the ship at each timber; and being described in the body plan, limit the height and breadth of each frame at its broadest place. One line serves for both in the half-breadth plan.

Main half-BREADTH, is a section of the ship at the broadest place, perpendicular to the sheer plan, and represents the greatest breadth at the outside of every timber.

Top-timber half-BREADTH, is a section of the ship at the height of the top-timber line, perpendicular to the plane of elevation.

Half-BREADTH Staff, a rod about an inch square, and of any convenient length. Upon one side of this staff are set off, from one end, the several half-breadths of all the timbers in the after-body; and those of the fore-body are set off upon the other side. On the other two sides are set off the several heights of the sheer; the after-body on one side, and the fore-body on its opposite. Two sides of the staff are marked *half-breadths*; and the two other sides, *heights of the sheer*.

BREAK, in *Agriculture*, denotes, in Norfolk, land ploughed or broken up the first year after it has lain fallow in the sheep walks.

In *Architecture*, it denotes a recess, or giving back of a part behind its ordinary range or projecture. In which sense, they say, a break of pediment; a break of entablatures, whereby it shrinks, as it were, between the columns, is reputed a fault.

BREAK, *Cape*, in *Geography*, lies on the east coast of Newfoundland, and forms the east point of the entrance into Trinity bay, about 10 leagues south-east from cape Bonaventure.

BREAK-Sea Island, lies without the new passage or north entrance into Dusky-bay, on the west coast of the southern island of New Zealand.

BREAK-in, among *Carpenters*, is when they break a hole in brick-walls with their ripping chissel.

BREAK-neck, *Brise-cou*, in *Building*, a fault in a stair-case, as when a step is made higher or lower than the rest, and landing-place too narrow, or the like.

BREAK-water, in *Sea Language*, the hull of an old ship or vessel, sunk at the entrance of a small harbour, to break the force of the waves in their passage to the vessels moored within. Jetties, however, where practicable to be built, are employed for this purpose. A break-water is also a sort of a small buoy fastened to a large one in the water, when the buoy rope of the latter is not long enough to reach from the anchor, lying at the bottom, to the surface of the water. The use of this break-water is, therefore, to shew where the buoy swims.

BREAKERS, a name given to those billows that break violently over rocks lying under the surface of the sea. They are distinguished both by their appearance and sound, as they cover that part of the sea with a perpetual foam, and produce a hoarse and terrible roaring, very different from what the waves usually have in a deeper bottom. When a ship is unhappily driven among breakers, it is hardly possible to save her; as every billow that heaves her upward, serves to dash her down with additional force, when it breaks over the rocks or sands beneath it.

BREAKERS' Point, in *Geography*, is the south-east point.

of Hope bay, on the north-west coast of North America. N. lat. $49^{\circ} 15'$. W. long. $126^{\circ} 40'$.

BREAKING, in *Agriculture*, denotes the ploughing up of grounds, especially such as have lain some time fallow.

BREAKING Bulk, the commencement of the discharge of the cargo of a ship.

BREAKING *Beer* is applied to a ship at anchor, when she is forced by the wind or current from that position in which she keeps her anchor most free of herself, and most firm in the ground, so as to endanger the tripping of her anchor.

BREAKING up a ship, stripping off the planks, and taking her to pieces, when she becomes old and unserviceable.

BREAKING ground, in the *Military Art*, the beginning of works for carrying on the siege of a place; more especially the beginning to dig trenches, or approaches.

BREAKING the angles of a battalion, denotes a military evolution, whereby the four angles turn, and make so many fronts towards the enemy; so that the battalion, which before was only a square, becomes an octangle, and can fire on all sides. This is otherwise called blunting the angles of a battalion; by the French, *emousser les angles d'un bataillon*.

BREAKING of measure, in *Fencing*, denotes a moderate retiring, or giving of ground, in order to avoid the adversary's thrust. Breaking of measure differs much from going back, and losing or yielding of ground; the latter being reputed a great reproach, the former a mark of judgment and adroitness. Some pretend, that a man retiring is obliged to forbear, if his adversary call him to stand.

BREAKING of the sea, **BREAKING of a wave**, or the like, on a rock, a bank, or the like, are a sufficient indication to the pilots, that it is not safe mooring there.

Divers machines and structures have been contrived for breaking the force of wind, the stream of water, and the like.

BREAKING is also used for the taming of animals, or reducing them from a wild to a tractable state.

BREAKING of a horse to the saddle. See **BACKING** and **TRAVICE**. To break a horse for hunting, is to make him acquire the disposition and habit of running. It is a great fatigue to run horses full speed before they are broken.

BREAKING herd, among *Sportsmen*, denotes a deer's quitting the herd, and running by itself; or singling it out from the herd for chase. In which sense, the word stands opposed to herding. A deer when close pursued, is loth to break herd. When a hart breaks herd, and draws to the thickets and coverts, he is said to harbour or take hold.

BREAKING up a deer, signifies the opening or cutting it up. This term is applied to the act of cutting open the deer after the chase, that the perquisites of blood and garbage may be given to the hounds.

BREAKING of prison. See **PRISON**.

BREAKING the legs, *crucifixagium*, was an appendage of crucifixion, used no where but among the Jews. See **CROSS**.

BREAKING of hemp. See **BRAKE**.

BREAKING of bread, is sometimes used in *Ecclesiastical Writers*, for celebrating the **EUCCHARIST**.

BREAKING of wine, among *Vintners*.—Wine is said to break, when being left some time in the air, in an open glass, it changes colour; an indication that it will not keep. This is the usual method of trying the goodness of wine, among the merchants and vintners of Paris.

BREAKING is also used in trade, for a person's failing or stopping payment. See **BANKRUPT**. Breaking betimes, when there is something left to pay withal, is a mark of
Vol. V.

honesty; and, generally, entitles the unhappy person to compassion and gentler usage from his creditors, saves his credit, and facilitates his retrieving. A late sensible writer on trade takes great pains to inculcate this precept, *break early*. Compl. Eng. Tradesman, vol. i. p. 77, 80, &c.

BREAKNECK, in *Geography*, the name of a hill in America, opposite to Butter-hill, at the northern entrance of the high lands, in Hudson river, about 60 miles N. of New York. The rocks on the southern side of the hill are so situated as to give a tolerable idea of a human face, with a nose, mouth, and double chin, without a forehead.

BREAKSPEAR, **NICHOLAS**, in *Biography*. See **ADRIAN IV**.

BREAL, in *Geography*, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the district of Montford; 2 leagues S. E. of Montford.

BREAM, *head and bay*, lie on the east side of the north island of New Zealand; the head is the north point of the bay. S. lat. $35^{\circ} 46'$. It has some small islands before it called the "Hen and Chickens." The name of this bay is derived from the sea-bream, with which it abounds.

BREAM, in *Ichthyology*. See **BRAMA CYPRINUS**.

BREAM, to, in *Sea Language*, to burn off the filth, such as grass, ooze, shells, or sea-weed, from a ship's bottom, that has gathered to it in a voyage, or by lying long in a harbour. This operation is performed by holding kindled furze, faggots, or such materials, to the bottom, so that the flame incorporating with the pitch, sulphur, &c. that had formerly covered it, immediately loosens and throws off whatever filth may have adhered to the planks. After this, the bottom is covered anew with a composition of sulphur, tallow, &c. which not only makes it smooth and slippery, so as to divide the fluid more readily, but also poisons and destroys those worms which eat through the planks in the course of a voyage. Breaming may be performed, either when the ship lies aground after the tide has ebbed from her, or by *docking*, or by *careening*. See these articles.

BREAST, *Mamma*, in *Anatomy*. The breasts, which are two in number in the human subject, occupy the anterior and middle part of each side of the chest, and are therefore situated over the pectoralis major muscle. Each of these bodies consists of a gland, to which anatomists give the name of mammary, surrounded by cellular and adipous substance, and covered by the common integuments. In men, and in young girls, these bodies are small; they enlarge in the female subject very considerably at the time of puberty, assuming an hemispherical shape, and pretty firm consistence, which, however, is lost, as the subject advances in years.

The skin which covers these parts is white and soft to the touch, except in the middle, where there is a circular portion of a reddish brown colour, called the areola. From the centre of this projects the nipple, in the form of a cylindrical prominence, with a rounded end, similar in colour to the areola, and covered, like that part, by a more delicate continuation of the skin, which is somewhat wrinkled and irregular on its surface. Both the areola and the nipple are furnished with numerous sebaceous glands, which may be clearly seen through the integuments. The fluid which these secrete, preserves the parts from the excoration, which they might otherwise suffer from suckling. Under the integuments, we find a considerable quantity of fat and cellular membrane, which surrounds and envelopes the mammary gland, connecting it to the skin in front, and to the pectoral muscle behind, and penetrating into its substance, so as to separate the different portions of the gland from each
L l other.

other. It is this that gives to the breasts of a well-formed female their beautiful external form.

The substance of the mammary gland presents a flattish body, of a circular form, bearing obscure marks of a division into smaller portions, which cannot be completely separated from each other. It is composed of a vast congeries of small tubes, convoluted and accumulated on each other, and known by the technical name of *tubuli lactiferi*, or *galactophori*. These unite together, gradually forming larger and larger trunks, which approach from all sides towards the nipple. The trunks become very much contracted at the areola, and in this state pass through the nipple, connected by a dense and shining cellular substance, to terminate on its surface by open orifices, whose size is about sufficient to admit an hog's bristle. The number of these openings is said by Rölpin and Sabatier, to be constantly fifteen: the smallness of some of the apertures, and the consequent difficulty of finding them, have led some anatomists to state their number as less than this. Mekel has found, that when the lactiferous tubes, arising from one of the openings on the nipple, were fully distended, the mercury would pass into other sets of tubes by anastomosing branches. Some anatomists, in the number of whom is our countryman Mr. Cruikshank, have contended for the existence of acini in the mammary gland, which are supposed to afford origin to the lactiferous tubes. The description just given is drawn from subjects, who have died while suckling, or near the time of parturition: at these periods the gland is called into action, its parts are developed, and their structure may be unravelled without difficulty. At other times, the lactiferous vessels become so small as to be imperceptible.

The arterial supply of the breast comes from the internal mammary, and the thoracic arteries: the veins terminate in the thoracic trunks: the nerves are derived from the dorsal pairs: the lymphatics, which may be injected with facility from the lactiferous tubes, pass into the axillary glands in their course to the thoracic duct on the left side of the body, to the right lymphatic trunk on the right side. Sometimes, however, according to the researches of Mekel, they terminate separately in the subclavian veins. On the subject of this article, the reader may consult Haller's *Elem. Physiol.* tom. ii. Sabatier *Traité d'Anatomie*, tom. ii. Rölpin *de Structura Mammarum*, 4to. 1764.

The mammary glands secrete the milk, the nutriment of the young animal: for an account of the properties of this fluid, the reader is referred to the article MILK.

BREAST, *diseases of the*, in *Surgery*. See EXCORIATION, ABSCESS, SCHIRRHUS, and CANCER: these are the chief morbid affections to which the breasts are liable; but they may occur likewise in various other parts of the body, and require to be treated on the same common principles, allowing for the different seat of the disorder.

BREAST, applied to the correspondent parts of other animals, is more properly called *udders*, *dugs*, *ubera*, &c.

BREAST also denotes that cavity or region of the body by anatomists more frequently called THORAX. Though, in propriety, the breast is rather restrained to the anterior part of the thorax where the ribs meet; called also sternum, and pectus; in English, popularly, the bosom.

We say, a flat, a narrow, a strait breast; a broad breast, not high, is ranked among the signs of longevity. Distensions on the breast and lungs are dangerous.

Coughs, catarrhs, asthmas, phthises, peripneumonies, &c. are also diseases of the breast. See COUGH, and ASTHMA.

Physicians also speak of a dropsy of the breast, *hydrops pectoris*. See DROPSY.

Medicines for disorders of the breast are called *pectorals*. See PECTORAL.

Smiting the breast is one of the expressions of penitence. In the Romish church the priest beats his breast in rehearsing the general confession at the beginning of mass.

BREAST-bone. See STERNUM.

BREAST of a chimney, denotes the fore-part under the mantle or chimney piece, commonly made inclined.

BREAST-fast, a *Sea Term*, a sort of hawser, or large rope, employed to confine a ship side-ways to a wharf or key, or to some other ship; as the head-fast confines her forward, and the stern-fast, abaft.

BREAST-hooks, in *Ship-building*, are thick pieces of timber, incurvated into the form of knees, and used to strengthen the fore-part of the ship, where they are placed at different heights directly across the stem, so as to unite it with the bows on each side. The breast-hooks are strongly connected to the stem and hawse-pieces by tree-nails, and by bolts, driven from without, through the planks and hawse-pieces, and the whole thickness of the breast-hooks, upon whose inside those bolts are fore-locked, or clinched, upon rings. They are usually about one third thicker; and twice as long as the knees of the decks which they support. The fore-side of the breast-hooks, which is convex, is formed so as to correspond with the place in which it is stationed; that is to say, it conforms exactly to the interior figure of that part of the bow where it ought to be fayed; accordingly, the branches, or arms of the breast-hooks, make a greater angle, as they are more elevated above the keel, whilst the lower ones are more incurvated. As it is not necessary that the inner, or concave side of these pieces should retain a regular form, the artificers frequently let them remain as thick as possible, to give additional support to the fore-part of the ship, where she sustains the whole shock of resistance in dividing the fluid, or in plunging down into it. It is evident, that the connexion and solidity of the ship in this place, will be reinforced in proportion to the strength and extent of the breast-hooks, so that they may cover a greater number of the head timbers.

BREAST-pain, called by the Italians *grandezzo di petto*, is a distemper in horses proceeding from superfluity of blood and other gross humours, which being dissolved by some extreme and disorderly heat, resort downward to the breast, and pain them extremely.

The signs of the breast-pain are, stiff, staggering, and weak-going with his fore legs, besides that he can hardly, if at all, bow his head to the ground.

BREAST-plate, in *Antiquity*, a piece of defensive armour, wherewith to cover the breast.

The breast-plate is said to be the invention of Jason. It was originally made of leather, afterwards of mail, and lastly, of a brazen or iron-plate. When made of this last matter, it is more particularly called *clibanus*, by the moderns *cuirass*; when made of brass, with a Gorgon's head in the middle, it is denominated *ÆGIS*.

The breast-plate, called also by the Romans *pefforale*, is frequently confounded with the thorax and lorica; from both which it ought to be distinguished, as being properly a half-thorax, or half-lorica, covering only the breast; whereas the thorax invested the body.

As the whole thorax might be a temptation to the soldiery to turn their backs, when equally guarded with their breast, the thorax was thrown away, and the hemi-thoracian, or breast-plate, only retained. Polyæn. *Stratag.* lib. vii.

BREAST-plate, in *Jewish Antiquity*, one of the priestly vestments anciently worn by the high-priests. It was a folded piece of the same rich embroidered tissue with that of the ephod, having set upon it twelve precious stones in gold, on each

each of which was engraven the name of one of the tribes. These were set in four rows, three in each row; and the whole was fastened at the four corners; those at the top to each shoulder-piece by a golden hook or ring, at the end of a wreathed chain; and those below to the girdle of the ephod, by two blue strings or ribbands, which had likewise two rings and hooks; so that the whole might be tied fast to the garment, without danger of falling off; for they were never to be severed. The Jews say, that if the high priest did, at any time, either through inadvertency, or wilfully, put on one without the other, he was to be punished; hence this ornament was called the *memorial*, to put him in mind how dear those tribes ought to be in his estimation, whose names he wore over his breast. This is also called the breast-plate of judgment, because it had the divine oracle fastened to it. Thus, however, most interpreters have understood the command of God to Moses of adjoining the *urim* and *thummim* to the breast-plate. The stones of the breast-plate were divided from one another by the golden partitions into which they were set, and were ranged in the following order, to which the Hebrew names are added, together with the tribe that was engraven on each of them:

1. Odem.	Sardius.	Reuben.
2. Phitrah.	Topaz.	Simeon.
3. Barketh.	Carbuncle.	Levi.
4. Nopheh.	Emerald.	Judah.
5. Saphur.	Sapphire.	Dan.
6. Jahalom.	Diamond.	Naphtali.
7. Leshem.	Ligure.	Gad.
8. Shebo.	Agate.	Asher.
9. Achlamah.	Amethyst.	Issachar.
10. Tarshish.	Beryl.	Zebulun.
11. Shohem.	Onyx.	Joseph.
12. Yashphe.	Jasper.	Benjamin.

BREAST-PLATE, in the *Manager*, denotes a leather strap running from one side of the saddle, across the horse's breast, to the other; intended to keep the saddle from slipping backwards in mounting up rising grounds. It is otherwise called *ree*; sometimes the *gaiter*.

BREAST-PLATE, among *Artificers*, denotes a drill-plate, aged, which to set the blunt end of the drill.

BREAST-PLATE, in *Agriculture*, a small plough so constructed, that a man may push it before him. It consists of a cutting-iron about eight or nine inches long, with one of its sides turned up to cut the turf, which is fixed to a pole about five or six feet long, forked at the upper end, with a cross handle. It is used in the operation called *turn-baking*.

BREAST-RAIL, in *Sea-Language*, the upper rail of the balcony, or of the breast-work on the quarter-deck.

BREASTS of a saddle, are part of the bow, being the two sides of it down from the arch or upper part.

BREAST-WORK, in the *Military Art*, is an elevation thrown up around a fortified place or post, to conceal or protect the garrison, and which is at the same time so strong that the enemy's shot cannot pierce through it.

The terms *breast-work* and *parapet* are frequently used indiscriminately; but the former is more applicable in a general sense, a parapet implying more immediately that breast-work which is raised upon the rampart of a fortified town. See **PARAPET**.

A breast-work is usually formed simply of earth, not only because it may be procured with the greatest ease, and with the least expence, but also because it is liable to fewer objections and difficulties than such as occur in the use of other materials; for if the breast-work was made of stone or wood, the garrison would be liable to have more men killed

and wounded by the splinters struck off by the enemy, than by his shot. The stiffer the earth, the better it is for the formation of a breast-work; a stiff soil adhering well together, and destroying the force of the balls which penetrate it better than any other. A soil of loam or clay is, therefore, to be preferred to all other kinds of earth. In rocky or marshy ground, a covering may be formed of wool-sacks, dung, brush-wood bound together, or fascines.

With respect to the height of a breast-work, it should be such that a soldier, standing behind it, cannot be seen by the enemy. If, therefore, the garrison and the enemy are on the same level, the height of six feet is sufficient to cover the defenders; but if the enemy is on higher ground something must be added; and, in this case, the principles of geometry will easily determine how much it must be augmented in each particular instance, according to the distance of the enemy from the breast-work, the space behind it in which the garrison is to be covered, and the elevation of the ground on which the enemy is posted. If the garrison stands on higher ground, the breast-work need not be six feet high, and the more the garrison is elevated, the lower the work may be. It is here also easy to determine the necessary height, by only considering the intention of the breast-work, which is at all times to shelter the soldiers placed behind it from the fire of the enemy's cannon and small arms. A breast-work should be so strong that the enemy's shot cannot entirely penetrate it. To resist the most powerful attack of field artillery, the thickness should be at least 18 feet of good soil, and from 22 to 24 feet in bad. This is the case in actual fortification; but in works cast up in the open field, often in the greatest haste, and where we expect to be assaulted only by field pieces, a thickness from 10 to 12 feet is perfectly sufficient. If it is intended only to hold out against musquetry; or if the work is erected only for the purpose of concealing the troops behind it, from three to six feet is an ample thickness.

If the breast-work is formed of earth, each side must make an acute angle with the horizontal base of the work; otherwise it would soon fall down. These oblique surfaces are called the interior and exterior *slope* or *talus* of the breast-work. As good earth will stand firmer than bad, the base of the slope need not be so large in a clayey as in a sandy soil. Experience shews that good earth will stand when the base of the slope is only equal to half the height; but that bad earth requires a slope equal to the whole height; therefore, when other reasons do not render it necessary to vary from this rule, it may be looked upon for earth-work in general, that if the soil is very good it should be equal to half the height; if middling to two thirds; and if very bad, the base must be equal to the height. The interior slope should be kept as small as possible, for the convenience of the troops posted behind the breast-work. It is, therefore, usual to make the base only one-sixth of the height; and to retain the interior side from falling, a revêtement of fascines, hurdles, fods, or even a stone wall, may be made use of. Of these, fascines and hurdles, from the ease with which they are procured and constructed, are the most advantageous in the open field. In a permanent fortress, the inner side of the parapet should be formed of fods. As for revêtements of boards or stone, they should never be used in the field, because the former become soon rotten, and the splinters of the latter might greatly annoy the garrison. The exterior slope, being more exposed to the enemy's fire, is sooner liable to fall, and requires therefore a larger base; but the smaller this is kept, the more difficult it is for an enemy to climb. For this reason, it should always be as narrow as the nature of the soil will allow. If it has a revêtement, the rules

BREAST.

given for the interior slope apply equally to this, except that boards and stone are not here so dangerous to the garrison.

That the troops thus protected by the breast-work may be enabled to fire on the enemy without obstruction, an elevation of earth, called a *banquette*, is made immediately behind it, which the soldiers mount when they are to fire. This should be raised until the height of the breast-work above is about four feet two inches, that the soldier standing upon it may make use of his arms properly, and fire conveniently over. If the height of the breast-work is six feet, that of the banquette will accordingly be one foot two inches; and if the breast-work is higher, the banquette must also be raised. To render the ascent perfectly easy, its slope should be very broad, at least equal to, or even double its height. The breadth of the banquette should be three feet or more, according to the number of ranks in which the men are drawn up. The upper surface, summit, or crown of the breast-work, must be made with a declivity towards the country, otherwise when the enemy is advanced within a short distance, he cannot be hit from behind the work. The difference in height between the slopes depends on the thickness of the work. If this is 24 feet, the exterior talus may be two feet lower than the inner; if the breast-work is weaker, the difference must be proportionably lessened. If on an eminence, it will be necessary to give the superior slope a greater declivity. Its proper inclination may be easily determined, only taking care that the fire regulated by it is not confined to a single point on the ground, but extends as much as possible. When the breast-work has no exterior slope, but the summit is continued outwards until it meets the surface of the ground, it is a perfect *glacis*. In this case the base must be much broader than that of a common breast-work; otherwise the work would be too weak, and the slope so steep, that the fire acting in that direction instead of grazing, would bury itself in the ground. Two advantages are derived from a *glacis*; every point in front of it is exposed to the small arms of the garrison, which is not the case in any other kind of breast-work; and it cannot be destroyed by the enemy's shot, which only strikes into it, the loose earth remaining in its proper place; but it is attended with this disadvantage, that it may be mounted without difficulty.

When cannon are planted behind a breast-work, they may either fire *en barbette*, or through embrasures. In the former case, instead of a banquette, an elevation of earth is formed sufficiently large to contain guns mounted on their carriages, and of such a height that their muzzles may reach above the summit. This elevation must be carried to within two and a half, or three feet from the top of the work, and sufficiently broad to afford convenient room for the gun and men attached to it. About ten or twelve feet are allowed for each piece of cannon. The length should be from twelve to eighteen feet, according to the gun, that space may be left behind to prevent its running down in the recoil. An easy slope, called a *ramp*, is made to every battery of this nature, that the guns may be run up without difficulty. This method, however, is only safe when the enemy cannot bring artillery against the breast-work, or when posted on an eminence; and even then we should endeavour to cover the artillerymen with gabions or sand-bags placed upon the work, leaving an opening of $1\frac{1}{2}$ or 2 feet between them for the mouth of the cannon. If two or more rows of gabions are placed one before the other, the opening must increase in width towards the front, that we may be enabled to point the gun to either side, as well as directly forwards. When the guns, and men who serve them, are much exposed to the enemy's fire, *embrasures* are to be cut for them. When several pieces of

cannon are placed behind a work, their distance asunder should be from 12 to 20 feet. The piece of the breast-work which remains standing between every two is called a *merlon*. As it is to be expected that the enemy will direct his principal fire against the batteries, the merlons ought to be very strong, and constructed with attention; and as musquetry are not used behind them, they may, for the better security of the gunners, be made eight or nine feet high.

To procure the earth for the formation of the breast-work, a ditch is made on the outside of it, by which the enemy has an additional obstacle to overcome in his attempts to approach. In some cases the ditch is behind the work; as, for example, on a very steep hill, where a fosse in front would not render the enemy's endeavours to climb it more difficult, and it is more convenient to make use of the earth within the breast-work. The ditch is made sloping on both sides. The inner slope is called the *scarp*, and the outer the *counter-scarp*. The width of their bales is determined by the nature of the soil; but to give the enemy all possible trouble in getting in and out of the ditch, both slopes should be as steep as the tenacity of the ground will allow. If the scarp forms one continued surface with the exterior slope of the breast-work, the enemy has the greatest difficulty in gaining the summit; but as the scarp in this case sustains too great pressure, it would soon give way, and a considerable part of the work with it. Even should the scarp stand firm, the earth must constantly fall from the breast-work into the ditch, and fill it up to our great disadvantage. To prevent this, the breast-work is thrown up at a small distance from the edge of the ditch, thereby leaving a free passage between them, called a *berme*. This certainly facilitates the enemy's mounting the breast-work; but to diminish this disadvantage, it should be made as narrow as possible. The size of the ditch is regulated by that of the breast-work. The requisite quantity of earth may be procured equally, whether the ditch is wide and shallow, narrow or deep; but the removing it is easier by the latter mode, and the enemy will also have greater difficulty in crossing the ditch. In low ground, however, this cannot always be done; and the ditch must at all times be sufficiently broad not to be leaped across. It is usually 10 or 12 feet wide, and, wherever the situation allows, at least six feet deep; but if those dimensions will not furnish the necessary quantity of earth, an augmentation must be made either of the width or depth, and sometimes of both.

A breast-work, constructed according to the foregoing rules, covers our garrison against the fire of an enemy, and enables us to fire on him with tolerable security during his march towards it. Notwithstanding this, if he is resolute, and not to be deterred by the loss of a few men, and as there is no particular difficulty in surmounting the ditch or breast-work, we have ultimately no superiority over him, and must therefore have recourse to other obstacles to impede his progress. These are natural and artificial. [Certain natural obstacles render the access to a place extremely difficult; such as when the breast-work is behind a river, canal, or morass, too deep for the enemy to wade through; or when it is situated in rocky ground, or on a high and steep hill which cannot well be climbed by a body of men in any regular order. Here there is no absolute necessity for a ditch; and provided the breast-work covers us from the enemy's fire, it may be considered as perfect. Artificial obstacles are, 1. *Palisades*, which may either be fixed in the open field in front of the ditch, or in the ditch itself, sometimes in two rows, or lastly upon the banquette, where they occasion excessive inconvenience to the enemy, and afford essential protection to the garrison. 2. *Fraises*, buried in the exterior slope of the breast-work, their points inclining a little downwards. Where there is also a row of

of palisades upon the banquette, these occasion much obstruction to the enemy in his endeavours to mount. 3. *Chevaux de frize*, planted along the middle of the ditch, where they render the passage extremely difficult, especially if they stand behind a row of palisades. 4. An *abbatis* of trees cut down and arranged on the outside of the ditch, along the whole front of the work. When the branches are well intermingled, and the trunks buried obliquely in the earth, or fastened down by strong pickets, they cannot be removed without great difficulty. The *abbatis* should lie under the fire of the breast-work, and therefore ought not to be more distant from it than 200 or 250 yards. 5. *Trous de loup* placed chequerwise in front of the work, about 16 or 20 feet from the counterscarp. Three rows of them present at all times a formidable obstacle, as they cannot be passed except by each man singly, which causes the enemy to remain a long time exposed to the fire from the breast-work, and to form under it at a great hazard. 6. *Crows' feet* scattered along the bottom of the ditch, or in the ground in front of it; or where they are wanting, a number of stakes, capped and pointed with iron, may be driven into the ground. 7. An *advanced ditch* about 30 yards in front of the first. This, if filled with water, or enfiladed from the breast-work, presents a considerable obstacle; but, otherwise, only affords the enemy a place of shelter, where he may rest some time in security, and from thence make the remainder of his way to the work in great haste, so that it becomes a detriment instead of an advantage. 8. An *artificial inundation* of the country in front of the work, effected by means of dams. This, if five or six feet deep, and properly under the fire of the garrison, is an amazing and obvious advantage; but the work is so laborious, and requires such a combination of circumstances to render it effectual, that it is rarely executed in the field. 9. *Fougasses*, or *small mines*, placed about eight or twelve yards from the ditch, and sprung when the enemy is marching over them towards the breast-work. These occasion great disorder; and as soldiers have a great dread of mines, and anxiously avoid an attack upon any spot they conceive undermined, are an excellent security against the attacks of a superior enemy.

Previous to the elevation of the breast-work its entire plan must be traced or marked out upon the ground, in such a manner that the workmen may afterwards be enabled to calculate the thickness of the work and breadth of the fosse. In computing the length of the breast-work, two feet are allowed for each file of men; and as troops are usually formed two deep for its defence, the length will be equal to the number of men: ten feet are allowed for a small gun, and fourteen or sixteen for a larger. Thus the length of a breast-work for 250 men and four field-pieces should be 290 feet. In excavating the ditch, three workmen are allowed to every eight feet in length; and when in a clayey or gravelly soil, to every three men with shovels, one with a pick-axe should be reckoned, to loosen the ground. The breast-work itself, and every thing immediately belonging to it, should be erected entirely by the troops. A work with a revêtement of fods may in general be completed in a day, provided there is a sufficient number of workmen. But if it is to be formed with fascines, or palisaded, it will require two days; and if there are likewise to be fraises, fougasses, trous de loup, &c. three may not be sufficient. Under the articles RAMPART, FOSSE, RELEVEMENT, FASCINES, FOUGASSES, PALISADES, &c. the reader will find the construction of the different parts of a breast-work more fully explained.

In *Plate IV. Fortification*, fig. 1. *a, b, c*, is the banquette; *c*,

d, the interior slope or talus; *d, e*, the summit of the breast-work; *e, f*, the exterior slope or talus; *f, g*, the berme; *g, h*, the scarp; *i*, the fosse; *k, l*, the counterscarp; *l, m*, the glacis.

Fig. 2. is a breast-work fraised and palisaded, seen in profile; *a*, is a row of palisades planted upon the banquette; *b*, another of fraises, buried in the exterior talus of the breast-work; *c*, chevaux de frize in the middle of the ditch behind *d*, a row of palisades, fixed at the foot of the counterscarp; *e*, trous de loup; *f*, abbatis of trees, seen in profile.

Fig. 3. is a plan of the breast-work; *a*, is the slope of the banquette; *b*, banquette; *c*, interior talus; *d*, breast-work; *e*, exterior talus; *f*, berme; *g*, scarp; *h*, fosse; *i*, counterscarp; *k*, trous de loup in three rows; *l*, abbatis.

BREAST-work, a *Sea-term*, a set of framing composed of stanchions and rails, with moulding, and sometimes sculpture. It terminates the quarter-deck and poop at the foremost end and the after-end of the forecalle.

BREATH, the wind or air which is received and expelled by the mouth and nostrils, in the act of respiration. In which sense, the word amounts to the same with the Greek *πνευμα*, and Latin *spiritus*.

A sinking breath is one of the symptoms usually preceding the access of an intermittent fever. In some persons, a sinking breath is an indication of the menses being at hand. It is disputed among the civilians, whether a sinking breath, called *scabro*, owing to rotten teeth or gums, should be reputed a disease. Calvin. Lex. Jur.

BREATH is more particularly used to denote a strength of lungs, whereby a man is enabled to hold out without taking wind so often. In this sense, we say, a long, a short breath. The ordinary term of holding the breath does not exceed one third of a minute. Bacon, Hist. of Life and Death. Ap. Works, tom. ii. p. 176.

For the pearl-fishery they choose slaves who have the best breath, or can continue the longest under water without fetching their breath. Pechlin has a dissertation exprefs on living long without breathing. J. Nic. Pechlin De Aeris & Alimenti Defectu, & Vita sub Aquis diuturna, Meditatio ad Joel Langelot, 1676. The ancients were very watchful over the last breath of dying persons; which the nearest relations, as the mother, father, brother, or the like, received in their mouths. Pitisc. Lex. Antiq. voc. *Spiritus*.

BREATH is also sometimes extended to the odorous effluvia of plants, and even exhalations of minerals.

BREATHING. See RESPIRATION.

Fighting a cock to breathe him, is called SPARRING.

To breathe a running horse, and bring him to his wind, they gave him a HEAT.

BREATHING, *expiellatio*, a ceremony in BAPTISM.

BREATHING, *short*. See ASTHMA.

BREATHING, *difficulty of*. See DYSPNOEA.

BREAUTE', in *Geography*, a town of France, in the department of the Lower Seine, and chief place of a canton in the district of Le Havre, $3\frac{1}{2}$ leagues N. E. of Montivilliers.

BREBES, BREERS, or BERBERES, a denomination that distinguishes an ancient tribe of Africans, who are settled in and about the greater and lesser Atlas, and who inhabit different parts of Algiers, Barbary, and Morocco. Some suppose that they are descended from the ancient Sabaeans, who migrated thither from Arabia Felix, under the conduct of one of their princes; others believe them to be some of the Canaanites, whom Joshua drove out of Palestine. But their origin is uncertain. It is probable, however, that they were very ancient inhabitants of the country, and that they were compelled by the Arabs or Saracens, who overran the eastern parts of Africa, about the middle of the seventh century

any, to seek a safe retreat among the vast ridges of almost inaccessible mountains which extend through several parts of this immense country. Whatever be their origin, they are dispersed over Barbary, to which they are supposed to have given its name (see BARBARY), and divided into a multitude of tribes, under their respective chiefs; most of them inhabit the mountainous parts; some of them range from place to place, and live in tents or portable huts, others, in scattered villages, avoiding, generally, all intermixture with other nations. These are reckoned the richest of all the various inhabitants of the country; and they carry on a much larger traffic of cattle, hides, wax, honey, iron, and other commodities; they have likewise some artificers in iron, and weavers. The Brebes and the Moors form the two principal classes, comprehending the different tribes that people the empire of Morocco. The Brebes, as well as the Moors, adopted, without doubt, the Mahometan religion, analogous as it was to their manners and prevalent customs, on the first invasion of the Arabs; but they are ignorant, and pay little regard to any of the precepts of their religion, except to that which inspires them with a hatred for others of a different profession. Mahometanism, however, has not effaced the ancient habits and prejudices of these people; for they eat swine's flesh, and, in those places which have vineyards, drink wine; alleging, as an apology, that it is of their own manufacture. In the southern parts of mount Atlas, they preserve in earthen jars, and in barrels made of the trunks of hollow trees, the butt-ends of which they spread over with pitch, thus keeping it in caverns, and even in water. In the province of Rif, toward the north, they give it a slight boiling, which deprives it of its fumes, and makes it less intoxicating; and, perhaps, they also think, that it is thus rendered congenial to the spirit of the Koran. Bred in their mountains, the Brebes maintain their resentment against the Moors, whom, confounding with the Arabs, they regard as usurpers. In these asylums they contract a ferocity of character and strength of body, which render them more proper for war and labour than the Moors of the plain generally are; and the independence they profess imparts more of character to their countenance, which is visible to those who reside long among these nations. Although they are subject to the emperors of Morocco by religious prejudices, they set aside his authority whenever they think proper; and intrenched in their mountains, it is difficult to attack and vanquish them. The Brebes have a language of their own; and they never marry but among one another. They have tribes or castles among them, which are exceedingly powerful, as to both their number and courage. Such are those of Gomera on the borders of Rif, of Gayran towards Fez, of Timoor extending along mount Atlas from Mequinez to Tedla, of Shavoya from Tedla to Duquella, and of Mishboya from Morocco to the south. The emperor of Morocco retains the children of the chiefs of these tribes at court as hostages for their fidelity. The Brebes have no distinction of dress; they are always clothed in woollen like the Moors; and, though they inhabit the mountains, seldom wear caps. These mountaineers, as well as their wives, have very fine teeth, and exhibit signs of vigour, which distinguish them from the other tribes. They commonly hunt lions and tigers; and the mothers have a custom of decorating their children with a tiger's claw, or the remnant of a lion's hide on the head, thinking that they thus acquire strength and courage. Similar superstition, without doubt, induces young wives to give their husbands the same sort of amulets. The Brebes and the Shellu, having a language common to themselves, and unknown to the Moors, must both have had the same origin, notwithstanding the difference that subsists in

their respective modes of life. The Shellu live on the frontiers of the empire towards the south; their population is by no means so great as that of the Brebes, nor are they so ferocious; they do not marry with other tribes; and, though they practise many superstitious rites, they are faithful observers of their religion. The Brebes count the days of the week in the same manner with the Moors, and both of them employ Arabic words. The Shellu enumerate the days after the same method, but in their own language. Both the Brebes and Shellu denote the months of the year like the Moors and the Arabs, and date from the same æra, or the year of the Hegira. The Koran, and books of prayer of the Brebes and Shellu, are in Arabic; and so are their acts and title-deeds, which are written by their Talbes, or learned men. Chenier's Morocco, vol. i.

BREBEUF, GEORGE DE, in *Biography*, a French poet, was born at Torigny, in the Lower Normandy, in 1618, and studied polite literature at Caen and Paris. During his residence at Rouen, where he lived several years, he published, in 1656, a parody on the 7th book of the *Æneid*, and the first book of Lucan travestied, which latter work was intended as a satire against the titled vanity of great lords, and the servile baseness of their flatterers. He afterwards laid the foundation of his celebrity by a translation of Lucan's *Pharsalia*, which first appeared in 1658. Although this performance was censured on account of its dazzling and hyperbolical sentiments, and inflated language, and of its consequent tendency to corrupt the taste of young persons, it possessed the attractions of a rich style and sonorous versification, and became fashionable even at court, where cardinal Mazarin excited the hopes of the author by various promises, which his death prevented from being fulfilled. Disappointed in his expectations from other patrons, he retired to Venoix near Caen, where he died in 1661. His character was modest and gentle; and the last years of his life were spent in pious exercises, of which we have a specimen in his "Entretiens Solitaires," a collection of religious poems, inferior in merit to his other performances. A collection of his posthumous works was published in two volumes, containing, among other pieces, 152 epigrams, written in consequence of a wager on the single subject of a lady's painting. He was likewise the author of "Poetical Eulogies," and a "Defence of the Romish church." *Nouv. Dict. Hist.*

BREBIETTE, PETER, a painter and engraver, who flourished in 1625, was born at Monte upon the Seine, in France, and acquired some eminence as a painter; but as an engraver he is well known. His etchings, which are spirited, evince genius, and great fertility of invention. His compositions abound with figures, which, though not correctly drawn, are well grouped, and executed in a masterly manner. Among others are the following: "St. George's Martyrdom," from Paulo Veronese; "Paradise," from old Palma; "A holy family, with St. John, whose foot is upon the cradle," from Raphael; the "Virgin kneeling by the side of Christ," attended by two angels, from a design of his own; the "Battle of the Lapithæ," and the "Death of the Children of Niobe," from his own designs." *Strutt.*

BREBINCE, or BOURBINCE, in *Geography*, a river of France, in the department of the Saone and Loire, which issues from the lake of Longpendu, in the district of Montcenis, and joining the Arroux, discharges itself into the Loire, near Digoin.

BRECCA, from the Fr. *breche*, in some ancient deeds, is used to denote a breach or decay. See BREACH.

BRECCIA, BRÉCHE. The term breccia was invented by the Italian statuary and builders, to denominate those varieties of marble which are composed of angular fragments cemented

cemented together by calcareous spar, or any other natural calcareous cement of a different colour from the fragments. Some French mineralogists have adopted the word, but have considerably extended its meaning. By *brèche* they understand any mineral aggregate composed of angular fragments, cemented together into a compact mass, and divide it into sub-species from the nature of the fragments; hence they have calcareous *breccia*, siliceous, argillaceous, magnesian, &c. The *brèche*, therefore, of the French differs from porphyry in the compacted pieces not being crystals, but merely casual fragments, and from *pandiguës* (a term borrowed from our pudding-stone), in the pieces being angular instead of rounded.

BRECEY, in *Geography*, a town of France, in the department of La Manche or the Channel, and chief place of a canton in the district of Avranches. The town contains 2097, and the canton 9061 inhabitants. The territory includes 137½ kilometres and 17 communes.

BRECHEN, LOWER, a small town of Germany, in the circle of the Upper Rhine, and electorate of Treves, surrounded with walls, and made a town in 1369: 16 miles W.S.W. of Wetzlar, and 78 E.N.E. of Treves.

BRECHIN, an ancient and large town of Forfarshire, Scotland, is seated on the declivity of a hill, and consists of one large, two smaller streets, with a detached row of houses at the foot of the hill. This royal burgh, in conjunction with four others, sends one member to parliament. It was formerly a rich bishopric, founded by David I. about the year 1150, and at the reformation its revenues in money and kind amounted to 7000l. a year. The Culdees had a convent-house, whose abbot witnessed the grant made by king David to his new abbey at Dumfermline. Some ruins of this house still remain, in a place called the College Wynde. An hospital was founded here by William de Brechin in 1256, of which some fine ruins were standing in the time of Mr. Pennant. Here was also a cathedral church, which has suffered much dilapidation, but its southern aisle is converted into the parish church. At its north-western angle is a handsome square tower with a short steeple, and near the southern-side is a singular round-tower. This ancient structure corresponds with many similar buildings in Ireland; and it is remarked by antiquaries that they are peculiar to that island and Scotland, though only two remain in the latter country. Their origin and appropriation have never been satisfactorily accounted for, though many ingenious dissertations have been written on them by different learned antiquaries. The height of this at Brechin, from the ground to the roof, is eighty feet; the inner diameter, near the bottom, eight feet; and the thickness of the walls seven feet two inches. At the top its diameter is seven feet eight inches, and its circumference forty-eight feet. The top has been covered in, and terminated with a small spire, which has four windows. Near the top of the tower are also four original windows, and towards its bottom are two arched recesses, ornamented with religious sculptures; among which are the Crucifixion, with figures of the virgin Mary, St. John, &c. See *TOWER, round*. *Archæologia*, vol. ii. 83. *Ledwich's Antiquities of Ireland*.

Brechin had formerly its baronial castle, which was built on an eminence a little south of the town. It underwent a long siege in the year 1303, when it was gallantly defended against the English under Edward III. by its brave governor Sir Thomas Maule, who, after twenty days resistance, was slain by a stone cast from an engine, and the garrison immediately surrendered. This town is also remarkable for a battle fought here in the great rebellion in 1452.

The trade of this place consists principally in linen and

yarn, which gives employ to many of the poor women. There is also a bleachfield, and a considerable tannery. Brechin is 64 miles N.E. from Edinburgh. Pennant's *Tour in Scotland*, vol. iii.

BRECHT, a town of the eastern part of Brabant, now the French department of the Deux Nethe, and chief place of a canton, in the district of Anvers or Antwerp. The town contains 3428, and the canton 8800 inhabitants; the territory comprehends 257½ kilometres, and 7 communes.

BRECKBERG, or **BERKHEYDEN, JOB**, in *Biography*, a painter of landscapes, conversations, and portraits, was born at Haerlem in 1637, according to Houbraken, but, according to Descamps, in 1643, and studied after nature on the borders of the Rhine, where he sketched those views which he proposed to introduce into his landscapes. Having made himself a competent master in this style, he studied and practised the painting of figures, taking his models from nature. His subjects, however, were of the lowest kind, such as boors, husbandmen, shepherds, and inn-keepers, introduced into his landscapes, and represented also at their feasts, dances, or conversations, which he composed in the manner of David Teniers. His pictures were well handled, and agreeably coloured; and some of them were much esteemed. Ambitious of visiting the court of the elector palatine, who had been represented to him as a magnificent patron of persons of his profession, he accompanied his brother Gerrard thither; but being at a loss for a proper introduction, he and his brother finished two pictures, in which they painted the portraits of the elector, and of his principal attendants, which were striking resemblances, as they had observed them in the chace; and they then prevailed with an officer of the household to place them in a gallery, through which his highness always passed on his return from hunting. The stratagem succeeded; as the prince observed them with surprise and satisfaction; and the artists were ordered to be brought to court, where they were honourably received, paid liberally for their works, and presented, among other donations, with two medals of gold. Job died in 1698. Pilkington.

BRECKBERG, or **BERKHEYDEN, GERRARD**, brother of the preceding, was born at Haerlem in 1645, and painted many pictures in concurrence with his brother; but his usual subjects were views of churches, convents, noblemen's houses, and magnificent structures, which he adorned with small figures designed after nature, and intended for his compositions. His works were much esteemed; but as he was advancing to reputation, he was unfortunately drowned in a canal on his return home from an evening party of friends. This event happened in 1693. Pilkington.

BRECKENRIDGE, in *Geography*, a county of Kentucky in America, containing 758 inhabitants; the court-house and post-office are 700 miles distant from Washington.

BRECKERFELD, a town of Germany, in the circle of Westphalia, and county of Marck; 26 miles N.N.E. of Cologne.

BRECKNOCK, a township of America, in Lancaster county, and state of Pennsylvania, having 744 inhabitants.

BRECKNOCK, or **BRECON**, is the principal and county town of Brecknockshire, S. Wales. It is situated in a most romantic part of the country on the banks of the rivers Usk and Honddy, whence its ancient name was Aberhonddy. During the days of chivalry and papacy here were a castle and a monastery, both of which appear to have been extensive and important. They were built in the reign of Henry I. by Barnard de Newmarck, a Norman lord, who obtained great possessions in this part of the country, and perpetuated his name by founding several religious houses. This town was particularly distinguished

by his institutions; among which were two priories appropriated respectively to Benedictines and Dominicans. One of these was converted into a college by Henry VIII., and the principal building of the other is now a parish church. The remaining fragments of the castle prove that it has been an extensive and grand pile of building. Part of the keep, and a tower called Ely-tower, still remain. The latter is so named from Dr. Morton, bishop of Ely, who was confined here by order of Richard III., where, in conjunction with his keeper, the disappointed duke of Buckingham, they planned the union of the two houses of York and Lancaster, and the succession of Henry VII. Their plan was completely digested, and eventually brought to a successful termination, though the projectors of it experienced very opposite fates. The duke, who was the most active in this transaction, was detected, seized, and executed; but the more fortunate bishop escaped from the castle, kept quiet, and lived to become, in the ensuing reign, a privy counsellor, and was further advanced to fill the metropolitan see of Canterbury. The castle is divided from the town by the river Hodny or Honddy. Its main body, with all the principal parts, are still to be traced, though the tower just mentioned is the only large mass of building that remains to characterize its architecture and gloomy dignity.

Brecknock was formerly surrounded with an embattled wall, and entered by four gates, named, according to their respective situations, East-gate, West-gate, High-gate, and Water-gate. There was also another gate in the suburb, called Porthorne S. Mariz. The town consists, at present, of three principal spacious streets, and, according to Mr. Malkin's statement, "is one of the best built in Wales," though some of the smaller streets, occupied by poor inhabitants, are "miserably deficient in general arrangements." The trade, though not very considerable, is progressively increasing since the completion of its canal; and some manufactories of woollens and hats are established on a respectable scale. "Brecknock," observes Mr. Malkin, "appears in most respects to be a very desirable residence, and is much inhabited by clergy and gentry of independent fortunes. The number of spacious and modern-built houses is greater, in proportion to its size, than perhaps in any town of Wales. The markets are well, but not very cheaply, supplied. The broken summit of the mountainous ridge, continued into Monmouthshire in irregular lines; the dismantled towers of Aberhonddy, with its mouldering walls in wild and various ruins, while the unpicturesque compactness of the modern buildings is favourably concealed, render this one of the most striking situations, near any town in the principality." The situation of the priory and castle, with the secluded and interesting walks formed near these ruins, are peculiarly delightful, and invariably attract the attention and admiration of all strangers. Brecon is a borough, and returns one member to parliament.

Here were buried the three bishops of St. David's, Mainwaring, Lucy, and Bull. In the town and its vicinity have been found several Roman antiquities, with coins, &c. and some large intrenchments are to be seen on the neighbouring hills; but the most remarkable fortification is Y-Gaer, about two miles N. W. from the town. This was probably occupied, if not made, by the Romans. It is seated on a gentle eminence, overlooking the river Usk; parts of its walls remain; and within the area of the camp some Roman bricks have been found, similar to those at Caerleon, with the inscription LEG II AUG. Contiguous to the camp, in the middle of a highway, is a rude carved pillar, about six feet high, called *Maen-y-Morinion*, or the Virgin's Stone. Another fragment of Roman antiquity is a sepul-

chral pillar, noticed by Gibson and Gough, standing upright by the road-side, with a defaced inscription, of which only the word VICTORINI is legible.

Brecknock consists of three parishes, and contains 540 houses, and 2576 inhabitants. It is 171 miles west from London, and has two weekly markets on Wednesdays and Saturdays, and four fairs yearly. Evans's *Cambrian Itinerary*, 8vo. 1801. Malkin's *Scenery, Antiquities and Biography of South Wales*, 4to. 1804. Gough's *Edition of Camden's Britannia*, vol. ii.

BRECKNOCK Canal, in *Inland Navigation*, joins that from Monmouthshire, eight miles and a half from Newport, and about one from Pontypool. It crosses the river Avon, and passes the high ground by means of a tunnel 220 yards long, and, inclining towards the river Usk, passes Abergavenny. It then runs parallel with the Usk to the town of Brecknock; making a course of nearly thirty-three miles, with sixty-eight feet rise. A rail-road extends from Abergavenny to the canal, one mile in length; and from the canal at Cwm Clydach to the coal and iron works at Wain Dew, four miles and three quarters. Another rail-road, from the canal to Llangroiney, crosses the river Usk, and is in length one mile and a quarter. The rates of carriage for all kinds of merchandize, materials, horses, cattle, &c. are particularly specified by the act of parliament. Phillips's *History of Inland Navigation*, 4to.

BRECKNOCKSHIRE, deriving its name from Brecon, a distinguished character in legendary story, who succeeded to it about the year 400, one of the counties of South Wales, is bounded on the north and east by Radnorshire, having the river Wye for its natural division. A small part of Herefordshire also attaches to its eastern limits; on the south-east and south the county of Monmouth forms its boundary; and a small part of Glamorganshire, with Caermarthenshire and Cardiganshire, bound its western and south-western extremities. The length of this area, north and south, is estimated at twenty-nine miles, and its breadth at the southern basis about thirty-four miles, making nearly 900 square miles, and containing about 600,000 acres. This district is divided into the six hundreds of Builth, Crickhowel, Beuynnoch, Merthyr, Fenkelly, and Talgarth, and contains 4 towns, and 67 parishes. These, with the hamlets, are populated by 31,633 persons, and contain 6794 houses.

This county is described in the following terms by Giraldus Cambrensis, who wrote at the latter end of the twelfth century, and was archdeacon of St. David's, in which diocese this county is included.

"Brechiniane (says he, in his *Itinerary of Wales*) is a county abounding with corn; and if ever any deficiency happens, it is plentifully supplied from its neighbour, England. It is rich in pastures and woods, deer and herds, and abounds also with river-fish in the Usk on one hand, and the Wye on the other; both yielding salmon and trout in plenty, but the Wye greater quantities of the excellent fish called *umbræ*. It is enclosed on every side, except the north, by high mountains; having on the west the mountains of Cantrebochan; on the south the southern hills, the chief of which is Cader-Arthur, or Arthur's chair, from its two summits (it being *διὰ τοῦτο*, *double-topped*) resembling a chair; and this chair, being on a high and steep place, is by the vulgar ascribed to the greatest and most sovereign monarch of Britain, Arthur. On the top of this hill rises a spring, deep like a well, but square; and though no stream runs out of it, they find trout in it. These mountains, forming a barrier to the south, keep out the sun, while cool breezes, and the native salubrity of the air, render the country extremely temperate. On the east stretch the Tolgar and Ewias hills."

Previous to the reign of William Rufus, this county appears to have been vested in its native princes; but in this reign Barnard de Newmarch, a Norman of great spirit combined with prudence, assembled a considerable body of English and Normans, with whom he invaded this territory, and subdued the inhabitants. To secure his newly acquired possessions, he built castles, and assigned different parts of them to his principal associates. This policy further induced him to marry Nest, grand-daughter of Gruffyth ap Lhwelin, who, proving to be of a most revengeful and abandoned spirit, involved her lord in much trouble, and occasioned her son to be disinherited, by falsely swearing to king Henry I. that he was a bastard. The lordship progressively passed to Milo, earl of Hereford, and his sons, next to Humphry de Bohune, to Philip Bruce, to Thomas Plantagenet, sixth son of Edw. III., and afterwards to the dukedom of Buckingham, till an attainder vested it in the crown. Brecknockshire was the seat of war in 1217, and afterwards in 1233, when Lhwelin came with an army, and destroyed nearly all the towns and castles in the county. At the restoration James Butler, afterwards duke of Ormond, was created earl of Brecknock.

The general aspect of the county is mountainous and rugged, affording a sublimity of scenery, interspersed with fertile plots of cultivation, that attaches to it a peculiar character among the strongly marked divisions of South Wales. It is distinguished from Glamorganshire by more level and extensive vales; its mountains are also more continuous, more lofty, and presenting an appearance of hill piled upon hill. Its woods are commonly in very large masses, and the banks of its rivers are luxuriously clothed.

The principal river of this county, next to the boundary one of the Wye, is the Usk, which, taking its rise in the Black mountain, on the border of Caermarthenshire, flows through a fine valley, in its progress to Brecknock.

Agriculture, in this county, is much improved within the last twenty years. Being contiguous to Herefordshire, the husbandry of which is deservedly noted, many English farmers have purchased estates here, and introduced, with themselves, new and more approved principles of agriculture.

The principal remains of Roman antiquities are in and near the town of Brecknock. Among these are a causeway running nearly at right angles with the Usk, and leading probably to the great Roman camp in the neighbourhood. Another Roman road has been discovered near the bridge of Cefn Rhod y Briw, and another on the top of the most unfrequented mountains. A Roman hypocaust has also been discovered in a field near the county town. Malkin's Tour in South Wales, 4to. 1804. Gough's edition of Camden's Britannia, vol. ii. Barber's Tour in South Wales, 8vo. 1803.

BREDA, VAN, or BREDALE, PETER, in *Biography*, a painter of landscapes and cattle, was born at Antwerp in 1630; studied landscape after nature, and adorned his designs with figures, correctly drawn and judiciously grouped. His scenes are generally enriched with elegant Roman buildings, fountains, monuments, and ruins. His style, though inferior, resembled that of John Brueghel. He died in 1691. Pilkington.

BREDA, VAN, JOHN, a painter of history, landscape, and conversations, was born at Antwerp in 1683, and instructed by his father Alexander Van Breda, who was much esteemed as an artist, with whom he continued, profiting by good example and advice, till he was 18 years of age. Among the capital paintings in the possession of John de Wit at Antwerp, Breda selected those of Velvet Brueghel, which he successfully copied; and he employed 9 years

in copying also the pictures of several other great masters, which he did so exactly as to puzzle good judges in distinguishing the originals from the copies. Having established his reputation in Holland, he accompanied Rybrack the sculptor to London, where he was highly esteemed and obtained considerable patronage, and particularly that of the earl of Derwentwater, who was beheaded for rebellion in 1715. In London he was much employed by the court and nobility, and was hardly able to supply the demands made upon him for his performances. From London, after a residence of five years, he returned to Antwerp, much enriched; and in 1746, when Louis XIV. visited that city, he honoured this master by purchasing four of his pictures; viz., "Christ at the sea of Tiberias," "Christ performing miracles," and "two landscapes," with figures so exquisitely finished, as not to be easily distinguished from those of Brueghel. This master and Wouvermans were the models which he imitated; and he approached nearer to them than any other artist of his time. His landscapes are in the style and taste of the former; and his conversations, historical figures, fairs, and battles are in the manner of the latter. His colouring is good, his touch neat, his skies and distances natural and beautiful; and his taste of design agreeable. He had as much fire in his composition, and perhaps more genius than Brueghel; and, upon the whole, he is a painter of such rank, that the value and estimation of his works must always increase. He died in 1750. Pilkington.

BREDA, in *Geography*, a city of the Netherlands, the capital of Dutch Brabant, situated at the confluence of the rivers Aa and Merck, in a marshy country which may be overflowed by means of these rivers. The former of these streams, being, a little before its arrival at the town, augmented by the Byloop, is here rendered navigable, so as to form a communication with the German ocean. Breda was formerly large, populous, and well fortified, and was reckoned one of the strongest places in the Dutch frontiers. But its fortifications have sunk into decay, so that it is unable to stand a long siege; its circumference is estimated at about 4000 paces, and it is said to contain about 2200 houses, which are in general well built. Its citadel is environed with a moat; and its figure is triangular, having at every angle a gate constructed with brick; and its ramparts planted with elms. The great church is a magnificent structure, and remarkable for its tower, built in 1696, and afterwards rebuilt, the height of its spire being 362 feet. In this church are several monuments of the ancient lords of Breda; of which the principal are those of Engelbert I. who died in 1442; of John, who died in 1473; and of Engelbert II. who died in 1504; but they are not well preserved. The town-house is large, and its apartments regular and sumptuously furnished. Its woollen manufactures and commerce were formerly prosperous; but they have long since very much declined.

Breda is the capital of an ancient barony or free lordship, which comprehends several considerable villages, and the woods of Lielbosch, Maltbosch, and Ulvenhoutbosch. The former of these woods is intersected with walks and vistas; and the second, consisting of fir-trees, is about 1½ league in length, and half a league in breadth. This barony includes good corn land and pastures, interspersed with many heaths and morasses. It was wrested from the county of Stryen, to which it formerly belonged, about the year 1100, by the duke of Brabant; in 1212 it pertained to Godfrey of Berg, a son of Brabant; in 1284 John I. duke of Brabant conferred the lordship of Breda on Raso von Gavre; and in 1326 it was sold to John III. duke of Brabant, who parted with it, in 1351, to John von Polanen,

M. u.

whose

whose grand-daughter Joanna transferred it to her consort Engelbert of Nassau, whom she married in 1404. In consequence of this alliance it remained in the house of Nassau, till William III. of England, dying without issue, caused it to be left in abeyance. The old castle was begun by Henry of Nassau in 1530; but about the year 1680, William prince of Orange, afterwards king of England, erected the new one, which is a magnificent structure, surrounded by the waters of the Merck. Breda suffered exceedingly in the wars of the 16th century. In 1567 it was annexed to the domains of the king of Spain, by the duke of Alva, on account of the rebellion of William of Nassau, prince of Orange. In 1575, the emperor Maximilian having offered his mediation for peace, a conference was held at Breda, but it terminated without an agreement between the Spaniards and the Confederates. In 1577 it was delivered up by the garrison to the States; but in 1581 it was retaken by Claude de Berlamont, and fell into the hands of the Spaniards. In 1590 prince Maurice took it by a stratagem, having sent a party of select men concealed in a boat loaded with turf, by which means the prince was admitted, and the city surrendered. In 1625 it was invested by Spinola, who, well knowing the strength of the place, determined to reduce it by famine, and for this purpose drew trenches round it for the space of four miles, erecting forts and redoubts at certain intervals; the siege was prosecuted by Spinola with the utmost diligence and vigour; and the place was defended, amidst the calamities of famine and disease, with a sagacity, steadiness, and valour, which did honour to the talents of the governor, Justin de Nassau, the natural son of William prince of Orange. A negotiation at length took place between the besiegers and the garrison; and the result was, that two capitulations were drawn up, one for the garrison and the other for the city, both of which were the most honourable and advantageous that could be devised. These were accepted; and the garrison marched out, after having sustained a siege of 10 months, and having lost two-thirds of their number and an equal number of the inhabitants. Spinola drew up his army to salute them, and, surrounded by his field officers, paid particular compliments to the governor, and commanding officers. He also distributed money among the soldiers, ordered the sick and wounded to be tenderly treated and taken care of; and in the regard paid to the valour and merit of his enemies he displayed all the sentiments of a hero. On the citizens also he poured out a profusion of civilities; manifesting his admiration of their constancy and fidelity to a degree, which even alarmed the States-General. In 1637 Henry, prince of Orange, determining to recover Breda, laid siege to it on the 23d of June, and obliged the governor, Omer de Fourdin, a very distinguished officer, to surrender, the 20th of October following. The governor and soldiers on this occasion, were, by the prince's generosity, allowed all the honours of war; and the officers of the city placed on the same footing as in the year 1625, before it was reduced by Spinola. Fourdin paid his compliments, sealed in a letter, to the prince; he was received graciously, loaded with praises and honours, and dismissed with valuable presents, reflecting equal credit on the generosity of the prince and the valour of the governor. After this event the Dutch considerably augmented the fortifications; and yet, though they have been reckoned among the most complete in the Netherlands, Breda surrendered to the French, on the 24th of February 1793, after a short siege of 10 days. However, on the 20th of March following, it was again delivered up to the Dutch by capitulation, and the soldiers were permitted to return to France with safe conduct.

Breda was rendered famous in 1667 by the famous congress which was held there for a general peace; first, between Louis XIV. king of France, and Charles II. king of England, concluded the 21st of July, by the mediation of the king of Sweden; secondly, between the king of England, and the States-General on the 31st of July, one article of which peace was the cession of the province of New York to the English; and thirdly, on the same day a peace was ratified between the king of England and Frederick III. king of Denmark. Breda lies 46 miles south of Amsterdam, and 22 S. E. of Rotterdam. N. lat. 51° 37'. E. long. 4° 45'.

BREDE, LA, a town of France, in the department of the Gironde.

BREDEMEYERA, in *Botany*, Willden. 1314. Class, *diadelphia octandria*. Essential Char. *Calyx* three-leaved; *Cor.* papilionaceous; standard two-petalled; drupe with a two-celled nut.

Species. *B. floribunda*. A shrub from five to eight feet high. *Leaves* nearly alternate, oblong-lanceolate, smooth, veined, two or three inches long, with short petioles. *Flowers* small, yellow, terminating, panicle. *Panicle*, much branched, pyramidal, many-flowered. *Bractes*, linear-subulate, at the base of the pedicles. A native of Caraccas in the margins of woods.

BREDENBORN, in *Geography*, a town of Germany, in the circle of Westphalia, and bishopric of Paderborn, 4 miles E. of Neheim.

BREDERODE, an ancient feignory of Holland between Beverwick and Haerlem; the lord of which was one of the principal persons who presented a petition to Margaret of Austria, against the inquisition and other innovations in the year 1566. The title is extinct.

BREDEWIG, or BREEDVIG, a sea-port town in Norway, in the diocese of Aggerhuus, and district of Bradberg-lehn, 44 miles S. W. of Christiania.

BREDEWITE, in *Ancient Law Writers*, an amercement arising from some default in the assize of bread.

BREDIN, in *Conchology*, the French name of the common limpet. *PATELLA VULGARIS*.

BREDL, in *Geography*, a town of Bohemia, in the circle of Boleslaw; 6 miles N. E. of Turnau.

BREDON, the name of a hill in England, that divides the vale of Tewksbury from that of Evesham; from the summit of which the prospect is extensive, commanding the cities of Gloucester and Worcester, and a considerable number of towns and villages.

BREDSTEDT, an ancient and populous town of Denmark, in the duchy of Sleswick, and capital of a district of the same name, two Danish miles in length and as many in breadth, containing a considerable number of acres of marshland, and subject to the prefect of Flensburg; 21 miles N. N. W. of Sleswick.

BREDYDT, a town of Germany, in the circle of the Lower Rhine, and electorate of Treves; 11 miles E. of Treves.

BRE'E, a town of France, in the department of the Lower Meuse, and chief place of a canton, in the district of Ruremonde. The town contains 1184, and the canton 5493 inhabitants; the territory includes 162½ kilometres and 11 communes.

BREECH, in *Ship Building*, the angle formed by a knee timber, the inside of which is called the *throat*.

BREECH of a gun, in *Artillery*, denotes the distance from the hind part of the base ring to the beginning of the bore, and is always equal to the thickness of the metal at the vent. See AC, fig. 1. *Tab. Gunnery*.

Engineers have contrived a sort of cannons, which are charged by the breech.

BREECH-mouldings. See MOULDINGS.

BREECH presentation, in *Midwifery*, a species of preternatural or cross-birth, which see; in which the nates of the fœtus present to the uterine orifice, at the commencement of labour, instead of the head.

When on the bursting of the membranes, the part of the fœtus about to enter the os uteri feels soft, and of a globular figure, the accoucheur will generally be right in pronouncing that it is the breech of the child that presents; particularly, if during the pains, the meconium, or fœces of the child are forced away.

Though both nates may be perceived presenting, when the child enters the pelvis of the mother, yet one of them always comes down, through that passage, before the other, and in that manner comes into the world.

When the pelvis of the mother is of the usual form and dimensions, and the child is not disproportionably large, this species of labour requires very little more attention, on the part of the assistant, and usually terminates, equally safely to the mother and child, though not so speedily, as a natural labour.

When, on account of the disproportion between the bulk of the child, and the pelvis of the mother, or through the rigidity of the soft parts of the mother, the breech of the child is very much pressed, and straightened in its passage, the serotum, if it be a male, will be much swelled, and black. This blackness and swelling, however, usually soon subsides, or they may be dispersed, by fomenting the part with warm water, applying afterwards, some elder, or other cooling ointment.

In this kind of labour no manual assistance will be necessary in ordinary cases, until the breech of the child is thrust down so low by the pains, as to press upon the external orifice. The accoucheur may then pass a finger up the vagina, and round the groin of the child, and assist in drawing it down, during each pain. This will contribute much towards facilitating and expediting the birth of the part. Or if, on account of the disproportion between the size of the child, and the capacity of the pelvis of the mother, the breech of the child should not descend so low as to enable the accoucheur to assist with his finger, a blunt hook may be passed round the groin, and used in the same manner. This will give a better purchase, and enable him to exert much more force than he could use with his finger; but great caution is necessary in extracting in this way, lest the head of the thigh bone of the child be broke off with the instrument. To prevent this accident, it will be necessary that the accoucheur keep two or three of his fingers pressed strongly against the thigh, on the side the instrument is applied, keeping the thigh close to the body of the child.

When, by either of these means, the breech of the child is delivered, the accoucheur must attend to the position of the child, and if its belly be placed opposite to the pubes of the mother, he must turn it round to the sacrum, and then complete the delivery in the manner directed under the article, **LABOUR Præternatural**.

If flooding or convulsion should come on, during a labour of this kind, before the breech of the child has entered, or made much progress in the pelvis, the accoucheur must pass his hand slowly and gradually up into the uterus, until he reaches, and can take a firm hold of one or both the feet of the child, which he must bring down through the vagina, withdrawing his hand in the same slow and cautious manner as he had introduced it. See **CONVULSIONS** and **FLOODING** during parturition.

BREECHES, a garment worn by males, reaching from the middle to the knees, and serving to cover the hips, thighs, &c.

The ancient Romans had nothing in their dress answering

to our breeches and stockings; instead of which, under their lower tunics and waistcoats, they sometimes bound their thighs and legs round with silken scarves, or *fistæ*, called *tibialia* and *æmoralia*. Salmuth. ad Panciroli. p. i. 161. Kennet. Rom. Ant. Not. p. ii. lib. v. cap. 8. Breeches appear to be a habit peculiar to the barbarous nations, especially those inhabiting the colder countries of the North; whence Tacitus calls them *barbarum tegmen*. We find mention made of them among the ancient Getæ, Sarmatæ, Gauls, Germans, and Britons; they also obtained among the Medes and Persians, as being a people of Scythian origin: they also afterwards got footing in Italy, some pretend as early as the time of Augustus; but without much foundation, that emperor's breeches, mentioned by Suetonius, being apparently only swaths tied over his thighs. Tacit. Hist. lib. ii. cap. 20. Perf. Sat. iii. ver. 51. Ovid. Trist. lib. v. Eleg. 11. Suet. in August. cap. 82.

However this be, breeches were at length received into Italy, and grew so highly into fashion, that it was thought necessary, under Honorius and Arcadius, to restrain them by law, and expel the *braccarii*, or breeches-makers, out of the city; it appearing a thing unworthy, that a nation, which commanded the world, should wear the habit of barbarians. We find frequent mention of *brace*, *braccæ*, or *bracche*, in classic writers, but the form of this habit is not agreed on: some will have it to have been a rough party-coloured coat.

BREECHING, in *Sea Language*, a rope used to secure the gun of a ship, and to prevent it from recoiling too much in the time of action. It is thus named, because it is made to pass round the breech of the gun. This rope is fixed by fastening the middle of it to the hindmost knob, or casebail of the gun, which, by sailors, is called the pomiglion, or pummilion; the two ends of it are afterwards inserted through two strong rings on the sides of the carriage, and fastened to other bolts in the sides of the ship. The breeching is of sufficient length to allow the muzzle of the gun to come within the ship's side to be charged.

BREED, in *Rural Economy*, a term applied to any particular sort of any kind of domestic animal, which is known and distinguished from all others by certain characteristic marks, or in the technical language of the breeder, *points*. Thus, in the horse kind, we have the *race breed*; the *heavy black*, *cart*, or *Leicestershire breed*; the *Cleveland bay*, or *Torkshire breed*; the *Suffolk Punch breed*; the *Glydesdale*, or *Scotch breed*; the *Welsh*, or *poney breed*, &c. And in neat cattle, the *long-horned*, or *Lancashire breed*; the *middle-horned*, or *Devonshire breed*; the *short-horned*, *Dutch* or *Holderness breed*; the *Welsh breed*; the *Suffolk dun breed*; the *Galloway*, or *polled breed*; the *Highland*, or *Kiln breed*; the *Lreland*, or *Fifehire breed*; the *Alderney breed*; the *Wild breed*, &c. In the sheep kind, the *new Leicester*, or *Dishley breed*; the *Lincolnshire breed*; the *Tiswater breed*; the *Romney Marsh breed*; the *Dartmoor*, or *Devonshire nut breed*; the *Exmoor breed*; the *Dorsetshire breed*; the *Hertfordshire*, or *Ryland breed*; the *South Down breed*; the *Norfolk breed*; the *Heath breed*; the *Heidwick breed*; the *Cheviot breed*; the *Dunfau breed*; the *Shetland breed*; the *Merino*, or *Spanish breed*, &c. In the swine kind, there are likewise several breeds, as of the large sort, the *Berkshire breed*; the *Hampshire breed*; the *Shropshire breed*; the *Gloucestershire breed*; the *Herefordshire breed*, &c. and of the smaller sorts, the *Chinese breed*; the *white*, or *fouch-eared breed*; the *prick-eared breed*; the *swing-tailed breed*, &c.

The different properties and qualities of the various breeds of these different kinds of domestic animals, will be fully described and explained when we come to speak of the means of improving live stock. See **CATTLE** and **LIVE STOCK**.

Much of the success of the grazing farmer depends upon a correct knowledge and judgment in selecting and choosing those breeds of different kinds of animals that are the most adapted to the nature, circumstances, and situation of his land. See *GRAZING and STOCKING PASTURES*.

In the smaller kinds of domestic animals, there are likewise different breeds, which will be described in considering their particular applications and uses in the practice of the farmer.

Breed's Hill, in *Geography*, an eminence, near Boston, in America, where the Americans withstood the attack of the British troops at the commencement of the American war, and where the former lost five pieces of cannon and 139 men, and the latter lost 1054 men, among whom were 19 officers who were killed, and 7 wounded. This battle is commonly called "the battle of Bunker's Hill," from the name of another hill near Breed's Hill. It happened on the 17th of June, 1775.

BREEDBAND, in *Natural History*, one of the synonyms of *ECHINUS SAXATILIS*, which see.

BREEDING, in a general sense, is used for the care of rearing or bringing up the young of divers animals.

BREEDING, in a moral sense, denotes a person's deportment or behaviour in the external offices and decorums of social life. In this sense, we say, well-bred, ill-bred, a man of breeding, &c. Good breeding amounts to much the same with what is otherwise called *politeness*, among the ancient Romans *urbanity*. Good breeding is nearly allied to virtue, and will, of itself, lead a man a great part of the way towards the same; it teaches him to rejoice in acts of civility, to seek out objects of compassion, and to be pleased with every occasion of doing good offices. Lord Shaftesbury compares the well-bred man with the real philosopher: both characters aim at what is excellent, aspire to a just taste, and carry in view the model of what is beautiful and becoming. The conduct and manners of the one are formed according to the most perfect ease, and good entertainment of company; of the other, according to the strictest interest of mankind; the one according to his rank and quality in his private station, the other according to his rank and dignity in nature. *Horace* seems to have united both characters.

"Quid verum atque decens curo et rogo, et omnis in hoc sum."
Shaftes. Charact. vol. i. p. 64. vol. ii. p. 242. vol. iii. p. 161. Hor. lib. i. Ep. ver. 12.

BREEDING, in *Midwifery*. Immediately after having conceived, a woman is said to be breeding, and this stage of pregnancy continues for the space of three or four months, or to the time of quickening, after which she is said to be young with child, and at seven or eight months, great or big with child. These stages, not of themselves of importance enough to be noticed, are here mentioned on account of some symptoms, peculiar to each of them. The most remarkable of these, and which frequently attacks women almost immediately after conception, is nausea and vomiting, particularly in a morning, and as soon as they rise from their beds; though in some cases, it continues through the whole of the day, scarce suffering them to retain any part of their food. It is usual to attribute this symptom to nervous irritation, occasioned by the distension of the minute vessels of the uterus, the stomach sympathizing with the part. As it is so general an attendant on breeding, perhaps, by the shock it gives to the frame, it may be intended to assist in unfolding those vessels. Whatever may be the cause, vomiting in pregnancy is rather a troublesome than dangerous symptom, and the violence of it may usually be mitigated, though it cannot be entirely quieted, by a moderate and slender diet; and by taking small doses of rhubarb and magnesia, by losing three

or four ounces of blood from the arm, or by going for a short time into the country. It usually ceases soon after quickening, though in some women it continues through the whole time of gestation. Cardialgia or heart-burn, which see, another frequent attendant on this stage of pregnancy, is equally untractable and lasting, and only to be alleviated by remedies and management similar to those recommended for nausea and vomiting. Costiveness, to which women in this state are also subjected, is perhaps occasioned by the loss of the bile, which is thrown up by vomiting, instead of going down through the intestines, where, by its stimulus, it is supposed to keep up the peristaltic motion of the bowels, and thence to facilitate the descent, and discharge of the feces. Magnesia and rhubarb, senna, manna, Epsom, and glauher's salts, in small doses, are the most convenient and efficacious remedies for obviating this complaint. When the stomach is so weak as to reject these remedies, recourse may be had to aloes, of which four, five, or six grains, in the form of pills, may be given at night going to bed. The custom of giving women a larger portion of food, while breeding, which by the common people is thought to be necessary, as they have then two to support, if not the most frequent cause of the inconveniences here noticed, as attendant on pregnancy, certainly tends to increase and aggravate them, as the stomach is at that time generally very weak and delicate, particularly in the last months, when the uterus has acquired such a bulk as to press on and straiten the bowels, and consequently to impede the passage of the food.

A moderate diet, air, and exercise, are necessary in every stage of pregnancy. Those women therefore err exceedingly who live at such times too sedentary a life, particularly those who spend much of their time in crowded rooms, at the card-table, &c. as besides the injury done by sitting too long in one posture, which they always find troublesome to them, they breathe an impure and noxious air, whence proceed head-achs, sickness, faintings, and a train of nervous symptoms, which not unfrequently lead on to abortion.

BREEDING, in *Rural Economy*, the art or science of raising different sorts of live stock, in the best and most perfect manner. This is a branch of the art of husbandry, on which great attention has lately been bestowed, but which probably depends on principles and circumstances that are not yet fully investigated or understood. Much improvement has, however, been effected in the raising of almost every kind of live stock, since the nature and means of its support have been better known and more abundantly provided. The greatly increased demand for the animals, either in consequence of their usefulness for the purposes of labour or those of supplying the food of mankind, has probably had much effect in promoting this sort of improvement, as rendering it more an object to the breeding as well as grazing farmer. It has been well remarked by the author of "Practical Agriculture," that notwithstanding much has been done in different districts, in bringing different breeds of different sorts of live stock to a greater state of perfection, much still remains to be effected; and that it is probably far from having reached that point to which it is capable of being carried, by the judicious combination of the best and most appropriate breeds of domestic animals; with the improvements in the cultivation of herbage, or other sorts of green food for their support. To fully explain the means of accomplishing such improvements in every sort of stock, many additional facts and experiments are, however, necessary. All that can be done at present is, perhaps, that of presenting the farmer with a few hints and directions, which may serve as guides in conducting the business.

In pursuing attempts of this nature to any extent, Mr. Middleton

BREEDING.

deleton has justly observed, great care should be previously taken, that there be a full and free degree of light, shade, and warmth, and at the same time a high state of fertility in the land, with suitable drainage; as it is only by the richness and abundance of food that such changes or improvements can be made in the most advantageous manner, or the stock be carried to any high state of perfection.

Different modes of practice have been followed in the improving of live stock, but the principal are those of crossing the different breeds, so as to supply the imperfections and defects of the one by the merits and perfections of the other; and of uniting the valuable qualities or perfections of the same kinds by continuing to breed and selecting the most perfect animals in the same line or family. The former of these methods has been long known and employed; but the latter has, only within these few years, been fully introduced to the notice of the farmer, and is not, probably, yet so much attended to as it would seem to deserve.

It has been commonly supposed, that the practice of crossing the breeds of domestic animals possesses various other advantages, as well as those of preventing the decrease and degeneracy of the stock, on account of the animals being kept from becoming too nearly related to each other. There are many facts, however, which shew that the supposition of the degeneracy of animals in consequence of the nearness of their relation is not so well founded as has been commonly imagined. The complete success of the contrary practice in the management of Mr. Bakewell, who reared his best stock by the nearest affinities, not only without degeneracy in any respect whatever, but with a continued improvement and amelioration, makes strongly against the opinion; as well as the circumstance of cattle in the wild state, in particular situations, remaining for centuries without the least alteration taking place in their form, or change in their colour or other properties. It has, notwithstanding, been asserted, that in this system of breeding, young stock decrease rapidly in size. If, however, such a circumstance was really apt to occur, it could hardly have been overlooked or disregarded by the very expert and intelligent breeder just mentioned, in his long and very extensive experience of raising various kinds of live stock, by coupling the most perfect animals of the same line or family.

There cannot be any doubt, however, but that by the method of crossing the breeds of animals much advantage may be derived, especially in what relates to size, and some other properties noticed below; yet it is obvious, that it must require the nicest care, and the greatest circumspection, in order to suit the animals in the most exact manner to the nature of the improvement that is intended, otherwise injury, instead of advantage, may be the consequence. Indeed, from the injudicious and random method in which improvements of live stock, on this principle, have, in general, been undertaken, it does not seem improbable but that injury may often have been produced instead of benefit, by uniting such breeds, as from the great dissimilarity of their forms, qualities, or other properties, could not have any chance of effecting the purpose with utility. Besides, in almost every district of the kingdom, where the breeding system is pursued to much extent, useful breeds of domestic animals are asserted to have been injured by the practice of injudicious crossing, as may be seen in the various reports that have been published by the Board of Agriculture: and Lord Somerville, in his excellent view of the system of the Board of Agriculture, has very pertinently remarked, "that to the mountebank doctrines of crossing dissimilar breeds, whom nature in its infinite wisdom had set asunder, we are indebted for much confusion and mismanagement." It cannot, however, be

disputed, but that by pursuing this method with judgment and proper attention, great advantages may often be obtained, especially in regard to bone or size, and the hide or coat, as well as in the improvement of particular parts or points, and probably in what relates to the movement or speed of the animals. The author of "Practical Agriculture," has observed, "As it is in some measure a principle founded in physiological science, and countenanced by the observation and experience of ages, that animals are somewhat endowed with the faculty of not only propagating an offspring that has, in a considerable degree, the properties, dispositions, and resemblances of themselves, but that is, in some measure, subject to a similarity of disease; it would appear, that although there may be occasional deviations, the most certain method, and that which has the best foundation in the nature and economy of the animal, in so far as the particular qualities and other properties, besides those that have been just mentioned, are concerned, is to breed in the same line, and, perhaps, in the same family; as by a careful procedure in this way, the expert breeder may not only have the greatest security for attaining that improvement which he is anxious to produce, but run the least risk of deterioration." The success of this practice, it is contended, "has not merely been shewn in the breeding of the farmer's stock, but also in that of the sportsman, as it has been found that pointers and game cocks have been bred with the greatest perfection and superiority in this mode;" and that "it is by the same means that the valuable properties of the race-horse are perpetuated and preserved." "The same thing likewise," it is added, "takes place in the vegetable economy, the finest and most perfect productions of this sort being propagated by sowing seed selected from the best and most perfect plants of the same kind, and taking the buds or off-sets from the best and most perfect trees of the same species." "There is also another circumstance," continues the same author, "that seems to shew the propriety and superior advantage of this method of proceeding in the breeding of domestic animals, which is that, however much the breeds of live stock may be altered by climate, pasture, and other causes, in what respects their colour and other trifling particulars, their specific characters remain invariably the same. No causes of these kinds have ever been capable of changing any one of the distinct breeds, whether of neat cattle, sheep, horses, or hogs, in such a manner as to have the characteristic distinctions of those of any of the others."

On these principles it is therefore concluded that "by having recourse to occasional crossing in the above intentions, and the careful selection of the most perfect animals of the same breed or kind, with due attention to constant good feeding, the improvement of live stock may be carried to the greatest perfection."

"But as the principal object of the breeding farmer must constantly be that of obtaining such animals as will afford him the largest profit, it may be necessary to ascertain the nature and form of the animal that may be most advantageous in this view, or which pays the best for the food that is consumed, as by this means it will be seen what points are the most desirable or useful in a breed or variety, and what circumstances ought to be attended to, so as to justify its introduction in preference to any other."

The properties which seem the most particularly to interest the breeder, in his attempts to improve the different sorts of live stock, are principally those of form or shape, size, disposition, hardiness, quick maturity, nature of flesh, fattening property, milk, hide, aptitude for labour, and the quality of the breed, or in the language of the art, *blood*.

With regard to *form*, the notions of breeders have been

BREEDING.

considerably at variance; but it would seem that there can only be one perfect form, which must be that which approximates the most to exactness in the shape and proportion of the different parts. This, should, therefore, be the principal aim of the improver, whatever the nature or breed of the animal may be.

The writer, mentioned above, conceives, that "in this view a perfectly formed animal should have an exact proportion and consistency in all the different parts; the head neat and compactly formed, being neither too large nor of too great length; the eyes bright and prominent; the neck not of too great length, but somewhat thin, gradually narrowing from the breast towards the head, to which it should be neatly attached; the chest round, wide, full, and of deep girth; the length of the legs well proportioned to the size; the fore ones straight and clean, the hind ones forming an angle at the hock so as to stand well under the loins; the distance between the feet in the different extremities equal; the feet round and even; the hoofs straight; the back and loins straight and broad; the belly firm and capacious; the quarters deep, full, and well fleshed downwards." This would seem to constitute that "utility of form," which is the chief aim of the most enlightened modern breeders: and it has been suggested as probable, that such a form may be the most adapted to the principal object of the grazier, that of taking on and sustaining flesh in the process of fattening; as where animals greatly exceed or fall short of such just proportions of parts, there must be disadvantage either in their being weak and less disposed to fatten, of course requiring a larger proportion of food, and more time in finishing the business; or in their being deficient in the general weight and value of the meat, from their not being sufficiently fattened on the best parts. Mr. Young has indeed observed, in his *Eastern Tour*, that it has been the constant practice of Mr. Bakewell to procure such animals, whether of the cattle or sheep kind, as were capable of weighing the "most in the most valuable joints," as "there is a great difference between an ox of fifty stone carrying thirty in roasting pieces, and twenty in coarse boiling ones, and another carrying thirty in the latter, and twenty in the former." The utility of attending to this circumstance cannot be disputed; and it may likewise, in particular cases, be of much benefit to consider the nature of the consumption, in relation to the form of the animal, as where some parts are more in demand than others in the market, and of course sell at higher prices, that should be taken into the account of the breeder, and that shape which is most favourable in this view more particularly attended to.

It is supposed probable, that improvement in these as well as many other points of importance depends upon a just proportion and symmetry of parts in the animals made use of for the purpose. And it is conceived not improbable but that the "excellence of the most valuable points in all the different sorts of live stock may, in some measure, bear a proportion to the goodness of the form in the animal."

The fine fulness of shape usually distinguished by the breeder under the term "beauty of form," has been considered as very different from that of "utility of form," and to consist in a greater roundness of the parts, with a less bony protuberant appearance.

Though it cannot but be a matter of much advantage to bring the shape of domestic animals to as high a state of perfection as possible, yet utility, or what may be termed profit, ought to be more particularly regarded as being the main object of the breeding farmer.

In regard to the second property, that of *size*, the question does not seem to be yet decided, whether large or small

animals pay the best for the food they consume, nor does it appear capable of being easily ascertained, as it must obviously be influenced by a variety of causes. It is a property that may, however, be desirable where the chief object of the grazier is that of feeding to a great weight, especially where the supply of food is rich and abundant, but in other circumstances, it is perhaps not so necessary to be attended to. It is the difference in the quantity of meat afforded by large and small animals, in proportion to the extent and value of the food which they differently consume, that is to be considered. The experience of graziers would appear to rather favour smallness of size, from the animals fattening with more expedition, and paying them better. And the judgment of Bakewell is in support of the same conclusion, as he found that the "smaller the bone, the truer the make of the beast, and the quicker in fattening." Mr. Young has also observed, in respect to the large sized breeds of cattle, as the Lincolnshire and Holderness, that, though large, their size lies in their bones, they may be fattened with loss, but can never pay so much for a given proportion of grass as the small-boned long-horned sort.

Mr. Knight, an intelligent observer, however, contends that large animals are the most profitable, on the ground that they do not consume food in proportion to their weight, as on putting the question to different breeders, in different parts, he found they were uniformly of opinion, "that the same quantity of food was given to the smallest and the largest beasts of the same age; that the largest, even when not master of the food, often kept itself in the best condition; and that every thing depended on the disposition to fatten, and very little on the size of the animal." His own experience is likewise in support of the same position. It is notwithstanding allowed that a limited number of large cattle will generally consume more than an equal number of small. This has been clearly shewn by the practice of graziers in most places, as they have found, that with small animals they can often stock nearly in the proportion of two to one. But in the consumption of food a great deal must also depend on the state of the stomach and digestive organs of the animals. There is another circumstance that is necessary to be regarded as being in some measure connected with size, which is that of the quality of the flesh. This is, in general, allowed to be the finest and most delicate, in the smaller sorts; which would seem to be really the case from the grain or muscular fibre being smaller, and of course finer. The taste of the epicure also affords a further proof of the same thing, in constantly preferring the meat of small-sized animals of different kinds. On this account it has been commonly supposed that the meat of small-sized animals, is worth more for a given quantity, than that of large ones. Mr. Knight, however, contends, "that if the animal be taken as it stands in the pasture or stall, the contrary is the truth; but when the butcher merely buys what are termed the valuable parts, and receives the offal into the bargain, he will unquestionably, for obvious reasons, give more for two cows of twelve stone each a quarter, than for one of twenty-four. The offal is of much greater value, besides a considerable advantage in the hides. The difference between the weight of the animals, when living, and of the four quarters, when dead, is always in an inverse proportion to their sizes, when their forms and merits are equal; but the bones will then be in proportion to the living weight, and therefore, it is concluded, small animals must be, in this case, most disadvantageous to the consumer." However, as the flesh of large animals, from the greater size of their muscles, would appear to be more coarse in the grain; it is probable, that upon the whole, it must sell at a lower price in the market. It has likewise been supposed

supposed to be an advantage on the side of large animals, that the meat, when preserved, retains the juices more perfectly, and that there is less waste in out-sides.

On the supposition that small sized animals are in general more hardy than large ones, Mr. Knight remarks, "that if it be meant merely that they are capable of subsisting on shorter herbage, it is right; as a large animal, though it may have exactly the same form as the small one, necessarily requires more time for rest. It feeds and removes itself with greater labour; and notwithstanding it may be as strong again, as having double the weight, it will still, in relation to itself, be a weaker animal. Its head and neck will be as heavy again, and from their greater length, the weight will recede farther from the centre of motion in the shoulder, consequently increase in power in proportion to the distance: and the same thing holds good in respect to the whole of the limbs." But that "in the stall or the fold, where large oxen are mostly fed, these disadvantages are of no consequence, as the food is received without the trouble of looking for it; and if the necessity of a better pasture does not proceed from the large animal consuming much more, but from less power in collecting food, the consequence will be, that it must afford the largest weight of flesh with the smallest consumption of grass."

With regard to the injury done to the ground by poaching, being greater in large than small sized animals; the same writer observes, "that the question is not, whether the feet of the former be wider in proportion to their weight, but whether the feet and mouths of two small animals will not injure the herbage more than those of one large one." In favour of the latter it is contended, that small sheep do not produce any mischief at all in this way, yet that a score, weighing a ton in the aggregate, will do more harm to a rich pasture in forty-eight hours, than an ox of the same weight in a week. But though this may, in some degree, be true, there cannot be any doubt, but that small stock may be kept longer in the pastures in the autumn, than large, without mischief by poaching, which is a great advantage in many cases to the farmer.

In milking stock the advantage is allowed to be on the side of small size, as such animals give, individually, nearly the same quantity of milk as those of the large kind, and are capable of being supported on shorter herbage, without injuring the land in the same degree.

There are likewise advantages in the small sized animals, in their being capable of being wholly fattened on grass without the aid of other more expensive kinds of food, and on inferior pastures, as well as in their being procured by the grazier with greater facility; being more adapted to the circumstances of different situations, and the loss being less, in case of accidents.

It is evident, therefore, that as each size of stock has advantages, under particular circumstances, the breeder should be chiefly regulated in his conduct by the nature of his pastures, and the command he has of other sorts of food.

In respect to the *disposition* of animals, there can be little doubt but that it must be advantageous to the farmer to have them tame and gentle without their being sluggish or too dull, as they will be not only less disposed to ramble, but be fed, reared, and fattened with less trouble, and with a smaller proportion of food. That this property is much influenced by the mode in which the animals are reared is fully seen by the facility with which they were managed in the practice of Mr. Bakewell.

The quality of *hardiness* is likewise extremely desirable and interesting to the grazing farmer, in most cases, but particularly in bleak and exposed situations, as such sorts of stock constantly succeed better, and keep themselves in more per-

fect condition, than those in the contrary circumstances. It is probable that this property depends in a considerable degree on the nature of the breed, and the manner in which the animals have been reared. It has often been supposed to be denoted by a darkness of colour, and a roughness in the hair; but to these there are numerous exceptions.

Quickness of arriving at maturity is another quality that greatly interests the breeding farmer, as his profits are obviously much influenced by it. And it is likewise of much importance to the public, as the abundance of supply must obviously be much connected with it. The length of time that different sorts of live stock may be kept with advantage, under different circumstances, has, however, not been yet well ascertained, but neat cattle may generally, it is supposed, be kept longer with profit to the farmer than sheep. It is obvious, however, that the method in which the animals are treated in respect to food must greatly influence the matter, as where they are abundantly supplied at all times, and of course constantly preserved in a thriving state, they will, without doubt, arrive much earlier at a state of maturity, than when the contrary is the case. In all sorts of stock this must invariably be the consequence. It has, indeed, been well observed, by Sir John Sinclair, that where the animals are constantly well fed, a greater progress will be made in three years, than in the common pinching mode can be made in five. The necessity and advantage of not suffering live stock of any kind to be restricted, especially in their more early growth, from the want of due care, food, and warmth, are therefore sufficiently clear, and should never be disregarded by the breeder in rearing of his stock.

In addition to the observations that have been already made on the *nature of the flesh* of animals, it may be remarked, that its goodness probably in a great measure depends on the breed being a quality inherent in the muscular substance. Mr. Marshall has indeed observed, in the Rural Economy of the Midland Districts, that there "the grain is clearly understood to depend wholly on the breed, and not, as has been heretofore considered, on the size of the animal." Experiments are wanting to shew how far the flavour and colour of the flesh of different animals may depend on or be influenced by the nature and quality of the food on which they are fed, and on the breed. The common notion of its being in some degree connected with the colour of the skin of the animal, is most probably without any real foundation. The great deviations that have sometimes been observed in the flesh of animals from the natural appearance, can only be accounted for on the supposition of their being diseased. It is remarked in a late work on practical agriculture, that "in the living state the proofs of good flesh are a mellow, elastic, rather firm feel, without any degree of harshness, and in the dead condition a similarity of feel, with a fine grain and marbled appearance." There may likewise be some difference in the quality of the flesh of animals in proportion as they are more old or young, being in the former case more hard and less tender and juicy than in the latter. The fineness of the grain may also vary according as the animal is male or female, being in general coarser in the former than the latter.

The *disposition to fatten* readily while young is another property which has some relation to that just noticed; and which greatly interests the profits of the grazing farmer, as where it does not occur, a large proportion of food must often be consumed to little or no advantage. It is well known, that some animals of different kinds, and some particular breeds of different sorts of animals, become readily fat with but a trifling consumption of food, while others that consume in a vastly increased proportion have not the

least appearance of attaining such a state ; but the principle on which this depends has not been yet fully ascertained. From the little knowledge that has been obtained on the subject, it would seem to be a quality some way or other connected with the smallness of bone. In the experience of Mr. Bakewell and some other intelligent breeders, it was found to depend much upon the goodness of form and the breed. But whether it depends on these, or is the consequence of some particular state or structure of the digestive or other internal organs, it is evidently of great importance to the farmer to have such animals as not only fatten readily, but in many cases, as can be supported on the inferior sorts of food. The opposition that has been made to the utility of this quality on the score of the over-fattening of animals, and the supposition that such fat meat is less useful, as well as less economical in the consumption, is probably without any foundation in truth or just observation, as the grazier has no other means of increasing the quantity of lean meat in his feeding stock, but through the medium of the fattening property. This quality should of course be constantly kept in view by the breeder in raising of his stock, whatever the kind may be.

The state of the *hide or skin* is likewise a circumstance that should be attended to in the breeding of animals, as showing, in some degree, their disposition to become fat. When it has a soft silky feel there is mostly a disposition in the animal to fatten in an expeditious manner, and it is supposed to have an advantage in being more distensible, and of course more adapted to admit a large increase of flesh. Thick hides may, however, have advantages in cold exposed situations, where warmth is more particularly necessary to the animals.

The quality of furnishing a large supply of *milk*, with the least possible expenditure of food, is another property in animals that ought not, by any means, be overlooked by the breeding farmer. How far a separate and distinct breed should be provided for this purpose, or one partly adapted to this use, and partly to that of the butcher, be employed, is a point that has not yet been determined ; but as it is well known, that such cows as have much tendency to fatten seldom or ever afford any large quantity of milk ; there should probably be a breed exclusively for the purpose of the dairy. Sir John Sinclair has, however, suggested it as probable, " that, by great attention, a breed might be reared, the males of which might, in every respect, be well calculated for the shambles ; and the females, when young, produce abundant quantities of good milk, yet, when they reached eight or nine years of age, be easily fattened." It is supposed that this would be the most valuable breed that could be produced, and that some of the Scotch breeds have nearly attained such a state of perfection.

The capability of performing *labour* in an easy and proper manner is another property, that, in many cases, demands the attention of the breeder, especially in neat cattle and horses ; but in respect to the former sort of stock, it has not yet been, by any means, decided, whether there be any advantage in the increase of meat by working the animals, or whether there may not be some disadvantage in their growth being retarded by the practice. It cannot, however, be disputed, but that where cattle are made to undergo much labour, they must be a greater length of time before they can be in a proper state to be brought to the market ; and it would seem that the growth of the animals must also be lessened ; however, as they are capable of being reared and kept at a much cheaper rate than horses, a breed well calculated for this use may, in many instances, be an object of great consequence to the farmer.

The inherent property of a breed, or what is usually termed *blood*, is likewise a quality that has engaged the attention of the breeder in the raising of live stock. This is mostly shown in the external appearance, and of course may serve to guide the judgment of the grazier in choosing such animals as may be the best suited to such improvements as he may have in contemplation.

Such are the principal points to which the attention of the breeder should be directed in his attempts at improvements of this nature, as well as the means by which they are chiefly to be accomplished. And it has been remarked by Dr. Dickson, in his *System of Practical Agriculture*, that " the success of his endeavours, to whatever species of excellence his attention may be directed, must obviously, in a great measure, depend upon the accuracy and correctness of his judgment in choosing those breeds, of whatever sort of live stock they may be, that are most adapted to his circumstances ; and in selecting such individuals, both male and female, of such breeds, as are the most perfect and exact in their different parts and properties ; cautiously, continuing to breed from them, without ever suffering the least intermixture by the admission of those of inferior qualities ; advancing in this way, with the nicest attention to such faults or defects, however trifling, as may arise, so as to alter and correct them by appropriate pairing in the succeeding generations. And as an indispensable assistant in this arduous undertaking he must constantly have recourse to the aid of good and abundant keep at all seasons, with suitable degrees of shelter and warmth for both the old and young stock ; so that they may never decline in flesh or be checked in their growth." This, continues he, " would seem to constitute the great secret of the important art of breeding live stock, which the superior discernment and unwearied perseverance of a single individual raised to a degree of notice and perfection that has had the happiest effects in bringing the improvement of our domestic animals to a state of excellence perhaps unequalled in any other country." See **CATTLE** and **LIVE STOCK**.

BREEDING of fish. See **FISH-pond**.

BREEDING of horses, dogs, &c. See **HORSE, &c.**

BREEF-cards, denote a kind of false cards, either longer or broader than the rest, whereby they may be known and distinguished.

BREEN, G. V. in *Biography*, an engraver of some merit, whose time is not ascertained, who worked entirely with the graver, and imitated the style of James de Gheyn, from whom he probably received his first instructions ; though he never equalled his master, either in correctness of design, or mechanical execution. Strutt.

BREENBERG, BARTHOLOMEW, called **BARTOLOMEO**, a painter and engraver, was born at Utrecht in 1620, and went, at an early period, for improvement to Rome ; where the society of Flemish painters, called " Bentvogels," distinguished him by the appellation of Bartolomeo. Among the superb ruins and beautiful objects, in and about this city, he acquired an elegant taste ; and he peculiarly excelled in landscapes, which he enriched with historical subjects. The figures and animals, which he introduced, were elegantly disposed, and executed with spirit and freedom : especially when they were not larger than the small size, in which he usually painted them. His manner, particularly with respect to colouring, gradually improved ; his touch is light and spirited, his tone of colouring very pleasing, his taste altogether of the Roman school, and his pictures are distinguished both by force and delicacy. The draperies of his figures, which are gracefully proportioned and designed, are easy and ornamental, and in his smallest figures, the expression

pression is lively, sensible, and natural. His pictures are exceedingly rare, and highly valued. We have of his etching a set of 24 views, and landscapes, ornamented with ruins, &c. from his own designs. He died in 1660. Pilkington and Strutt.

REESEBACH, in *Geography*, a river of Germany, which runs into the Unstrut, 4 miles S. of Weissenfee, in the circle of Upper Saxony.

BREEZE, a shifting wind, blowing from the sea and land alternately, during certain hours of the day or night; only sensible near the coasts.

The sea-breeze, Dampier observes, commonly rises in the morning about nine, proceeding slowly in a fine small black curl on the water towards the shore: it increases gradually till twelve, and dies about five.—Upon its ceasing, the land-breeze commences, which increases till twelve; and is succeeded in the morning by the sea breeze again. The sea-breezes rule by day, and the land-breezes by night; so that, dividing their empire, they remain as constant as the seasons of the year, or course of the sun, on which they seem alone to depend; not but that they appear sooner or later, stronger or weaker, in some places than others, and vary the alternative according to the several latitudes, situations, soils, mountains, valleys, woods, and other circumstances of the countries where they are found.

In some countries, the sea-breezes appear only to be efforts of the general or trade-wind, as at Barbadoes, and in many places between the tropics, where the general wind, if not impeded by mountains or islands, blows fresh in the day-time, but, after sun set, the terrestrial exhalations becoming precipitated, produce a new wind, which is not only able to make head against the trade-wind, but to repel it from their coasts.

The sea-breezes do not all come from the same point of the compass, but from different points as the land lies.

In Brazil and many of the Caribbee islands, they have no land-breeze, especially if the shores lie low, as at Barbadoes, where the general or eastern wind blows from one end of the isle to the other, and serves instead of the land-breeze. In other places they want the sea-breeze, especially between the tropics, in coasts which lie westerly, as in the western kingdoms of Africa.

If either the easterly or westerly winds blow fresh, they hinder both the land and sea-breezes in the Mediterranean; of which those are always found the weakest which rise latest. In England, in very hot days, and when no other winds are stirring, the like alternation of land and sea-breezes may be observed on our coasts, though with little certitude, any where to the northward of Portugal.

Breezes are more constant in summer than in winter, and more between the tropics than in the temperate zone.

The general cause of those alternate breezes which set on and off the coasts in hot countries, is the greater rarefaction of the air by reflected heat, and by fermenting exhalations over the land than over the water: the denser air from the water becomes a sea-breeze in the day; but this air, condensed again, by the cold of the night, may then occasion a land-breeze.

The cause of this alternation of sea and land-breezes may be familiarly illustrated by placing a common pewter water-pipe in the midst of a large vessel, and filling the former, the one with hot water, and the latter with cold, and holding a taper just blown out at the edge of the plate; in which case, the smoke will be observed to gather over the plate which has heated, and of course rarefied the superincumbent air; but if this experiment be inverted, and the plate filled with cold water, whilst the larger vessel is filled with hot water, the smoke of the taper, held near the plate, will be

seen to move towards the rarefied air that rests over the hot water in the larger vessel.

Breezes differ from *cliffs*, or trade-winds, as the former are diurnal, or have their periods each day; and, besides, they are only perceived near the shore or coast; whereas the latter are anniversary, and blow at a distance from land. Phil. Trans. N° 183. p. 158. See WIND.

BREEZE, in *Brick-making*, are small ashes and cinders sometimes made use of instead of coals, for the burning of bricks. But as this does not so well answer the end, the use of it was prohibited by 12 Geo. I. cap. 35. but allowed by 3 Geo. II. cap. 22. 10 Geo. III. cap. 49.

BREEZE-fly. See OESTRUS and GANDLY.

BREFFNY, in *Geography*, the name of an ancient district of Ireland, which included the present counties of Cavan and Leitrim, with part of Longford. It was divided into east and west, and is frequently mentioned in the history of Ireland, as it was not divided into counties until the reign of James the 1st.

BREG, a small town of Switzerland, in the Valais, near the river Drone. N. lat. 46° 7'. E. long. 7° 16'.

BREGANCON, a fortress of France, situate on a small island in the Mediterranean, near the coast between Toulon and St. Tropez.

BREGANZA, a small place of Italy, in the territory of Vicenza, famous for a luscious wine produced in its neighbourhood.

BREGE, a small river of Germany, in the circle of Swabia, which joins the Bribach, below the town of Donefchingen.

BREGENTZ, or **BREGENZ**, in Latin, *Comitatus Brigantius*, a county of Germany, in the circle of Swabia, but annexed to the circle of Austria, bounded on the north by the territory of Wangen, on the east, by the bishopric of Augsburg, and the county of Tyrol, on the south, by the counties of Pludentz and Montfort, and on the west, by the Rhine and the lake of Constance. It anciently belonged to the counts of Montfort: but in 1451, part of it was sold to the archduke Sigismund for 35,592 Rhenish florins; and in 1523, the other part was sold for 50,000 Rhenish florins, to the archduke Ferdinand. The capital of the same name is situated at the east end of the lake of Constance; it has several iron works in its vicinity, and an adjoining citadel seated on a mountain, and named Pfannenbergl. To the south of the town is the "Bregenz-clans," which is a strong pass. This town was taken by the French on the 5th of August 1796. It lies 60 miles E. N. E. of Zurich. N. lat. 47° 31'. E. long. 9° 50'. The river Bregenz runs into the lake of Constance near the town.

BREGLIO, in *Geography*, a small town of Piedmont, in the county of Nice, seated on the river Rodia.

BREGMA, or **FONTANEL**, in *Anatomy*, is a space left between the parietal or frontal bones in the fœtus, in which the pulsation of the brain may be felt. There is frequently a similar vacancy between the parietal and occipital bones which is termed the posterior frontal. See CRANIUM.

BREGNANO, in *Geography*, a small town of Italy, in the duchy of Milan, seated on the river Sevese.

BREGNO, **VALDI**. See BRENNA.

BREHIAL, a town of France, in the department of the Channel, and chief place of a canton, in the district of Coutances, 3 leagues S. S. W. of Coutances. The town contains 1373, and the canton 14,251 inhabitants; the territory comprehends 197½ kilometres, and 16 communes.

BREHAN LOUDIAC, a town of France, in the department of Morbihan, 6 miles N. of Josselin.

BREHAR, or **BYER**, the name of one of the Scilly islands, lying about 30 miles directly west of the Land's End

in Cornwall, N.W. of St. Mary, and W. of Trefcaw, two other islands. It is mountainous and rocky, contains several barrows and monuments of the Druids, and is inhabited by 30 families. It abounds with sea and land fowls, excellent samphire, and a variety of medical herbs. N. lat. 50° 2'. W. long. 6° 47'.

BREHEMONT, a town of France, in the department of the Indre and Loire; 4 leagues W. of Tours.

BREHNA, a small town of Germany, in the circle and electorate of Upper Saxony, and in the prefecture of Bitterfeld, having both seat and voice at the provincial diets; 12 miles E.N.E. of Halle.

BREHONS, in *Antiquity*, hereditary judges belonging to the inferior provincial kings, and also to the nobles or chieftains, among the ancient Irish, by whom justice was administered, and controversies decided.

These sages were a distinct tribe or family, to whom competent lands were allowed in inheritance. One of these seems to have belonged to each sept or tribe; and they sat to try causes in the open air, either on the summit of a hill, or on its acclivity, as had been the custom of the Druids; and in such places the Irish continued also to hold their provincial assemblies, where all differences or complaints between districts and districts, and even private causes of extraordinary importance or difficulty, were heard and determined. To these meetings they came armed, some on horseback, and some on foot, as was usual among all the ancient colonies of the Celts in their public consultations. *Brehons'* chairs, or mounts, which are supposed to have been appropriated to this purpose, are found in many parts of Ireland. Dr. Ledwich has given a view of one of them, seated on the hill of Kyle, in the Queen's county. Campion speaks of such lawyers in 1570, who, after the custom of the country, determined and judged causes; to which Stanishurst adds, that they were entirely unacquainted with the English, the canon, and civil law; that their determinations were founded on no solid rules, but on precedents sanctioned by time and usage; and that these were kept profound secrets, by which they acquired admiration, and maintained their influence. An old man, the principal brehon in the part now called Monaghan, is mentioned by sir John Davies, attorney-general of Ireland in the reign of James I. (see his *Tracts*), as being summoned before the lord chancellor, himself, and some others, when on a tour through the north, in 1606; and on a solemn promise of its being returned to him, he produced a roll out of his bosom, written on both sides in a fair Irish character, but worn and defaced with time and ill-keeping. Of the rules of the law by which the brehons determined causes, sir John Davies delivers this opinion: "If we consider the nature of the Irish customs, we shall find that the people which doth use them must of necessity be rebels to all good government, destroy the commonwealth wherein they live, and bring barbarism and desolation upon the richest and most fruitful land of the world. For, whereas by the just and honourable law of England, and by the laws of all other well governed kingdoms and commonwealths, murder, man-slaughter, rape, robbery, and theft, are punished with death; by the Irish custom, or brehon law, the highest of these offences was punished only by fine, which they called an "erike." He thus describes the mode of imposing it: "For offences and matters criminal, none was of so heinous a nature, that it was capital; for treason against the chief lord and murder, were fineable; the fine they called an "erike," which was assessed by the lord and his brehons. In case of treason, the lord had all the fine; in case of murder, the lord had one moiety, and the kindred of the party slain the other moiety; so as they never forfeited their possessions or their lands for any offence. Howbeit their lands were seized by the lords

for their fines, until the same were levied thereupon, and then restored. Rape was fineable in like sort; but theft deserved praise and reward, if the stealth were brought into the country, because the lord had a share, and the country thereby became the richer. But the theft being committed in the country and carried out, if the thief were apprehended before his friend made offer of his fine, he was commonly punished with death. But the lord, in that case, might take an "erike," if he would. The brehons, assisted by certain scholars, who had learned many rules of the civil and canon law, gave judgment in all causes, and had the eleventh part of the thing adjudged for their fee; and the chief's lord marshal did executions." Having described the Irish customs of tanistry and gavel-kind, he thus concludes: "These are the principal rules and grounds of the brehon law, which the makers of the statutes of Kilkenny did, not without cause, call a "lewd custom;" for it was the cause of much lewdness and barbarism. It gave countenance and encouragement to theft, rapine, and murder; it made all possessions uncertain; whereby it came to pass, that there was no building of houses and towns, nor education of children in learning or civility, no exercise of trades or handicrafts, no improvement or manuring of lands, no industry or virtue in use among them; but the people were bred in looseness and idleness, which hath been the true cause of all the mischiefs and miseries in that kingdom."

BREHON-laws denote the general maxims, or rules of law, observed by the brehons, and having the force of law throughout all the provinces of Ireland, previously to the settlement of the English.

Several fragments of the *leges brehonicæ* are still extant in public and private libraries. The most complete collection is that belonging to the duke of Chandos, containing twenty-two sheets and an half, close written, full of abbreviated words, and not very legible. This collection, falling into the hands of sir J. Sebright, was given by him to the university of Dublin, and forms 28 volumes. These laws resemble those of other ancient people, in the order of succession called tanistry, and in appointing fines for murder and other heinous crimes. From the resemblance of some of them to those of Asiatic countries, general Vallancy has endeavoured to strengthen his arguments in favour of the oriental origin of the Irish; whilst Dr. Ledwich urges the similarity of the same laws to the laws and customs of the ancient Germans and the northern tribes, in favour of the truth of Spelman's assertion, that the Irish are "Germanorum nepotes," of German origin. Dr. Ledwich asserts, "that the Irish erics are plain transcripts of the Salic and other weregilds in Lindenbrog's German codes." The reader who is desirous of further satisfaction in this inquiry, will find most that has been said respecting the origin of the brehons in Dr. Ledwich's "Antiquities of Ireland," and in the "Collectanea de rebus Hibernicis," and other works of general Vallancy. The latter gentleman has published a translation of some parts of the code, in the 10th number of the "Collectanea."

At the time of the conquest of Ireland by king Henry II. A.D. 1172. the Irish were governed by the brehon law; but the laws of England were then received and sworn to by the Irish nation, assembled at the council of Lismore. King John, in the 12th year of his reign, carried over with him into Ireland many able sages of the law; and there by his letters patent, in right of the dominion of conquest, is said to have ordained and established, that Ireland should be governed by the laws of England; which letters patent sir Edward Coke (1 Inst. 161.) apprehends to have been then confirmed in parliament. But to this ordinance many of the Irish were averse from conforming, and still adhered to their

their brehon law; so that both Henry III. (A. R. 30.) and Edward I. (A. R. 5.) were obliged to renew the injunction; and at length, in a parliament holden at Kilkenny, 40 Edward III. under Lionel duke of Clarence, the then lieutenant of Ireland, the brehon law was formally abolished; it being unanimously declared to be indeed no law, but a lewd custom crept in of later times; and it was enacted, that no English subject shall submit to a trial by this law, on the penalty of high treason. And yet, even in the reign of queen Elizabeth, the wild natives still preserved their brehon law, which is described by Edm. Spenser (*State of Ireland*), to have been "a rule of right unwritten, but delivered by tradition from one to another, in which oftentimes there appeared a great shew of equity in determining the right between poor and party, but in many things repugnant quite both to God's laws and man's." As to the prevalence of this law among the Irish, this writer further observes, that "dwelling as they do, whole nations and sept of the Irish together, without any Englishman amongst them, they may do what they list, and compound, or altogether conceal, amongst themselves, their own crimes." Some writers have spoken of these laws, as if they were peculiar to the Irish, and an evidence of their barbarity; not duly considering, that when they were established, many other nations had similar laws; and that if the English had taken proper pains to introduce their improved institutions, and to settle the country under any kind of regular government, they would, in all probability, have been able, though not without difficulty, to effect it. The civilization and improvement of Ireland seem, however, to have engaged little attention till the reign of James I.; who "proceeded in this work," says Hume (*History of Great Britain*, vol. vi. p. 58.), "by a steady, regular, and well concerted plan; and in the space of nine years, according to sir John Davies, he made greater advances towards the reformation of that kingdom, than had been made in the 440 years which had elapsed since the conquest was first attempted." The legislative union, reserved for the reign of George III. affords a prospect, under regulations, proposed by a select committee of the House of Commons, and enforced by suitable sanctions, of further improvements, conducive to the remedy of the peculiar disorders of Ireland, and to the promotion of the real interests of both countries. See *UNION*.

BREIDDYN-HILL, in *Geography*, lies on the border of Shropshire, and occupies a large space between Montgomery and the vale of Severn. It consists principally of a coarse argillaceous schistus, blended in some places with small rhomboidal crystals and a calcareous spar. The summit of this hill, near the pillar erected in honour of admiral Rodney, affords a very extensive and delightful prospect, extending over the vales of the Severn, Fyrnwy, and Taned, as far as Plinlimmon, Cader-iddris, and Aran-ben-lllyn, whose pointed tops agreeably diversify the line of the horizon. This was a favourite situation of Llewelyn the Great, about the year 1240.

BREIDEMBACH, a town of France, in the department of the Moselle, 5 miles north of Bitch.

BREISCH, a town of Germany, in the circle of Upper Saxony, and duchy of Croffen; 8 miles S. of Croffen.

BREITENBACH, a town of Germany, in the circle of Upper Saxony, and county of Schwartzburg, seated on a small river of the same name, in the midst of woods, fields, hills, and vallies, with two churches and 400 houses; 12 miles S. of Erfurt. On the river, in its vicinity, is a mine yielding sulphur, alum, and vitriol.

BREITENBURG, a lordship and parochial village of Germany, in the duchy of Holstein, and circle of Itzehoe, seated on the river Stor, two miles S. of Itzehoe.

BREITENECK, a town of Germany, in the circle of Bavaria, which gives name to a lordship, situate in the upper palatinate, and contributing to each Roman month 20 florins, and to each chamber term 35 rix dollars. The fief estates of this seignory belong to the elector of Bavaria, and the allodial to the counts of Montfort, in which is the town, which has a citadel, and is distant 3 miles N.E. from Dietfurt.

BREITHORN, and **BREITLAUINEN**, peaks of the Jungfrau, or Virgin, in the canton of Bern, in Switzerland.

BREITKOPF, JOHN GOTTLÖB IMMANUEL, in *Bio-graphy*, an ingenious printer, letter-founder, and bookseller of Leipzig, was born in that city, Nov. 23, 1719. In early life he manifested a strong attachment to the sciences, and acquired a considerable acquaintance with the languages, particularly the modern ones. When he joined his father in business, he commenced the study of mathematics; and after the perusal of a work of Albert Durer, in which the shape of the letters is deduced from mathematical principles, according to which the first printing types were formed, he made the improvement of the art of printing a principal object of his attention. Accordingly, he began with delineating the form of types mathematically; and he endeavoured to fashion them according to the most beautiful models, which he could procure by an extensive research among the English, French, Dutch, Flemish, and Italians. By his ingenuity and diligence, employed in this way, he obtained new and improved figures of characters, and had them cast in matrices cut for the purpose. Thus his printing-office and letter-foundry acquired very high reputation, as being the most complete in the world, not excepting those of the society "de propaganda" at Rome, and containing punches for 400 alphabets, with an equal number of matrices, and a very copious assortment of ornaments. Whilst he was assiduous in prosecuting every mode of improvement, he indulged no mean jealousy in contemplating the inventions of others in a similar way; but, on the contrary, he employed the types of Baskerville, and duly appreciated the value of those of Didot. Breitkopf found by his various and extensive researches, that engraving in wood had given birth to printing; and that the latter had contributed to the improvement of engraving. He was thus led to transfer some particulars, in the province of the engraver, to that of the printer; and with this view he made his first experiment on musical notes, and contrived to represent by the typographic art, all the marks and lines which occur in the modern music, with no less accuracy than that with which they are represented by engraving. Recurring to mathematical principles, he succeeded, in 1755, in bringing this art to its present degree of perfection. He proceeded to print maps with moveable types, and in 1776, accomplished, after encountering many difficulties, the object at which he aimed. This, however, he considered as a matter of mere curiosity; and such was also another attempt, which was that of copying portraits by moveable types. In 1793, he directed his attention to another object of greater utility; which had long been considered as impracticable, and on which large sums had been expended without avail. This was that of printing, with moveable types, the Chinese characters, which are, in general, cut in pieces of wood, so that a whole house is often necessary to contain the blocks employed for a single book. After some trials he at length succeeded; and having sent specimens to the pope, he returned him thanks in the politest manner by cardinal Borgia. His next attempt was that of printing mathematical figures in the same manner; but though he surmounted all obstacles by his persevering exertions, his numerous engagements prevented the completion of his design. Breitkopf directed his attention to the

improvement of type-metal, particularly by giving it that degree of hardness, which has been a desideratum in foundries of this kind. He discovered likewise, a little before his death, which happened on the 28th of January, 1794, a new method of facilitating the process of melting and casting; but this he concealed for the benefit of his heirs. From his foundry, which employed 12 furnaces, and 39 workmen, types were sent to Russia, Sweden, Poland, and even America. He introduced also several improvements in his presses, which were freely presented to the inspection of those who visited his printing-house.

Besides his mechanical inventions, which occupied much of his time and attention, his researches into the origin and progress of the art of printing were very considerable, and furnished the materials of a history, which he left behind in manuscript. Of this larger work, he published, in 1774, an account, in a small treatise, containing, among other particulars, a refutation of the opinion of those who pretend that printing was first employed at Florence, Wirtzburg, or Antwerp. In 1784, he published the first part of a work, entitled "An Attempt to illustrate the origin of playing-cards, the introduction of paper made from linen, and the invention of engraving on wood in Europe." The latter part of this work was finished, but not published, before his death. His last publication was a small "Treatise on Bibliography, &c." published in 1793, and containing extracts from his larger works, with his reasons for retaining the present German characters, and a refutation of some assertions respecting typography. Breitkopf was distinguished by his assiduity and perseverance; and devoted his whole life to study and useful employment, with the interruption of only five or six hours in the 24, which he allowed for sleep. Schlichtegroll's Necrology. Gen. Biog.

BREITZENHEIM, in *Geography*, a lordship of Germany, in the circle of the Lower Rhine, on the Nahe, near the town of Creutznach, and deriving its name from an old castle now in ruins. In the matricula of the empire it is assessed at six florins, in that of the circle at 8, and pays to the chamber of Wetzlar 3 rix-dollars, 13½ kreutzers. Its inhabitants are partly Roman catholics, and partly Lutherans.

BRELADE'S, SAINT, a bay on the south coast of the island of Jersey, which takes its name from a village, 5 miles W. from St. Helier.

BRELANDS, a town of Norway, 7 miles W.N.W. of Christiansand.

BRELLES, a town of France, in the department of Finisterre, and district of Brest; 3½ leagues N.W. of Brest.

BREM. See PREM.

BREMA, a town of Italy, in the Milanese, near the conflux of the Sessia and Po, on the frontiers of Montferrat; 28 miles W. of Pavia.

BREMBO, a river of Italy, which rises on the frontiers of the Valteline, and discharges itself into the Adda, about 8 miles from Bergamo.

BREME, a cape which forms the south-eastern side of the mouth of Oroonoko river, opposite to cape Araya, in South America.

BREMEN, a duchy of Germany, in the circle of Lower Saxony, bounded on the north by the German sea and the Elbe, on the east by Holstein, Luneburg, and Verden, on the south by Verden, Hoya, and Diepholz, and on the west by the Weser, Oldenburg, and the German ocean. Its greatest length is about 60 miles, and breadth about 40. The face of the country is level, and it is almost surrounded by the Elbe and the Weser. The air is cold; but the country is fertile and well-peopled. The Elbe, Oste, and

Weser, are bordered with very rich marsh lands; those on the Elbe produce plenty of grain and fruit; those on the Oste are also very productive of grain, and yield a clay for vessels, and a kind of free stone; the soil on the borders of the Weser, besides being fertile in grain, supports likewise large breeds of cattle. Between Bremen and Stade, the country is either a barren sand, or a morass. In order to guard the lands against the inundations of the rivers, dykes and dams have been erected, and are kept in repair at a great expence; and yet in winter they are frequently so much overflowed, that the inhabitants are obliged to make use of long poles to leap over the ditches and other waters, in passing from one place to another; and the inundations of the Weser in particular are such, that cities and villages appear like so many islands in the midst of a sea. The champaign country has, in some parts, good corn land; the heaths are covered with sheep; and the culture of bees is an object of particular attention. On the moors are dug great quantities of turf, which is exported to Bremen and Hamburg, and used in brick-kilns, the glass-house, and as fuel in private houses. This country yields likewise much flax. The inhabitants likewise, by their situation between navigable rivers, have been induced to turn their thoughts to trade. They have the reputation of being good soldiers; but on account of the marshes and inundations of the country, they are subject to agues and fevers, and are hence led to indulge the habit of drinking much brandy. Reifbeck describes them as yellow-skinned, soft-fleshed, and full of wrinkles; and their small round figures form a striking contrast with the tall Germans of the southern parts. Few-rosy cheeks are observed either among men or women.

The duchy of Bremen was formed out of an archbishopric, which was originally a bishopric, founded by the emperor Charles the Great in 787 or 788, of which Willehad, an Englishman, was the first bishop. In 858, the see was incorporated with Hamburg, as the archbishopric of the northern nations; and the archbishops gradually got into their hands the counties within the diocese of Bremen, and acquired the sovereignty over it. But after the death of the archbishop Roden in 1511, the chapter elected archbishops out of princely families; in 1644, the Swedes made themselves masters of Bremen; and in 1648, at the peace of Westphalia, it became a duchy and fief of the empire. In 1675, the duke of Brunswick and Luneburg, in conjunction with the bishop of Munster and some Danish forces, overran this duchy as far as Stade, which place was taken in the following year by the Luneburg troops. The conquerors first thought of sharing the duchies of Bremen and Verden between them; but Sweden kept the whole to herself, except some small part of it, which was restored to the dukes of Brunswick and Luneburg, at the peace of Nimeguen in 1679. During the northern war, the Danes, in 1712, reduced the duchies of Bremen and Verden; and in 1715, Frederick IV. transferred them to the elector of Brunswick, in lieu of the sum of 700,000 rix-dollars. In 1719, by the peace of Stockholm, they were ceded by the crown of Sweden for ever to the elector of Brunswick, together with all their rights and appurtenances, in the same manner as they had been granted to Sweden by the treaty of Osnabruck; for which renunciation the elector paid Sweden a million of rix-dollars. In 1732 the elector obtained the emperor's investiture for Bremen and Verden. The elector of Brunswick, as duke of Bremen, possesses in the college of princes, the sixth seat on the bench of temporal princes, and in the diet of Lower Saxony, exclusively of a vote, is alternately director with Magdeburg. The assessment of the duchy to a Roman month, is 24 horse and 100 foot, or 688 florins, which is also its contingent to the matricula
of

BREMEN.

of the circle; and to the imperial chamber at Wetzlar, it pays 108 rix-dollars, 22½ kreutzers. The duchies of Bremen and Verden are jointly under the following colleges; viz. the regency, consisting of three counsellors, and subordinate to the privy-council at Hanover; and the chancery, composed of the three counsellors of regency, a director, and certain judiciary counsellors, and taking cognizance of criminal and executive cases. In the high court of justice sit all the members of the chancery, with seven assessors, nominated by the states of each duchy; viz. three by the Bremen nobility, two by Stade and Buxtehude, one by the nobility of Verden, and one by the town. The chief branches of the sovereign's revenue are those of the demesne bailiwicks, districts, and jurisdictions, with the regalia; certain payments arising from the subjects, as excise, and the monies for the maintenance of the high court of appeal at Zell, for furnishing forage, &c.

In the whole duchy there are but two cities, viz. Bremen and Stade, and 12 market towns. The states of Bremen consist of the nobility, and the deputies of the towns of Stade and Buxtehude, whose privileges are the same with those of Verden. An assembly of all the states, or a diet, cannot be held without the knowledge and consent of the regency; but the nobility may assemble twice a-year at Basdal, without giving any previous notice to the regency. All the inhabitants, except those who belong to the free states, and who have a right to sit and vote in the diets, are taxable: and the number of taxable hearths is 22,276. The established religion is Lutheranism; the number of Lutheran churches is 118, under the superintendency of more than this number of pastors; and the supreme inspection of the churches of this duchy and of the principality of Verden is vested in a general superintendent. The Calvinists form seven congregations, with a like number of pastors. The doctrine and institutions of the reformed church were introduced into the republic of Bremen in the 16th century. An attempt for this purpose was made so early as the year 1556, by Albert Hardenberg, the intimate friend of Melancthon; but it did not succeed till towards the close of this century, when no measures, either of prudence or force, were sufficient to prevent the church of Bremen from modelling its faith, worship, and government, after that of Geneva. The manufactures of this country, exclusively of cordage and linen, are those of cloth, flannel, kerseys, and other woollen stuffs, at Scharenbeck. Ammund, in the district of Lessum, has a sugar-refinery, and a porcelain manufacture. The principal rivers of the duchy, besides the Elbe and the Weser, are the Oite, the Schwinge, the Luhe or Aua, the Geeste, and the Lesum.

BREMEN, an imperial city of Germany, and capital of the duchy of the same name. This city lies on the banks of the Weser, which divides it into the Old and New town; joined by a large bridge, and another smaller one over a little branch of the same river. The streets of the Old town are very narrow; the houses, which are rarely more than two stories high, are, in general, old-fashioned and inconvenient, nor are the more modern built with great taste. The exchange, however, the Lutheran orphan-house, and a few other edifices, are in a much better style. The houses, both of the Old and New town, which are numbered, inclusive of the suburbs, are 5105; and Hoeck estimates the number of inhabitants at 40,000. The Old town is the largest and most populous, and is divided into four parishes. Most of the magistrates and principal merchants have their winter habitations in this town; but their gardens and summer residences are in the other. In the Old town stands the cathedral, which is an ancient Gothic structure, and which

belongs to the Lutherans. Under its choir is the "Bleykeller," or lead-cellar, so called because the lead, with which this building is covered, was cast there. It has the singular property of preserving from putrefaction the dead bodies which are put in it, and thus resembles the vaults of the Cordeliers and Jacobins in Toulouse. This city is governed by a council, that consists of four burgomasters, who preside by turns, each for six months, two syndics, and twenty-four senators, some of whom are jurils, and the rest merchants. The whole body is distributed into four courts, each consisting of a burgomaster and six senators. These magistrates elect their new colleagues, without consulting the citizens; but none can be chosen who are nearly related to any already in office. They may make any arrangement they think fit, with respect to the police; but they cannot enact any new law, nor alter any part of the constitution, nor impose any tax, without assembling the citizens; nevertheless, no resolutions of these latter are of any effect, unless approved by the council. The management of all public money is committed to deputies, appointed by the citizens, who act under the orders of the council, and must lay their accounts before their constituents. Their taxes are moderate; they who possess property exceeding 3000 dollars, pay a scot or tax on what they are worth, in which each is left to estimate his own possessions, and to ascertain the sum which he thinks he ought to pay. In doing this, the citizens are, in general, so conscientious and public-spirited, that most of them really contribute more than could strictly be demanded from them; but they are well satisfied that the revenues of their little state are wisely and frugally administered; and not walled in supplying the extravagances of princes, nor in diffusing corruption among the people and their representatives. The police of this city, it is said, is excellent; and not a beggar is to be seen in or near it; the magistrates taking care to furnish the poor with an opportunity of gaining a subsistence by industry. To the Jews, however, they are less tolerant and equitable; for they will not permit any of them to reside in the city, nor even to enter it, except during the fair. The predominant church at Bremen is the reformed, or Calvinist. Of this persuasion are the magistrates; though the Lutherans are not, by any law, excluded from the regency. Formerly they were sometimes chosen into these offices; but since the Calvinists have had undisturbed possession of the government, they have taken care to keep out all that are not of their own sect. This city was formerly an archbishopric; but so early as the 13th century, frequent disputes occurred between it and the bishops and chapter. Frederic, the last archbishop of Bremen, was frequently at variance with the city, opposing its appearance at the diet, though formally summoned to it; and in 1639 he conferred the cathedral on the Lutherans, which had been shut up ever since the year 1568. But in 1640, Bremen was summoned to the diet, and allowed a seat and vote on the Rhenish bench in the college of Imperial cities. In 1648, at the peace of Westphalia, both the city, its dependencies, and vassals were confirmed in their state-freedom, rights, and privileges, ecclesiastical as well as civil; and though disputes afterwards arose, the house of Brunswick and Luneburg, in 1731, voluntarily granted to the city that freedom which had been contested, and all disputes were brought to an amicable termination. In 1757, the French got possession of this city; but in the following year hastily abandoned it and were succeeded by a body of Hanoverians. In the diet of the empire it possesses the eighth seat on the Rhenish bench in the college of Imperial cities. Its matricular assessment is 320 florins, and its contingent to the chamber at Wetzlar 148 rix-dollars, 67½ kreutzers. The king of Great Britain, as elector of Brun-

wick, now claims all the authority which the prelate and chapter formerly enjoyed. He appoints the pastor of the cathedral, which belongs to the Lutherans; who, as such, are immediately dependent on the electoral government.

Bremen is supplied with water from the Wefer by means of a wheel turned by the stream, which raises it into a reservoir, whence it is conveyed to the several houses by subterranean conduits, at a very small expence. On the building which contains this machine is the following inscription:

“Volve Pater, Civi tradam tua dona, Vifurgis!”

Provisions of all kinds are much cheaper at Bremen than at Hamburg, or even in Hanover; and yet neither the commerce nor the wealth of Bremen is inferior, in proportion to its size, to those of the other Hanse towns; but the expensive luxury, which prevails in many trading places is unknown here, and the manners of the inhabitants are plain and frugal; of which one great cause is, that the town is very little visited by strangers. In this city there are many manufactures, exclusive of a very considerable trade. This trade consists in iron, flax, hemp, and linen, exported to England, France, Spain, and Portugal, and in returns of various other articles with which it supplies Westphalia, and the countries about Hanover. It is also a considerable gainer by its fisheries, and particularly the trade of blubber with the south of Germany. Bremen is famous for Rhenish wine; the sale of which is monopolized by the city, and it can be bought only at the public vaults. In one of these, as we are informed by baron Knigge in his “Letters written on a Journey from Lorraine to Lower Saxony,” published in 1793, wine is kept so very old, that if, to the prime cost, the accumulating interest of the money, the filling up, and other expences, were added, a bottle of it would amount to above a thousand dollars; but the baron does not vouch for the truth of this report. This precious liquor is only used by the magistrates on rare and grand occasions, and it is sometimes administered, by order of the president, to the sick.

The character of the inhabitants of Bremen, says this author, has been unjustly treated with contempt by travellers; and they have been represented as a plodding, stupid people, without genius or taste. He observes, on the contrary, that though the citizens of Bremen have not that exquisite taste for the comparatively trifling arts of luxury and amusement, nor that studied polish of manners which result from an habitual want of more serious employment, and from frequent intercourse with foreigners, whose sole object is pleasure; they have in general good natural abilities, improved by a judicious education; and with respect to useful knowledge, whether literary or scientific, more information may be obtained by conversation in Bremen, than in many places in which more pompous pretensions are set forth. They are obliging, frank, and hospitable; and their numerous and excellent institutions for the education of orphans, and for other charitable purposes, which are supported by voluntary contributions, reflect honour on their generosity and public spirit. This city has lately afforded M. Olbers an opportunity of forming an association of opulent merchants, who have established a museum, a physical cabinet, and an observatory, with professors, among whom M. Olbers, the discoverer of the new planet called PALLAS, is the professor of astronomy. Bremen is situated 52 miles S. W. of Hamburg. N. lat. 53° 30'. E. long. 9°.

BREMENIUM, in *Ancient Geography*, a town from which Antoninus begins his first journey in Britain. It was one of the towns belonging to the Otadeni. Dr. Gale places

it at Brampton, on the river Bremish in Northumberland; others place it at Brampton in Cumberland; but the altar that has been found at Riechester, or Rucheſter, near the head of the river Read in Northumberland, with the name Bremenium upon it, demonstrates that this was its real situation. Baxter (Gloss. p. 46.) derives its name from the British words Bre man iii, which signify a town upon a hill near a river, which is agreeable both to its situation and present appellation. Horsley, Brit. Rom. p. 243.

BREMERVORDE, in *Geography*, a large village and bailiwick of Germany, in the duchy of Bremen, in which was formerly the palace of the archbishop. It has municipal privileges and two burgomasters; 30 miles N. of Bremen, and 10 S. W. of Stade. N. lat. 53° 58'. E. long. 8° 35'.

BREMETONACIS, in *Ancient Geography*, a place of Britain, in Antonine's tenth rout, from Glanoventa to Mediolanum, between Galacum and Coccium, or Appleby and Ribchester; supposed to be Overborough.

BREMGARTEN, in *Geography*, a town of Switzerland, and one of the free bailliages, formerly subject to the cantons of Zurich, Bern, and Glarus, from the year 1712, and united by the French division of 1798, to Baden, which forms a part of the department of Argovie or ARGOW, according to the French constitution of 1801. The inhabitants of this bailliage are Roman catholics. Its regency, previous to the French conquest, consisted of the little and great council; the former being composed of 12 members, and the latter of 40. The town is seated on the Reufs, about 8 miles S. of Baden; and has a wooden bridge over the river, forming a communication between the cantons of Zurich and Bern. It is divided into the Upper and the Lower town; the former situate on an eminence, and the latter on the bank of the river. N. lat. 47° 14'. E. long. 8° 12'.

BREMIS, a town of Switzerland, in the Valais, situate south of the Rhine and near it; 4 miles E. S. E. of Sion. N. lat. 46° 16'. E. long. 7° 16'.

BREMONT LA MOTTE, a town of France, in the department of Puy-de-Dôme, 10 miles from Clermont.

BREMPT, a small town of Germany, in the electorate of Treves, seated on the Moselle.

BRENAS, a range of mountains in the southern part of Africa, towards the Cape of Good Hope, which, according to Barrow, in his “Travels,” 1801, p. 298, passes N. W. and S. E. about lat. 32° or 33°. This great range, says Paterſon, p. 125, runs E. and W. at the distance of about 4 days' journey from the mouth of the Orange river; probably the inmost terrace of the Table land of southern Africa, which seems to be pervaded by the Jagas, a wandering nation like the Tartars.

BRENCKHAUSEN, a town of Germany, in the circle of Westphalia, belonging to the abbey of Corvey, 4 miles N. W. of Corvey.

BRENDOLO, a small sea-port town in the canals of Venice, between Venice and the mouth of the Po.

BRENET, a picturesque lake of Switzerland, in the valley of the lake of Joux, upon that part of the Jura chain of mountains called Mont Joux, in the bailliage of Roman Motier. From this small lake descends a stream, which is lost in a hollow gulph called “L'Eatonnoir,” or the funnel, in which several mills are turned by the force of the current. About 2 miles further, on the other side of the mountain, the river Orbe bursts forth, and is probably produced by the stream here ingulphed.

BRENETS, LES, a village and mayoralty of Switzerland, in the Valais, containing about 1000 inhabitants; 10 miles N. W. of Neuchatel. It is seated near the river Dou. N. lat. 47° 5'. E. long. 6° 27'.

BRENNA,

BRENNA, **BREGNO**, or **BLenzo**, **VAL DI**, one of the baillages of Switzerland, which formerly belonged to the cantons of Uri, Schwitz, and Unterwalden, but referred by the French constitution of 1801. to the 17th department. It lies N. of the Bellinzone and Riviera, and between Val Leventina and the river Tessino, on the west, and Val Calanca on the east. It is about 7 leagues long, and half a league broad. Its principal resources are its pastures and its chestnuts. See **BELLINZONE**.

BRENNAGE, *Brennagium*, in *Middle Age Writers*, a kind of tribute paid, in lieu of bran, or bran itself, which the tenants were obliged to furnish for support of the lord's household. The word is also written *brenage*, *brenagium*, and *brenaige*, *brenagium*, *brenaticum*, and *brennaticum*. Du-Cange Lat. Gloss.

BRENNAU, in *Geography*, a town of Lower Bavaria, situate on the river Ilum, nearly built and sinking into decay; 92 miles from Munich, and 23 miles from Passau.

BRENNE, the name, before the revolution, of a small district of France, that lies between Berri, Touraine, and Poitou, and of which the chief town was Mezzieres; forming now a part of the department of the Indre.

BRENNE, a town of France. See **BRAINE**.

BRENNER, **HENRY**, in *Biography*, a learned Swede, was born 1669, in the parish of Kronoby in West Bothnia. Having finished his education at Upsal, he accompanied, in 1697, Lewis Fabricius, his Swedish majesty's ambassador, to Persia; and as he had acquired, in this journey, an extensive knowledge of the eastern languages, he remained in that country for the purpose of assisting the Persian envoy, Sarug Chan Beg, in his mission to Sweden. On their way through Russia in 1701, a war having taken place between Charles XII. and Peter I. Brenner was arrested at Moscow, under a suspicion of some political intrigue, and confined in prison till the peace of Nykstad. This journey, however, produced a learned and very curious treatise with Elias Brenner, Gripenhielm, Gavelius, Benzelier, and Lilienstedt, part of which has been published; and the history of Moses Armenus Choronenis, under the title of "Epitome Commentariorum Moyses Armeni de origine et regibus Armenorum et Parthorum, cum notis et observationibus," Stockholm, 1723. The Armenian original of this work, written about the middle of the 15th century, in the Armenian language, was printed at Amsterdam in 1695; and another translation of it was printed at London in 1736 by the sons of the celebrated Whiston. In 1722 Brenner communicated to the royal college of the chancery his observations on the cause of the expedition undertaken by Peter I. against the Persians; of which Justus Rabner has availed himself in his history of that prince. In the course of these observations, he announced his intention of giving an accurate description of the Caspian sea, and of the river Daxia in the country of the Nezetzu Tartars, which he supposed to be the ancient Jaxartes; but a copy of it was inserted without acknowledgment, in the "Memorabilia Orientalis Partis Asiae." Whilst Brenner occupied the office of librarian to the royal library at Stockholm, to which he was appointed in 1722, he enriched it with more than 30 volumes of MSS. which treat of the ecclesiastical history of Sweden. But his health having been impaired by his long confinement in Russia, he died in 1732. Gen. Biog.

BRENNER, in *Geography*, the modern denomination of the Rhætian Alps, which pass through the Tyrol, between Inspruck and Storing, over which the high road is extended through an interval of 4 leagues. These mountains rival the grand Alps of Switzerland in numerous glaciers, and, like other grand chains, present exterior barriers; that

on the north being distinguished by the name of Spitz, and that on the south by the appellation of Vedretta. The primitive or greatest elevations arise to the north of Storing, whence streams proceed towards the river Inn on the north, and to the Adige on the south; and the Eisac descends, as a precipitous torrent, amidst masses of granite, petrosilex, and marble, while the avalanches become dangerous to travellers. The naked and rugged peaks of the mounts Lorenzen, Fartschel, and Tschafatsch, raise their towering heads towards the N. W., and on the S. E. are those of Glander, Schloß, Pragles, and Pallanser. Their summits are entirely bare, and seem to be composed of granite. The glacier most easy of access is that of Stuben, the centre of which presents many Alpine plants; and the granite and porphyry are frequently covered with calcareous stone. The glacier of Stuben is 4692 feet above the level of the sea, and exhibits the usual phenomena of such scenes, with beautiful pyramids of azure, which in sunshine reflect a blaze of light. The mountain, particularly called Brenner, is, according to Beaumont (*ubi infra*) only 5109 feet above the level of the sea. The town of Steinach is placed nearly in the centre of the Tyrolese chain; towards the east, from the midst of a long course of glaciers running N. E. and S. W. rises the grand mountain Gefrom, a mass of granite covered with snow, and one of the highest peaks of the Rhætian Alps; on the west is Habitschspiz, of smaller height; but to the S. W. is Tributann, another stupendous peak of the great Brenner chain. Bock-kogo (which see) is another. The Brenner, or burning hill, says Beaumont, is so called on account of the frequent thunder-storms. Beaumont's Rhætian Alps, Lond. 1792. Pinkerton's Geog. vol. i. p. 362, &c. See **ALPS**, and **TYROL**.

BRENNING. See **BURNING**.

BRENNKIRCHEN, in *Geography*, a small town of Lower Austria, on the frontiers of Hungary, not far from the Danube.

BRENO, a town of Italy, in the Bressano, seated near the Oglio, between Bormio and Brescia; 32 miles N. of Brescia.

BRENOD, a town of France, in the department of the Ain, and chief place of a canton, in the district of Nantua; 5 miles S. of Nantua. The town contains 879, and the canton 6959 inhabitants: the territory includes 215 kilometres and 11 communes.

BRENSCHEN, or **BREUNSCHEN**, a town of Germany, in the circle of the Lower Rhine, and electorate of Mentz; 7 miles S. of Miltenberg.

BRENT, **MISS**, in *Biography*, afterwards Mrs. Pinto, the first singer who performed the part of Mandane in Dr. Arne's Artaxerxes. In her bravura singing she had considerable merit: her execution was neat, distinct, rapid, and unrivalled at the time (1763); but has been greatly surpassed by subsequent female singers. This performer died in 1802, oppressed by age and indigence. Her history, if detailed, might furnish a useful lesson to female favourites of the public, possessed of greater vocal powers than human prudence.

BRENT, in *Geography*, a river of England, which runs into the Thames at Brentford in Middlesex.

BRENTA, a river which has its source in the Tyrol, about 7 miles E. from Trent, passes by Padua, and runs into the Adriatic, a little to the south of Venice.

BRENTA, in *Ornithology*. See **BRANTA**.

BRENTFORD, in *Geography*, a market-town of Middlesex, England, stands on the northern banks of the river Thames, at the distance of seven miles W. from London. This place is particularly distinguished in the page of history as the scene of warm contention, in the strongly contested elec-

elec.

elections for the county of Middlesex. It derives its name from a rivulet called Brent, which passes through it in its course from Hendon to the Thames. The town is divided into two parts called New and Old Brentford, and belongs to two distinct parishes: the former being mostly within the boundary of Hanwell parish; whilst the latter is situated in that of Great Ealing, to which village its chapel is subordinate. This is a modern structure, and was rebuilt in 1764. Exclusive of continual passage of travellers through this town, it derives considerable profits from the different mills and manufactures established here. Large quantities of malt, corn, flour, pottery, bricks, and tiles, are annually sent hence to the metropolis. Here are a weekly market on Tuesdays, and two annual fairs for swine, sheep, &c. The town is composed of one very long street, occupying the sides of the great western road, and its houses are mostly inhabited by shop-keepers and tradesmen. In 1801, the population amounted to 1443, and the houses to 287.

In the civil wars between Charles I. and his subjects, this town was rendered a scene of conflict and slaughter. The king, after defeating the rebels at Edge-hill, marched his forces to Brentford, where he was opposed by those of the parliament. A battle ensued, and the latter were vanquished, when their captain was killed, and above 500 were taken prisoners. The earl of Forth, having greatly signalized himself in this engagement, was first made general of the king's forces, and afterwards created earl of Brentford; which title became extinct at his death in 1651.

About one mile West of Brentford stands Sion-house, a stately ancient mansion of the dukes of Northumberland. It takes its name from a monastery founded here by Henry V. in 1414. Edward VI. gave it to his uncle the protector, Edward Seymour, duke of Somerset, who, about 1547, began to build a magnificent structure here; but being afterwards executed for felony, this property was confiscated. Passing through different proprietors, James II. at last settled it for ever on the Northumberland family. The house stands in a spacious park on the bank of the Thames, and is composed of a large square with towers at the corners, and an open court in the centre. It is built of white stone, and embattled all round.

On the opposite banks of the river are the beautiful royal gardens of Kew. They were begun by the late prince of Wales, afterwards much improved by the dowager princess, and completed under the direction of his present majesty. This monarch has also commenced the building of a magnificent castellated palace, under the superintendence of Mr. James Wyatt, architect. See *Kew*, et seq. Lyson's *Environ of London*, vol. ii. Gough's edition of *Camden's Britannia*, vol. ii.

BRENTIUS, or BRENTZEN, JOHN, in *Biography*, one of the earliest Lutheran divines, was born at Wil, in Suabia, in 1499; and having pursued his studies with great reputation at Heidelberg, he obtained a canonry of Wittenberg, and took holy orders. Although, at an early period of the reformation, he became a convert to the opinions of Luther, and taught them publicly, he retained a great part of the popish doctrine of the real presence, and attempted to explain and defend it by the notion of the ubiquity of Christ since his ascension, whence the appellation of "Ubiquitarians" has been applied to a class of Lutherans. On the subject of baptism he had also peculiar notions, and he maintained, in the extreme, Luther's opinion concerning justification. In the assemblies of Worms and Ratisbon, he distinguished himself as an ardent disputant; and he was charged with promoting the religious war of 1546, which rendered him particularly obnoxious to Charles V. After

the death of Luther, he assumed a considerable lead in his party. He was twice married; and in 1570 died at Tübingen, where he was theological professor, leaving behind him a numerous progeny. His works have been published in 8 vols. fol. Moreri.

BRENTOLA, or BRENDOLA, in *Geography*, a small town and district of Italy, in the Vicentin, at a small distance from Vicenza.

BRENTON's reef, the southernmost point of Rhode island, in America, about three miles from Newport, lies 2 miles E. of Beaver-tail; forming with it the mouth of Newport harbour.

BRENTONEGO, a town of Germany, in the Tyrol; 12 miles S. W. of Trent.

BRENTUS, in *Entomology*, a genus of COLEOPTEROUS insects, having the head projecting into a very long, straight, cylindrical snout, beyond the middle of which the antennæ, which are moniliform, are inserted. Fab. &c. The species of this genus are *anchorago*, *affinis*, *barbicornis*, *bifrons*, *cylindricornis*, *dispar*, *druryanus*, *basile*, *monilis*, *nasutus*, and *semipunctatus*, which see.

BRENTWOOD, in *Geography*, is a large chapelry in the parish of South-Weald, in the county of Essex, England, situated 18 miles E. from London, on a commanding eminence. It is a considerable thoroughfare, and contains many inns and public-houses. The Crown Inn is of very ancient foundation; and even in Salmon's time was reputed to have had that sign for 300 years. The county assizes were once held here; and in the High-street are the remains of a town-hall and prison, inhabited by a farrier and other persons, who are bound to put them in repair when the assizes shall be again removed hither. Here is a good grammar-school, endowed by sir Anthony Brown in 1537. The chapel, a small ancient structure, was founded about the year 1221, at the intercession of David, prior of St. Olyth, for the use of the tenants of a manor belonging to that monastery. This township contains 182 houses, and 1007 inhabitants. Camden supposed the Cæsaromagus of the Itinerary to have been in the neighbourhood of Brentwood. At South-Weald is a circular camp, single-ditched, including about seven acres, supposed to have been a castra exploratorium near which the Roman way, called Watling-street, passes. Morant's *History of Essex*, 2 vols. fol.

BRENTWOOD, a township of America, in Rockingham county and state of New Hampshire, containing 899 inhabitants, distant 7 miles from Exeter, and 22 from Portsmouth. In its vicinity is found a stone in which vitriol and sulphur are combined.

BRENTZ, a river of Germany, which rises in Wirtemberg, and discharges itself into the Danube, near Laugingen.

BREPHTROPHIUM, from βρεφός, *infant*, and τροφή, *I nourish*, an hospital for foundlings, or a place wherein children, exposed by their parents, are brought up at the public charge.

BREREWOOD, EDWARD, in *Biography*, first professor of astronomy at Gresham-college in London, to which office he was chosen in 1596, was born in the city of Chester in 1565; and having completed his course of grammar-learning in his native place, was admitted, in 1581, of Brazen-Nose college, in the university of Oxford. Here he acquired the character of an assiduous student, and took his degree of master of arts in 1590. Failing in his attempt to obtain a fellowship, for which he was a candidate, he removed to St. Mary's hall. After his election to the professorship of Gresham college, he seems to have had no wishes of further preferment; but devoted himself to the pursuit

pursuit of knowledge, and passed the remainder of his life in retirement. He died of a fever, Nov. 4th, 1613; and was buried in the chancel of St. Helen's church, without any monument or other memorial. From his works on a variety of subjects, which were printed after his death, we may conclude that he was a very general scholar. These are as follow: 1. "De ponderibus et pretiis veterum nummorum, eorumque cum recentioribus collatione," lib. i. Lond. 1614, 4to. printed also in the "Critici Sacri," vol. viii. and in the Apparatus of the "Biblia Polyglotta." 2. "Enquiries touching the diversity of Languages and Religions through the chief parts of the World," Lond. 1614, 23, 25, 4to.; 1647, &c. 8vo. To this was prefixed a learned preface by his nephew and heir, Robert Brerewood. 3. "Elementa logicæ, in gratiam studiosæ juventutis in academia Oxoniensi," Lond. 1614, 1615, &c. 8vo. 4. "Tractatus quidam logici de predicabilibus, et predicamentis," Oxon. 4to. 1628; and 1637. &c. 8vo. 5. "Tractatus duo; quorum primus est de meteoris, secundus de oculo," Oxon. 1631, 1638, 8vo. 6. "A Treatise of the Sabbath," 1611; Oxf. 1631, 4to. 7. "Mr. Byfield's Answer, with Mr. Brerewood's Reply," Oxf. 1631, 4to. 8. "A second Treatise of the Sabbath," or "An explication of the fourth Commandment," Oxf. 1632, 4to. 9. "Commentarii in Ethicæ Aristotelis," Oxon. 1640, 4to. 10. "A Declaration of the Patriarchal Government of the Ancient Church," Oxf. 1641, 4to.; Lond. 1647; Bremen, 1701, 8vo. Ward's Lives of the Professors of Gresham College, p. 74, &c.

BRESANY, or BREZAN, in *Geography*. See BRZESANY.

BRESARGIA, a small town of Sardinia, in the north part of the island denominated "Capo di Lugatori."

BRESCIA, or IL BRESSANO, or BRESCIANO, a country of Italy, formerly a part of Lombardy, but now belonging to the Cisalpine republic, is bounded on the north by the county of Bormio, on the north-east by the Trentin, on the east by the Veronese, from which it is separated by the lake Garda, on the south by the Mantuan and Cremonese, and the small lake of Idro, and on the west by the Bergamasco, from which it is in a great part divided by the lake Iseo. Brescia, though mountainous, is fertile in wine, oil, and maize, and has excellent pasturages, and some mines of copper and iron, and also manufactures of silk, paper, &c. The air is wholesome, and the country populous. Its principal rivers are the Adige and the Oglio. It became a province of the Venetian states in 1517; but Brescia, its capital, was taken by the French under Bonaparte, in 1796, and it formed a part of the Cisalpine republic by the 8th article of the treaty of Campo Formio in 1797, confirmed by the 12th article of the treaty of Luneville in 1801.

BRESCIA, in Latin *Brixia*, the capital of the above province, is situated on a beautiful plain on the small river Garza. It is large, being reckoned about a league in circumference, well fortified, having a castle on a hill, and is said to contain about 50,000 inhabitants, some of whom are rich and noble, and others are ingenious and diligent in carrying on several manufactures of linen, and particularly fire-arms, swords, knives, and other cutlery wares. It is encircled with walls, in which are five gates; the streets are handsome and clean, most of them being watered by little streams from the river, and the buildings are good. It has several public squares, the largest of which is surrounded with piazzas, and in the centre of it stands the town-house. The palace, where public business is transacted, is a magnificent stone structure, built from the ruins of a temple of Vulcan, and remarkable for its architecture and paintings in fresco. Besides the cathedral, this city has 19 parishes, churches, 30 convents, a general hospital, and several chari-

table foundations. The cathedral is a modern edifice, to the rearing of which cardinal Quirini, once bishop of this city, contributed liberally; and he also presented the city with a library; in acknowledgment of which the magistracy, in 1750, erected two marble statues to his honour, one in the church, and the other at the entrance of the library. In the cathedral is exhibited the famous standard of Constantine; and this, as well as several of the churches, are adorned with beautiful statues and paintings. The magistracy, before the revolution, consisted of 600 citizens, divided into inferior councils, under a noble Venetian, who presided as governor, or podestat. This city was the see of a bishop, suffragan of Milan. Brescia is said to have been built by the Cenomani, commanded by Belovefus; and as others affirm, by Brennus; and it afterwards became a Roman colony. It was burnt by Radagastus, king of the Goths, in 412, and re-established by Attila in 452. It was afterwards possessed by the Lombards. Charlemagne, having defeated king Didier in 771, entered Brescia, and built the church of St. Denis. In 1426, after having suffered much by the troubles occasioned by the duke of Milan, it surrendered itself to the republic of Venice. Gaston de Foix, general of Lewis XII. took it in 1512 from the Venetians, and abandoned it to pillage, with the exception of the house inhabited by Chevalier Bayard: but in 1517, it was restored to the Venetians. It was visited by a plague in 1478, which swept away 25,000 persons; and again by a similar calamity in 1524. Brescia was the birth-place of Tartaglia, the famous mathematician, and of Gambaro, the poet, who died in 1596. It is distant about 44 miles E. of Milan, and 32 N. W. of Mantua. N. lat 45° 31'. E. long. 10° 5'.

BRESCICATI, in *Commerce*, a kind of bays, which supplies the negroes between the river Gambia and Sierra Leona. The best sorts for this trade are the blue and red.

BRESCOU, in *Geography*, a small island of France, with a fort upon it, in the gulf of Lyons, near the coast of Languedoc, or Herault, about a league S. of AGDE; which see.

BRESELLO. See BERSELLO.

BRESINI, a small town of Poland, in the palatinate of Lenciez.

BRESINS, or BRESONS, a small island of the Atlantic, near the south-west coast of England.

BRESK, or BRESKAN, a town of Africa, in the kingdom of Algiers, seated on the sea coast, at the bottom of a bay in the Mediterranean; 50 miles W. S. W. of Algiers. N. lat. 36° 50'. E. long. 2° 30'.

BRESKENS, a town of Flanders, in the island of Cadzand, 10 miles N. of Sluys.

BRESLAU, or WRATISLAW, a principality of Silesia, bounded on the N. and N.E. by that of Oels, on the S.E. by that of Brieg, on the S. and S.W. by those of Brieg and Schweidnitz, and on the W. by those of Lignitz and Wohlau. This district forms a kind of long square, about 25 miles in length, by 16 in breadth. The country is very level; and the parts of it near the rivers, are either sandy or swampy. It is, however, an excellent corn country, and not destitute of rich pasturage ground; it abounds with sheep and cattle; and near the capital, the cows are of an uncommon size, and yield a proportionate quantity of milk; and this part of the country produces great quantities of madder. Wood is every where scarce, except in the circle of Namslau; and the roads are so bad, as to be in some places impassable; but this inconvenience is remedied, particularly in the vicinity of Breslau, by dykes and canals, which are kept in repair at a great annual expence.

On the partition of Silesia in 1764, among the sons of Frederick II., Breslau fell to the share of Borussia Prussia; but

but disputes occurring among his successors, it was sold by one of them, viz. Henry VI., to John, king of Bohemia, who, after the death of Henry, in 1335, incorporated it with the crown of Bohemia, endowing the city, at the same time, with divers important privileges; and the kings of Bohemia always appointed governors over that principality. In 1337, king John assigned the government to the city of Breslau; and, in 1505, king Wladislaus transferred the jurisdiction of the whole principality to the same city; so that the chief magistrate occupied the part of governor until the year 1635, when both the government and judicatures were surrendered to the emperor Ferdinand III.; and in this state it continued, till it was united to Prussia. It is divided into four circles: viz. those of Breslau, Neumarkt, Canth, and Namslau; and, together with the district of Glogaw, it includes 53 cities, 108 towns, 14 market-towns, and between 5 and 6 thousand villages, 2000 catholic churches, 605 protestant churches, 20 abbys, 91 convents, and 39,000 hearths in the cities. The principal river of this principality, of which the property and jurisdiction belong to the king, is the Oder, which, in its course through the country, receives the interior streams of Ohlau, Lohé, Weyda, and Weßnitz.

BRESLAU, or BRÉSRAW, the capital of the above described principality, and of the whole duchy of Silesia, is situated on the south side of the Oder, which receives the Ohlau after its winding course through Old Breslau. This place, the antiquity of which is uncertain, was set on fire by the Tartars in 1241, and was formerly environed by the Ohlau, as with a moat; and all without the Ohlau to the walls in their present position, were additions made by the emperor Charles IV. The Neustadt is more modern, and, since the year 1529, has been included within the fortifications, which are now, indeed, of no great importance. The whole town, both old and new, including the suburbs, is of great extent, being no less than two German miles in length. It is reckoned one of the most beautiful cities in Germany; and has several large regular squares, broad streets, and stately edifices, both public and private. The Roman catholics have several churches and convents; the Lutherans have seven churches within the walls, and two without, and two-gymnasiums; the Calvinists and the Greeks have, each of them, one church; and the Jews have two synagogues. The popish university is a noble edifice; and the exchange, adjoining to the council-house, is an elegant structure. Several of its monasteries and convents are magnificent buildings: and it has some good public libraries, with two armouries, a college of physicians, and a mint. Breslau holds the third rank, next to Berlin and Königsberg, among the cities of Prussia. It is the centre of all the trade of Silesia, and its manufactures are considerable and various. The number of its inhabitants is estimated at about 52,000: and as it has several annual fairs, it is much frequented by Hungarian, Bohemian, Polish, and other merchants. The magistracy, which is Lutheran, consists of a town-council and a council; and its consistory is likewise Lutheran. This city was taken by the king of Prussia in 1741; compelled to surrender to the Austrians in 1757; and taken by the Prussian army at the close of the same year, after a signal victory over the Austrians in its vicinity. In the last siege, several of its churches were much damaged, the library of St. Mary Magdalen was destroyed by the bursting of a bomb, and its suburbs were considerably injured. N. lat. 51° 3' E. long. 17° 8' 45".

BRÉSLE, a town of France, in the department of the Oise, and district of Beauvais; 7 miles S. E. of Beauvais. —Also, a river of France, which rises near Aumale, and

separates the department of the Somme, from that of the Eure, till it falls into the sea at Treport.

BRESMA, in *Ichthyology*, a name given by Hildegard, and several others to the Bream, *CYPRINUS BRAMA*, which see.

BRESMAL, JOHN FRANCIS, in *Biography*, a physician at Liege, was born in the year 1660. After studying some years at home, he went to Paris, where he was admitted doctor in medicine, in 1689. In the course of his travels, he had turned his attention, in a particular manner, to investigating the properties of the most celebrated mineral springs, of which, on his return to Liege, he published analyses, giving also accounts of their virtues in the cure of diseases. The titles of his works are, "La circulation des eaux, ou l'hydrographie des minerales d'Aix, et de Spa." Liege, 1699, 12mo. "Description, feu analysi de fontis, S. Egidii, prope Tunyros," 1700, 12mo. He cites a description of this spring from Pliny. "Parallele des eaux minerales chaudes et froides du diocese de Liege. Avec un avis au public, pour le preserver de la peste, &c." 1721, 8vo. For the titles of other works by this writer, on the subject of mineral waters, see Eloy. Dict. Hist.

BRESSAN. in *Geography*. See BRESCIA.

BRESSAY, or BRASSA, one of the Shetland islands of Scotland, about 4 miles long, and 2 broad, separated from the main land of Shetland by a narrow sea, called "Bressay sound," forming a spacious harbour, in which a thousand ships may ride at the same time. In this harbour, the Dutch vessels, employed in the herring fishery, assemble about the middle of June. The inhabitants of Bressay fit out about 26 large fishing boats. The mountains supply slate for building, and peat for firing. N. lat. 60° 20'. W. long. 6° 50'.

BRESSE, a country of France, so denominated before the revolution, from a forest called "Brexia," situate in the province of Burgundy, and bounded on the east by Savoy, on the south by Viennois, on the west by Lyonnais and Dombes, and on the north by Franche Comté. It is estimated at 40 miles from north to south, and 23 from east to west. It is fertile in corn and hemp, and has fine pastures, and several lakes, abounding with fish. For some time, it was an earldom subject to the dukes of Savoy, who added it in 1601 to France, in lieu of the marquise of Saluzzo. The principal towns are Bourg, the capital, Beaune, or Bauge, Coligny, Montreuil, Loge, and Pont de Vaux.

BRESSICI, or BRESTE. See BRZESC.

BRESSOLES, see BREZOLES.

BRESSUIRE, a town of France; in the department of the two Sévres, and chief place of a canton, in the district of Thouars. The town contains 630, and the canton, 5911 inhabitants: the territory includes 290 kilometres, and 13 communes.

BRESSUS, or BREFUS; in *Ancient Geography*, a town of Asia in Armenia Major, situate near the Euphrates, according to Ptolemy.

BREST, or BREAST, in *Architecture*, a term used by some, for that member of a column otherwise called the *Tore*.

BREST-SUMMERS, or BRESSUMERS, in *Building*, are pieces of timber designed for the support of the brick-work in the front or rear wall of a building, for carrying arches, &c. In the inner parts of a building, the pieces into which the girders are framed are called SUMMERS.

BREST, in *Geography*, a sea port town of France, and principal place of a district, in the department of Finistère. The number of inhabitants in the 3 parts, into which it is divided, is estimated at 27,000; the first canton contains 13,000, and includes 52½ kilometres, and one commune; the

the second contains 17,275 inhabitants, and comprehends 24 kilometres, and 5 communes; and the third contains 14,408 inhabitants, 22½ kilometres, and 1 commune. Brest is seated on the declivity of a hill on the side of its port; and its streets, which are few in number, are narrow and inconveniently contrived. It has two parish churches, a marine seminary, and a court of admiralty; but it is principally famous for its spacious road and harbour, which are reckoned (if we except Toulon), the largest and the finest in the whole kingdom, and capable of containing 500 ships of war, in 8, 10, and 15 fathoms, at low water. Its entrance from the W.S.W. called the "Gullet," is narrow and rocky, and the passage is difficult and dangerous, on account of the sunken rocks on both sides of the shore. The entrance is also guarded by a strong castle seated on a rock on the sea-side, and defended on the land-side by a large ditch and other fortifications. On one side of the port is a large quay, more than a mile long, and 200 paces broad, covered with store-houses for various kinds of merchandize; and, on the other side, there is also a quay, for the warehouses, and the fine church of Notre Dame; and in a suburb, about half the size of the city, there is a strong tower opposite to the castle, at the entrance of the harbour. At the bottom of the harbour, to which the range of magazines on the quay nearly extend, there are two docks for the building of ships, adjoining to which are the shops and houses of the workmen; and one of these docks separates the quay from the city. The arsenal of Brest is a very large and magnificent building, plentifully supplied with different kinds of naval stores. This was entirely consumed by fire in the year 1744. In 1694, an attempt was made by lord Berkeley, who commanded a fleet of 29 ships of war, with a number of fire ships and bomb-ketches, and general Talmache, who had the command of twelve regiments of infantry, and two of marines, to seize on Brest. But whilst the sailing of this expedition was delayed by counter intrigues, the king of France dispatched marshal Vauban to repair the old, and to raise new fortifications, and a large body of troops to defend them. When the English armament arrived, the French were prepared in great force to repel it; and therefore the attempt, though conducted with singular resolution, was defeated, with the loss of 900 British soldiers, and 400 seamen, and of general Talmache, who died of his wounds, and who, in the agonies of death, complained, that he had fallen by the treachery of his countrymen. N. lat. 48° 22' 55". W. long. 4° 30' 50".

BREST, *bay of*, an American bay on the coast of the Western ocean, in New Britain. N. lat. 52° 10'. W. long. 52° 30'.

BRET, *Cape*, lies in the Pacific ocean, on the east coast of the north island of New Zealand, within about 7 leagues of several small islands, close under the main, called "Cavalles." S. lat. 35° 7'. E. long. 173° 52'.

BRET, in *Ichthyology*, a name which the people on the coast of Lincolnshire give to the common turbot; a fish extremely common with them, and taken in vast abundance. The way of catching them is in a net, trailed, it is said, upon the ground by two horses; the one going up to the middle of his body in the water, the other on the shore. The turbot is known by the name of Bret among the fishermen, on many of our sea coasts, but most commonly, the smaller turbot only are distinguished by that title; when they have attained to a moderate size for the table, they are called turbot.

It should be further observed, that the pearl, *Pleuronectes Rhombus*, likewise obtains the name of bret in some parts of the country. Bret is the name of the turbot almost throughout the north of Britain.

BRETACHIE, in *Middle Age Writers*, denote wooden

towers or castles, wherewith towns or camps were defended. Du-Cange Gloss. Lat.

BRETAGNE, in *Geography*. See **BRITANY**.

BRETCHER, or **GRATHAM**, a small town of Polish Prussia with a castle on the same river, in the territory of Culm; 48 miles E. of Culm.

BRETENOUX, a town of France, in the department of the Lot, and chief place of a canton in the district of Figeac, 4 miles N.N.W. of St. Ceré. The place contains 589, and the canton 8734 inhabitants; the territory comprehends 140 kilometres, and 15 communes.

BRETÉSSED, in *Heraldry*, a term used by French heralds to express any charge that is embattled on both sides opposite to each other.

BRETEUIL, in *Geography*, a town of France, in the department of the Eure, and chief place of a canton, in the district of Evreux, 5 leagues S.S.W. of Evreux. The place contains 1893, and the canton 12,775 inhabitants; the territory includes 187½ kilometres, and 14 communes.

BRETEUIL, is also a town of France, in the department of the Oise, and chief place of a canton, in the district of Clermont, 3½ posts south of Amiens. The place contains 2160, and the canton 11,632 inhabitants; the extent of the territory comprehends 147½ kilometres, and 19 communes.

BRETHREN and *Sisters of the Free Spirit*, in *Ecclesiastical History*, an appellation assumed by a new sect which sprung up towards the close of the thirteenth century, and gained many adherents in Italy, France, and Germany. They took their denomination from the words of St. Paul, Rom. chap. viii. v. 2. 14. and maintained, that the true children of God were invested with the privilege of a full and perfect freedom from the jurisdiction of the law. They were enthusiasts to a degree of distraction, both in their principles and practice. They resembled the **BEGHARDS**, by which name they were sometimes called, in their aspect, apparel, and manner of living. Some of their professed principles resembled those of the Pantheists; for they held, that all things flowed by emanation from God; that rational souls were portions of the Deity; and that the universe was God; and that by the power of contemplation they were united to the Deity, and acquired hereby a glorious and sublime liberty, both from the sinful lusts and the common instincts of nature; and hence they concluded that the person who was thus absorbed in the abyss of the Deity, became a part of the godhead, and was the son of God in the same sense and manner that Christ was, and that he was freed from the obligation of all laws, human and divine. They treated with contempt all Christian ordinances, and all external acts of religion, as unsuitable to the state of perfection at which they were arrived. Some of them were honest but deluded enthusiasts: and they endured the torments inflicted upon them by the inquisitors with astonishing calmness and triumph. Others proceeded to the most extravagant licentiousness of conduct. They held their secret assemblies stark-naked, and lay in the same beds with their spiritual sisters, and indiscriminately with other women, without the least scruple or hesitation; modesty and decency being, according to their creed, marks of inward corruption. And some of them proceeded still farther, and maintained, that the *divine man*, or believer, could not sin, let his conduct be ever so horrible or atrocious. Many edicts were published against them; but notwithstanding the severities they suffered, they continued till about the middle of the fifteenth century. They were called by several other names, such as *Schweftiones*, *Picards*, *Adamites*, and *Turlupins*. Mosheim's *Ecc. Hist.* vol. iii. p. 122, &c. 202, &c. 273, &c.

BRETHREN and Clerks of the Common Life, a denomination assumed by a religious fraternity towards the latter end of the fifteenth century. They lived under the rule of St. Augustin, and were eminently useful in promoting the cause of religion and learning. Their society was first formed, in the preceding century, by Gerard de Groote, a native of Deventer; but did not flourish till about the period above-mentioned, when it obtained the approbation of the council of Constance, and became very respectable in Holland, the Lower Germany, and the adjacent provinces. It was divided into two classes; the *lettered brethren*, or *clerks*, and the *illiterate*: they lived in separate habitations, but maintained the closest fraternal union. The former applied to the study of polite literature, and the education of youth; whilst the latter were employed in manual labour, and the mechanic arts. Unrestrained by religious vows, they nevertheless had all things in common; and this community was the great bond of their union. From the schools erected by the class of clerks proceeded many celebrated persons, who contributed to the revival of literature and taste in Germany and Holland; such as Erasmus, Hegius, Marmelius, &c. They were frequently called *Beghards*, and *Lollards*, by way of reproach. Mosheim, vol. iii. p. 253.

BRETHREN, *White, fratres albi*, were the followers of a leader about the beginning of the fifteenth century, who was arrayed in a white garment; and, as they were also clothed in white linen, they were distinguished by this title. Their leader was a priest from the Alps, who carried about a cross, like a standard, and whose apparent sanctity and devotion drew together a number of followers. This deluded enthusiast practised many acts of mortification and penance, endeavouring to persuade the European nations to renew the holy war, and pretended that he was favoured with divine visions. Boniface IX. apprehending that this enthusiast or impostor concealed insidious and ambitious views, ordered him to be apprehended and committed to the flames, upon which his followers dispersed. Mosheim, vol. iii. p. 275.

BRETHREN of the Observance. See OBSERVANCE.

BRETON, in *Geography*, a river of England, which runs into the Stour, near Hadleigh, in Suffolk.

BRETON, a sand-bank, about two miles from the coast of France, in the English channel, and at the same distance S. from Granville, towards Cancale bay, the middle of which is dry at low water.

BRETON, Cape, lies at the north end of the lake which extends northward from the Bayonne river at the bottom of the bay of Biscay. It is known at Bayonne by its flat tower, and often called "Cabriton."

BRETON, Cape, an island, or rather a collection of islands, called by the French "*Les Isles de Madame*," situated in the Atlantic ocean, on the coast of North America, between 45° 28' and 47° N. lat. and between 59° 44' and 61° 29' W. long. and about 45 leagues E. of Halifax. This island is about 109 miles in length, and from 20 to 34 in breadth; and, though attached to Lower Canada, is separated from Nova Scotia by a narrow strait, called the "*Gut of Canso*," which forms the communication between the Atlantic ocean and the gulf of St. Lawrence. It is surrounded with sharp pointed rocks, separated from one another by the waves, above which some of their tops are visible. All its harbours are open to the east, turning towards the south; and on the other parts of the coast there are not a few anchoring places for small vessels, in creeks or between islets. The soil is generally swampy and mossy, and unfit for agriculture; and as it abounds with lakes and forests, the climate is cold and foggy. The scarcity and poverty of pastures have likewise prevented the increase of cattle. Al-

though it abounds in timber, such as pine, beech, birch, maple, spruce, and fir, it has derived little advantage from it. The fur-trade of this island has always been very inconsiderable; its peltry consisted only in the skins of a few lynxes, elks, musk-rats, wild-cats, bears, otters, and foxes, both of a red and silver and grey colour. Some of these were procured from a colony of Miemac Indians, who had settled on the island with the French, and never could raise more than 60 men able to bear arms. The rest came from St. John's, on the neighbouring continent. The fishery is a much more important object; and in 1743, when this island belonged to the French, the whole value of it is said to have amounted annually to a million sterling; and no less than 564 ships, besides shallops, and 27,000 seamen, were employed in this trade. At present the inhabitants of the island take about 30,000 quintals of fish annually, which are shipped for Spain and the Straits, principally by merchants from Jersey (belonging to England) who yearly resort hither, and keep stores of supplies for the fishermen. Part of their fish was sent to the French southern islands, in 20 or 25 ships from 70 to 140 tons burden. Besides the cod, which made at least half their cargo, they also exported to the other colonies, timber, planks, thin oak-boards, salted salmon and mackarel, train-oil, and sea-coal. In return they received sugar and coffee, rum and molasses; the overplus of which they conveyed to Canada and to New England, where they obtained in exchange, fruits, vegetables, wood, brick, and cattle. Besides this allowed trade, they also carried on a clandestine or smuggling commerce, in flour and salt fish. In this island there is a very extensive bed of coal, which lies in a horizontal direction, about six or eight feet below the surface: but this has been chiefly used as ballast. In one of the pits a fire has been accidentally kindled, which could never yet be extinguished. These mines yield a revenue of 12,000l. yearly to the crown. The number of inhabitants in Cape Breton does not exceed 1000.

This island was discovered, according to the French authors, about the year 1500, by the Normans and Bretons, who navigated these seas; and as it was supposed to be a part of the continent, it was called *Cape Breton*, which appellation it has absurdly retained. But though it had been for some time a place of resort for fishermen in the summer, the French did not take possession of it before the year 1713; they then changed its name into that of "*Isle Royale*," and fixed upon fort St. Dauphin as their chief settlement. But as this harbour, though spacious and sheltered from winds, was difficult of access, they directed their views to another station; and in 1720 commenced their fortifications at Louisbourg. The settlers were chiefly Europeans; the Acadians and French of Nova Scotia not choosing to leave that country. This island remained in the possession of the French till the year 1745; when it was captured by the New England militia under the command of William Pepperell esq. a colonel of the militia, and a squadron under commodore Warren. It was afterwards restored to the French, and retaken in 1758, by admiral Boscawen and general Amherst; and finally ceded to Great Britain by the peace of 1763; since which period the fortifications have been blown up, and the town of Louisbourg dismantled. This island, with respect to matters of government, was considered as annexed to Nova Scotia, till the year 1784, when it was erected into a separate government by the name of Sydney, its capital. The other principal town is Louisbourg. The present seat of government is at Spanish river, on the north side of the island. This island may be regarded as the key to Canada, and the fishery in its neighbourhood depends on its protection; and the most convenient harbour for its security and supply is Louisbourg.

BRETON, *Pertuis*, or *Breton channel*, lies on the west coast of France, and on the north of the island of Rhé, between that island and the main.

BRETON, *Port*, lies at the extreme part of the Mediterranean, on the coast of Syria in Asia; N. N. E. from Larissa gulf, at the distance of about 14 or 15 leagues.

BRETONNAYAN, **RENÉ**, in *Biography*, practised medicine with reputation at Turin, towards the end of the 16th century, but is only now known by a singular work in verse: "La Generation de l'homme, et le temple de l'ame, avec autres oeuvres poetiques extraites de l'Ecole de R. B." Paris, 1583, 4to. In the course of the poem the author treats of the stone, gout, melancholy, colic, &c. The heart he calls the sun of the microcosm; the liver the temple of human nature. He describes also a variety of cosmetics to beautify the skin, which was at that time pretty much the custom, among writers on medicines, particularly those who treated on the diseases incident to women. Haller. Bib. Ch. Eloy. Dict. Hist.

BRETOYSE, or **BRETOIS**, the law of the marches of Wales; in use among the ancient Britons.

BRETTA, or **BRETTEN**, in *Geography*, a town of Sweden, in the province of Dalecarlia, at the western extremity of the lake Vener or Wener, and at the distance of about half a Swedish mile from Wenersborg.

BRETTEN, or **BRETHEINE**, a town of Germany, in a prefecture of the same name, in the circle of the Lower Rhine, and palatinate of the Rhine, seated on a hill on the Salzbach, and accommodating the Roman catholics, Lutherans, and Calvinists, in their respective worship. It is famous as the birth-place of Philip Melancthon. It was set on fire by the French in 1689; distant 21 miles S. from Heidelberg, and 18 S. E. from Spire.

BRETTEVILLE *sur Laife*, a town of France, in the department of the Calvados, and chief place of a canton in the district of Falaise; 10 miles N. N. W. of Falaise. The place contains 790, and the canton 14,450 inhabitants; the territory comprehends 230 kilometres, and 41 communes.

BRETTEVILLE l'Orueilleuse, a town of France, in the department of the Calvados, and chief place of a canton in the district of Caen; 2 leagues W. N. W. of Caen.

BRETTIGAU. See **PRETTIGAU**.

BREVAL, a town of France, in the department of the Seine and Oise, and district of Mantes, one league S. W. of Mantes.

BREVANNE, a town of France, in the department of the Upper Marne, and district of Chaumont, 6 miles S. of Bourmont.

BREUDEL, **JOHN PHILIP**, in *Biography*, a Dutch physician of eminence, who lived the latter end of the 16th and the beginning of the 17th centuries, only now known by a "Collection of medical consultations," which he published in 1615, at Franckfort, 4to. and which were much esteemed.

BREUDEL, **ZACHARY**, born at Jena in Saxony, in 1592, was initiated into the knowledge of medicine by his father, who was one of the professors in that university. In 1617, he was made doctor, and, on the secession of his father, professor in medicine, an office which he filled several years with distinguished attention and ability. He has left several works, the principal of which are "Chemia in artis formam redacta," Jena, 1630, 12mo.; "De Medicina, arte nobilissima," 1635, 4to.

BREUDEL, **ADAM**, professor in anatomy and botany in the university of Wittenberg, distinguished for his knowledge of the Greek language, as well as for his skill in his profession,

published, in 1700, a collection of inaugural dissertations, among which Haller notices, as of superior value, "De hydropse ovarii muliebris," in which he gives an accurate description of that organ; "Embryonem in ovulo ante conceptionem," an opinion which is now pretty generally assented to; "De nutritione fœtus in utero materno." He also published "De lapidicina microcosmi," 4to. 1711, shewing the varieties in stones found in the kidneys and bladder. He relates the case of a young woman who destroyed a fœtus she was pregnant with, and procured abortion, by passing a fillet up the vagina into the uterus, but her life fell a sacrifice to the experiment; also, "Observationum anatomicarum decades tres," 4to. They came out from 1606 to 1618. In the third part he describes the exhaling vessels of the heart.

BREUDEL, **JOHN GODFREY**, nephew to Adam, professor in anatomy at Gottingen, the beginning of the last century, published, in 1738, an accurate anatomical description of the "valvula Eustachij," with engravings; and, in 1747, "De auris humanæ concha;" "De phosphoro urinario," and other similar works, which have considerable merit. He died at Gottingen, January 18th, 1758, aged 47. Haller. Bib. Medica. Botan. Anatom. et. Chirurg. Eloy. Dict. Hist.

BREVE, **BREVIS**, *short*, in *Grammar*.—Syllables are distinguished into *longæ* and *breves*, according as they are pronounced quicker or more slow; the time of a breve is half that of a long, or, as the grammarians express it, a breve is one time, and a long two. See **ACCENT**.

BREVE, is used in the *Civil Law* for a short note or minute.

In which sense, the word is also written *brevis* (*subaude libellus*) and in English Brief or breve; amounting to much the same with what is otherwise called *schedula* and *brevicula*. See **BRIEF**.

BREVE more particularly denotes a list or register of the names of the soldiers under the command of a general.

BREVE is more particularly used in *Common Law* for a writ or brief; by which a man is summoned or attached to answer in action; or by which any thing is commanded to be done in the king's courts, in order to justice, &c. It is called "breve" from the brevity of it; and is directed to the chancellor, judges, sheriffs, and other officers. See **WRIT**. Hence,

BREVE *perquirere*, is to purchase a writ or licence of trial in the king's courts by the plaintiff; and on this depends the usage of paying to the king in suits for money due on bond, 6s. 8d. when the debt is 40l. and 10s. when it is 100l.

Fitzherbert has given a new *Natura Brevium*; thus called by way of distinction from an Old *Natura Brevium*, composed about the time of Henry III. There is a copy of this book of Fitzherbert filled with manuscript notes by sir M. Hales, in Dr. Williams's Library in Red Cross Street.

BEEVE *de recto*, see **RECTO**.

BREVE, in *Music*, is a note or character of time, formed square without any tail; and equivalent to two measures, or semibreves. See **CHARACTERS of music**, and **SEMI-BREVE**.

In *lugues*, *tempo di capella*, of two semibreves in a bar, the movement is said to be *alla breve*, from a bar containing one *breve* or two semibreves, and from the rapidity with which these seeming long notes are executed; *breves* as quick as semibreves, and semibreves as quick as minims, &c. See **TIME-TABLE**, and **NOTATION**.

BREVE, *Breve de Bengalé*, *Breve des Philippines*, and *Breve*

Breve de Madagascar, in *Ornithology*, names given by Buffon to different varieties of *CORVUS BRACHYURUS*.

BREVE, *was*. See *Vas breve*.

BREVEN, in *Geography*, a mountain of Switzerland, situate on one side of the valley of Chamouny, and opposite to the glaciers. The height above the Mediterranean is estimated at 8358 feet.

BREVET, in the *French Laws*, denotes an act issued by a secretary of state, importing a grant of some favour or donation from the king. The word is formed from the middle age Latin, *breve*, of *breve*, *short*. In which sense brevet amounts to much the same with our *WARRANT*. They say a brevet of nomination, a duke by *brevet*; such a person had a brevet of a marshal of France.

BREVET more particularly denotes the commission of a subaltern officer, being only written on parchment, and without seal. A brevet-officer is one whose rank is above his pay; e. g. a brevet-major serves only as a captain, and receives pay as such. Hence, a subaltern, who obtains rank by brevet is under a necessity of discharging the additional expences of his new dignity, together with the fees of his new commission, without additional pay.

BREVET, in the *Sea Language*, is sometimes used for a *BILL* of lading.

BRUEGHEL, or BRUEGHEL, PETER, in *Biography*, commonly called *Old Brueghel*, in contradistinction to his son, an eminent painter and engraver, was born at Brueghel, a village near Breda in 1510, and acquired the first principles of his art from Peter Cock or Koeck-van-Aelt, whose daughter he married. He afterwards travelled in France and Italy; studied nature, amidst the mountains of Tyrol and the scenery of the Alps; and availed himself of the works of the greatest masters in Italy. On his return from Italy he resided for some time at Antwerp, and from thence he removed to Brussels. Whilst he was employed by the magistrates of this city in taking views of the canal which falls into the Scheldt, he sickened, and died in 1570; after having caused to be burned in his presence all his licentious and satirical designs. He chiefly excelled in landscapes, and droll subjects, resembling those of Jerom Bosche; and he was particularly fond of representing the marches of armies, robberies, skirmishes, sports, dances, weddings, and drunken quarrels; and in order to acquire greater skill and accuracy in this kind of representations, he often assumed the habit of a peasant, and joined the meaner boors at their feasts and amusements. His figures were correct, and their draperies well chosen; the heads and hands were touched with spirit; and his expression, though not elegant, was true. His principal performance is in the emperor's collection at Vienna, which is the "Representation of the building of the tower of Babel, by Nimrod." Several of his paintings are in the cabinets of the emperor and elector palatine, and dispersed through various parts of Europe. For his amusement he engraved some few landscapes and grotesque subjects. Pilkington and Strutt.

BRUEGHEL, PETER, the *younger*, known by the appellation of the "Hellish Brueghel," from his delight in representing horrible subjects, the son of the preceding artist, was born at Brussels, and became the disciple of Gelles Coningsloo. His compositions rather excite disgust than satisfaction; and his human figures, though freely pencilled and not ill coloured, are not much more elegant than those of the infernal kind. In his historical subjects he generally introduced witches and devils; such as Orpheus charming Pluto and Proserpine to procure the deliverance of Eurydice, surrounded with horrible forms and appearances; Saul and the witch of Endor; or St. Anthony's

temptations. He also was an engraver. He died in 1642. Pilkington and Strutt.

BRUEGHEL, JOHN, distinguished from his mode of dress by the appellation of "Velvet Brueghel," was the son of Peter Brueghel the Old, and born at Brussels in 1560. He was instructed, probably, by his father, and by other artists; but, whoever were his instructors, he acquired an eminence in every art of painting, in colouring, in design, and in pencilling, far superior to that of his father, and of all his contemporaries in his style. He began with painting flowers and fruit; which he executed with admirable skill; and then proceeded to landscapes, sea-ports, and markets, in which he introduced a number of small figures, surprisingly exact and correctly drawn. At Cologne, where he resided for some time, he gained an extraordinary reputation; and his pictures were well known and admired in Italy, in which country he spent some time. He died, according to the most probable accounts, in 1625. That the industry of this artist must have been singular, sufficiently appears from the number and variety of his pictures, and the exquisite neatness and delicacy of their execution. It has been lamented, however, by connoisseurs, that his distances are overcharged with a bluish tinge. Brueghel often decorated the pictures of his friends with small figures, thus greatly enhancing their value; he was employed in painting flowers, fruits, animals, and landscape scenery, in the pieces of history-paintings; and in this way Rubens made occasional use of his pencil. He sometimes joined this master in larger works, which have been much admired; and particularly in a "Vertumnus and Pomona," a picture three feet high and four broad, highly commended by Houbraken, and sold at Amsterdam for above 28*l.* sterling; and "a Terrestrial Paradise," painted for Charles I. king of England. In the gallery of the archiepiscopal palace at Milan, there is an admirable landscape of Brueghel, representing a desert, in which Giovanna Battista Crespi painted the figure of St. Jerom; and among a great number preserved in the Ambrosian library in that city, there is an oval picture of the Virgin, painted by Rubens, which is encompassed by a garland of flowers admirably executed by Brueghel. Most considerable cabinets possess specimens of the art of this master. Some small engravings of landscapes, &c. are also ascribed to Brueghel. Pilkington and Strutt.

BRUEGHEL, ABRAHAM, called the *Neapolitan*, was born at Antwerp in 1672; and removing to Italy at an early age, he studied with such success, that he acquired a degree of reputation, which made his works much sought for, and highly valued. Nature was his model; and he represented his objects with elegance and truth, with a warm and natural colouring, and with a broad and free touch; which indicates a ready and expert hand. The performances of this master are classed among those of the most admired artists. The fortune, acquired by his profession, was considerable; but, he lost the whole of it by the dishonesty of a merchant in whom he confided, and died in consequence of the grief occasioned by this misfortune. Pilkington.

BRUEGHEL, PETER, of Bois le Duc, took his degree of doctor in medicine at Padua, and was in such esteem with Philip II. king of Spain, that he was by his command appointed professor in medicine at the university of Louvain, though, from his frequent attendance on the nobility in the neighbouring provinces, he was not able to perform the duties of that office. On his death, which happened in the year 1577, he left a sum of money to found a college at Louvain for six students, who were to be instructed in the different branches of medicine. The college, which is still in

in existence, bears the name of the founder; but no addition having been made to the revenue, it is now only capable of maintaining three students. Eloy. Dict. Hittor.

BREVIATA, mentioned by *Feodal Writers*, were written memorandums, introduced to perpetuate the tenor of the conveyance and investiture of lands, when grants by enrol only became the occasion of dispute and uncertainty. To this end they registered in the deed the persons who attended as witnesses, and heard it read without signing their names; the clerk adding their names in a sort of memorandum. Modern deeds are an improvement and amplification of these. Blackstone's Comment. vol. ii. p. 307.

BREVIARE, to abbreviate or reduce a thing into a shorter compass. This is otherwise called *abbreviare* and *inbreviare*.

BREVIARIUM, is more particularly used among Roman writers, to denote a book introduced by Augustus, containing the accounts of the empire. The design of it was for giving an account to the people how the monies levied on them were applied. The emperor Tiberius laid aside the *breviarium*, but it was resumed by Caligula.

BREVIARY, is an epitome and abridgment, or short state of a thing. The word is Latin, *breviarium*, though not pure, as appears from Seneca, who observes, that the ancients, in lieu of it, used *summarium*.

BREVIARY was also used among the ancients for the place where the briefs, or what was written abbreviately, were preserved.

BREVIARY, among *Ecclesiastical Writers*, denotes the office or service, both for day and night, as performed in the Romish churches.

BREVIARY is more frequently used for a church-book, containing the office of the breviary, that is, the prayers, and other parts of the service, with the several variations to be made therein, according to the several days, canonical hours, feasts, and the like.

D. Mege derives the name breviary from hence, that the ancient monks in their journeys, &c. had little books, wherein were the psalms and lessons read in the choir, collected out of large volumes: and F. Mabillon tells us, he has seen two such books in the archives of Cîteaux; they were not above three fingers broad: their letter was exceedingly small, and consisted mostly in abbreviations, expressing a whole period in a few syllables: whence they had a good title to the appellation of breviaries, q. d. *abridgments*. Some deduce the appellation breviary hence, that when the popes resided in the Lateran palace, the office read in the papal palace was much shorter than that said in the other churches of Rome; which office, thus abbreviated, was compiled by Innocent III., and called *officium capellare*, till such time as the Franciscan friars adopting the same, in conformity to the papal chapel, it became denominated *breviarium*, and shortly after was in general use. Marg. Vocab. Eccles. p. 38. Menag. Orig. Franc. The first time the word breviary occurs, in the sense of a church-book, is in a letter of the archbishop of Lyons to the bishop of Langres, in 1099; or rather by Micrologus, who lived in 1080.

The Roman breviary is general, and may be used in every place: but on the model of this have been formed various others, peculiarly appropriated to each diocese, and each order of religious.

The breviary consists of the services of matins, lauds, prime, third, sixth, none, vespers, and the complines, or *post-communion*; that is, of seven different hours; on account of that saying of David, *Septies in die laudem dixi tibi*. The obligation of reciting the breviary every day,

which was at first universal, by degrees was reduced to the beneficiary clergy alone, who are bound to do it on pain of mortal sin, and of refunding their revenues, in proportion as they are delinquent herein. In the fourteenth century, there was a particular reservation in favour of bishops, for passing, on occasion, three days without rehearsing the breviary. The institution of the breviary not being very ancient, the lives of the saints were inserted in it, agreeable to the opinions of the times, i. e. full of ridiculous ill-attested facts; which gave a handle to several purgations, or reformations thereof, by several councils, particularly those of Trent and Cologne; by several popes, as Pius V. Clement VIII. and Urban VIII. as also by several cardinals and bishops, each of whom lopped off some of the extravagancies, and brought the work nearer to the simplicity of the primitive offices; as acknowledging, that in the ancient church there was nothing read, but scripture itself.—Cardinal Quignon carried the reformation the farthest; leaving out the little office of the Virgin, the verses, responses, and a great part of the lives of the saints.

The breviaries now in use are almost innumerable: the difference between them consists principally in the number and order of the psalms, hymns, pater-nosters, ave-maries, credos, magnificats, cantemuses, benedictuses, canticamuses, nunc dimittites, misereres, hallelujahs, gloria patris, &c.

The most eminent, after the Roman breviary, are those of the Benedictines, of the Bernardines, of the Chartreux, of the Præmonstratenses, of the Dominicans, the Carmelites, the Franciscans, and Jesuits; also that of Cluny, of the church of Lyons the church of Milan, and the Mozarabic breviary used in Spain. But, in reality, there is scarcely a church in the communion of Rome, in France, Flanders, Spain, Germany, &c. that has not something particular in the form and manner of its breviary, though the differences are generally inconsiderable. See AMBROSIAN, GALLICAN, &c.

The breviary of the Greeks, which they call *απολογιον*, *horologium*, q. d. *dial*, is nearly the same, in almost all the churches and monasteries that follow the Greek rite. The Greeks divide the psalter into twenty parts, *καθισματα*; which are a kind of rests, pauses, or stations: and each pause is again subdivided into three parts. In general, the Greek breviary consists of two parts; the one containing the office for the evening called *μσονυχιον*; the other that for the morning, consisting of matins, lauds, prime, tierce, sixth, none, vespers, and complines. The breviary of the Maronites contains some more considerable variations.

Among the people who speak the Slavonic language, or any of its dialects, the breviary is rehearsed in the vulgar tongue, as among the Maronites in Syriac, among the Armenians in Armenian, &c. Those who rehearse the breviary in the Slavonic, are divided as to the rite; some following the Roman or Latin rite, as the inhabitants of Dalmatia and the neighbouring coasts; whereas those who live farther within the continent, as in Hungary, Bosnia, Servonia, &c. and in Poland, Lithuania, and Muscovy, follow the Greek rite. The breviaries of the Copts and Abyssinians are much alike.

BREVIATE, is sometimes used for an abridgment, or short extract of a book or paper. Phil. Trans. N^o 37. p. 2212.

BREVIATOR, an officer under the eastern empire, whose business was to write and transcribe briefs. At Rome, those are still called breviators, or abbreviators, who dictate and draw up the pope's briefs. See ABBREVIATOR.

BREVIUS, *et Retulis liberandis*, in Law, a writ or mandate

mandate to a sheriff, to deliver to his successor; the county; and the appurtenances, with the rolls, briefs, remembrances, and all other things belonging to that office.

BREVICORNIS, in *Entomology*, a species of *CERAMBYX* that inhabits Sierra Leona in Africa. The thorax is unarmed, and green: wing-cases obscure: antennæ short, and black. Fabr. &c.

BREVICORNIS, a species of *NECYDALIS* found in Guinea. The wing-cases are very minute: head and thorax fuscous, with a longitudinal yellow line: antennæ, very short and thick. Gmel. &c.

BREVICORNIS, a species of *CIMEX* of an obscure or dull cupreous colour: antennæ, very short and compressed; the anterior thighs dentated. Fabr. This sort is from China.

BREVICORNIS, a species of *TIPULA* of a black glossy colour: margin of the wings blackish: abdomen fuscous: anterior shanks spinous. Fabr. A native of Europe, called by Degeer, *Tipula flavicauda*.

BREVICORNIS, a species of *MONOCULUS* that inhabits marshes overflowed by the sea. It is simply described as having the hairs of the tail very short. Müll-Stroem, &c. *Obs.* The antennæ in the male of this species are hooked; those of the female forked at the tips.

BREVIER, among *Printers*, is the denomination of a small species of letters between *minion* and *Bourgeois*. See **PRINTING**.

BREVINE, in *Geography*, a town of Switzerland, in the principality of Neuchatel, 12 miles W. of Neuchatel. N. lat. 47°. E. long. 6° 23'.

BREVIPES, in *Entomology*, a species of *STAPHYLINUS* that inhabits Europe. The colour is deep black: wing-cases and legs testaceous: shanks short. Linn. Inhabits Europe.

BREVIPILIS, in *Zoology*, that variety of the dog (*CANIS*) known by the name of king Charles's dog.

BREVIS cubiti, in *Anatomy*, one of the extensor muscles of the cubitus, arising from the external spine of the humerus.

BREVIS radii, one of the supinator muscles of the radius, arising partly from the external condylus of the humerus, and partly from the upper and exterior part of the ulna; and inserted into the superior part of the radius, which it embraces wholly: and serves to turn the palm of the hand upwards.

BREVIS is also used by some for the third of the extensors of the carpus, which, arising from the lower part of the humerus, and running along the radius, terminates in the bone of the carpus which sustains the middle finger. Some anatomists join this with the second **EXTENSOR**, and call them *bicornis*, or *radialis externus*: others choose to distinguish them because they have different origins, and insertions; and that their bellies are separable.

BREVIS extensor pollicis pedis. See **EXTENSOR**.

BREVIS flexor pollicis pedis. See **FLEXOR**.

BREVIS peroneus. See **PERONEUS**.

BREVIS pronator radii. See **PRONATOR**.

BREVIS, in *Entomology*, a species of *CERAMBYX* of a blackish colour, with spinous thorax: thighs rotundate, short: anterior joints of the feet lobed with hairs. Sulz. &c. A native of Surinam.

BREVITY, in a general sense, that which denominates a thing brief or short.

BREVITY is more particularly used in speaking of the style or composition of discourse. **Brevity** of discourse is by some called *brachylogia* and *breviloquentia*; sometimes *laconismus*. Tacitus and Persius are remarkable for the brevity of their style. There are two kinds of brevity, one arising from dryness, poverty, and narrowness of genius;

the other from judgment and reflection; which latter alone is laudable. Brevity is so essential to a tale, a song and an epigram, that without it, they necessarily languish and become dull. Rhetoricians make brevity one of the principal marks or conditions of eloquence; but the rules they prescribe for attaining it, are difficult to apply, so as still to keep the due medium between too much and too little.

A just brevity is attained by using all the words which are necessary, and none but those which are necessary. Sometimes it may also be had, by choosing a word which has the force of several. It is this last kind which Quintilian admires so much in Sallust; and the imitation of which, by other writers, has caused so much obscurity. See **OBSCURITY**.

BREVIUM custos. See **CUSTOS**.

BREVIUM falso retorno. See **FALSO**.

BREUNLINGEN, in *Geography*, a small town of Germany, in the circle of Swabia, which, at the peace of Munster, was ceded to the house of Austria.

BREVOORDT, a fortified town in the United Netherlands, in the province of Guelderland, and county of Zutphen, surrounded by a marsh; seven leagues S. E. of Zutphen.

BREW, a river of England, which runs into the British channel, about 8 miles N. of Bridgewater.

BREWED-WINE. See **WINE**.

BREWER, a person who professes the art of **BREWING**. Brewers are called, in *Middle Age Writers*, *brasiatores*, *braciatores*, *braxionarii*, *brasiatrices*, *braxatrices*, and *cambarii*. Du-Cange Gloss. Lat. tom. i.

The brewers of London make a **COMPANY**, incorporated by Henry VI. in 1438, consisting of a master, three wardens, twenty-eight assistants, and one hundred and eight liverymen. See **COMPANY**.

The apparatus and utensils of a brewer, or a brewhouse, are a furnace made close and hollow for saving fuel, with a vent for the passage of the smoke, lest it taint the liquor; a copper, which is preferable to lead; a mask-fat near the head, a cooler near the mask-fat, and guile-fat under the cooler; adjoining to all, are several clean tubs, to receive the worts and liquors.

BREWER, in *Geography, a strait in the Magellanic sea, about the island called Statenland, which parts it from the straits of Le Maire. It was discovered by the Dutch navigator Brewer, about the year 1643.*

BREWER'S Haven, a good harbour at the N. end of the island of Chiloe, on the coast of Chili, in South America, and in the South sea. The Dutch attempted to land here in 1643, in order to obtain possession of some part of Chili, but they were driven off by the Spaniards and natives. S. lat. 42° 30'. W. long. 74° 10'.

BREWING, *Brassage de la biere*, Fr. *Das Brauen*, Germ. The art of brewing, or of preparing a vinous fermented liquor from the farinaceous seeds, is of very high antiquity. The ancient Egyptians, from the soil and climate of their country not being favourable to the culture of the vine, were induced to seek a substitute in barley, from which, in all probability, by the process of malting, they knew how to procure a fermented liquor. The town of Pelusium, situated on one of the mouths of the Nile, was particularly celebrated for its manufactories of malt liquor, of which there were two kinds; one called *Carmi* was sweet, and appears to have resembled our sweet and glutinous ales, the other named *Zithum*, seems to have been analogous to modern beer. The Germans, from the testimony of Tacitus, were capable of preparing a liquor similar to wine (*quandam vini speciem*) from barley, by fermentation. Julian, Strabo, and Polybius, show, that the same art

was known to the Spaniards, the Gauls, and the inhabitants of the British islands, and the north of Europe. All the ancient malt liquors, however, seem to have been made entirely of barley, or some other farinaceous grain, and therefore were not generally calculated for long keeping, as this quality depends considerably, though not entirely, on the bitter extract of hops, or other vegetables, with which the liquor is mingled.

Modern malt liquor is essentially composed of water, of the soluble parts of malt and hops, and of yeast.

For a particular account of the preparation of MALT, we refer our readers to that article. It will be sufficient for our present purpose, to mention, that barley consists of fecula or starch, albumen, and a little gluten; and, that by the process of germination or malting, the starch is converted into saccharine mucilage. If each grain of barley was perfectly malted, the whole of its starch would be changed into sugar; this, however, is never the case: the soluble contents, therefore, of such malt as the brewers make use of, arranged in the order of their respective proportions, are saccharine mucilage, starch, albumen, and gluten, of which only the first is absolutely necessary for the production of a vinous liquor. Three or four different kinds of malt are distinguished by the brewer by their colours, which depend on the degree of heat that was used in the drying. Malt that has been dried by a very gentle heat scarcely differs in its colour from barley; if exposed to a somewhat higher temperature, it acquires a light amber-yellow hue; and by successive increments of heat, the colour becomes deeper and deeper, till, at length, it is black. The change of colour is owing to the grain being partially charred or decomposed; and in proportion to the extent to which this alteration is allowed to proceed, will the produce of sugar, that is of fermentable matter, be diminished. The principal advantage of high-dried malt over the paler kind, is the deep yellowish brown tinge which it gives to the liquor: but this colour may be communicated much more economically by burnt sugar. The malt, whether pale or high-dried, must be bruised between rollers, or coarsely ground in a mill before it is used, and it is found by experience, that malt which has lain to cool for some weeks is, in many respects, preferable to that which is used as it comes hot from the mill. The first step in the process of brewing, is

§ 1. *Mashing.*

This is performed in the *mash-tun*, which is a circular wooden vessel, shallow in proportion to its extent, and furnished with a false bottom, pierced with small holes, fixed a few inches above the real bottom: when it is small, it ought to have a moveable wooden cover. There are two side-openings in the interval between the real and false bottom; to one is fixed a pipe for the purpose of conveying water into the tun; the other is fitted with a spigot for the purpose of drawing the liquor out of the tun. The brewing commences by strewing the grist or bruised malt evenly over the false bottom of the mash-tun, and then, by means of the side pipe, letting in from the upper copper the proper quantity of hot water. The water first fills the interval between the two bottoms, then forcing its way through the holes in the false bottom, it soaks into the grist, which, at first floating on the surface of the water, is thus raised off the bottom on which it was spread. When the whole of the water is let in, the process of mashing, properly so called, begins. The object in mashing is to effect a perfect mixture of the malt with the water, in order that all the soluble parts may be extracted by this fluid: for this purpose, the grist is first incorporated with the water by

means of iron rakes, and then the mass is beaten and agitated, and still further mixed by long flat wooden poles, resembling *cars*, which indeed is the name by which they are technically known. In some of the large porter breweries, the extent of the tun is so great, that the process of mashing cannot be adequately performed by human labour, and recourse is had to a very simple and effectual instrument for this purpose. A very strong iron screw, of the same height as the mash-tun, is fixed in the centre of this vessel, from which proceed two great arms or radii, also of iron, and beset with vertical iron teeth a few inches asunder, in the manner of a double comb: by means of a steam engine, or any other moving power, the iron arms which at first rest on the false bottom, are made slowly to revolve upon the central screw, in consequence of which, in proportion as they revolve, they also ascend through the contents of the tun to the surface; then, inverting the circular motion, they descend again in the course of a few revolutions to the bottom. These alternate motions are continued till the grist and water are thoroughly incorporated. When the mashing is completed, the tun is covered in to prevent the escape of the heat, and the whole is suffered to remain still, in order that the insoluble parts may separate from the liquor: the side spigot is then withdrawn, and the clear wort is allowed to run off, slowly at first, but more rapidly as it becomes fine, into the lower or boiling copper.

The operation of mashing, as it is the first in order, is the most important; and all the succeeding ones are modified according to the circumstances, under which this primary one is effected. The principal thing to be attended to, is the temperature of the mash, which depends, partly on the heat of the water, and partly on the state of the malt. If any quantity of barley is mingled with twice its bulk of water, the temperature of the mass will be very nearly that of the mean temperature of the ingredients. If the palest malt is subjected to the same experiment, the temperature will be somewhat greater than that of the mean heat. This excess is found to increase very rapidly, in proportion to the colour or dryness of the malt employed; so that when one part of the highest dried malt is mixed with two parts of warm water, the temperature will be no less than 40° Fah. above the mean. In calculating, therefore, the heat of the mash, it is necessary to take into consideration, both the dryness of the malt, and the proportion which it contains of unmaltd, or imperfectly malted barley. The object in mashing is to extract from the malt, as much as possible of the saccharine mucilage; but this is so intimately combined with the other parts of the grain, that the range of temperature which can be employed for this purpose, is very confined. If the water was let upon the grist boiling hot, the starch which it contains would not only be dissolved, but converted into a gelatinous substance, in which all the other parts of the malt, and most of the water, would be entangled, beyond the possibility of recovery by any after-process; and great loss is perpetually sustained by inattentive brewers, from this very circumstance. The most eligible temperature upon the whole for mashing, appears to be about 185° to 190° of Fahrenheit: the heat of the water, therefore, for the first mashing, must be somewhat below this temperature, and the lower in proportion to the dark colour of the malt made use of. Thus, for pale malt, the water of the mash may be at 180° and upwards; but for high-dried brown malt, it ought not much to exceed 170°. The wort of the first mashing is always by much the richest in saccharine matter; but to exhaust the malt, a second and third mashing is required; and as no heat is generated, except in the first mashing, the water in the succeeding ones

BREWING.

may be safely raised to nearly 190° . The proportion of wort to be obtained from each bushel of malt, depends entirely on the proposed strength of the liquor. For sound small beer, 30 gallons of wort may be taken from each bushel of malt; but for the strongest ale, only the produce of the first mashing, or about $6\frac{1}{2}$ gallons per bushel, is employed. But whatever be the proportion of wort required, it must be held in mind, that every bushel of well made malt will absorb, and retain $3\frac{1}{2}$ gallons of water, and therefore the water made use of must exceed the wort required, in the same proportion.

It is of great importance to the brewer, to ascertain the strength of his worts, or their richness in saccharine matter; this may be done, partly by the taste, but more accurately by an instrument called a *Saccharometer*, which in fact is only a hydrometer, the scale of which is adapted to the various densities of wort. The name *Saccharometer*, however, is an improper one, as it is apt to mislead the brewer: this instrument shews merely the specific gravity of the liquor, and this depends, not only upon the sugar, but the starch, and every other part of the malt which is soluble in water. But the relative proportions of these substances are, in all likelihood, very various in different parcels of malt; whence arises a serious objection to much dependence on the *saccharometer*.

§ 2. Boiling and hopping.

If only one kind of liquor (whether ale or beer) is to be made, the produce of the three mashings is to be mixed together: but, if both ale and beer are required, the wort of the first, or of the first and second mashings, is appropriated to the ale, and the remainder is set aside for the beer. All the wort destined for the same liquor, after it has run from the mash-tun, is transferred to the large lower copper, and mixed while it is heating with the required proportion of hops. The stronger the wort is, the larger proportion of hops does it demand: and this is calculated in two ways, either according to the quantity of malt employed, or the richness of the wort. Where the former basis of calculation is referred to, the quantity of hops, especially in private families, where economy is not so strictly attended to as in large establishments, is one pound of hops to a bushel of malt, whether the wort is intended for the strongest ale, or the weakest small beer. In public breweries, the proportion of hops is considerably smaller, and is regulated, not merely by the quantity of malt, but the richness of the wort. For strong ales, the common proportion is about 1 lb. of hops to 1. 3 bushel of malt; for beer, the quantity is lowered to 1 lb. of hops to 1. 7 bushel of malt. When both ale and beer are brewed from the same malt, the usual practice is to put the *whole* quantity of hops in the ale-wort; and after they have been boiled a sufficient time in this, to transfer them to the beer-wort, in order to be exhausted by a second boiling.

When the hops are mixed with the wort in the copper, the liquor is brought to boil; and the best practice is to keep it boiling as fast as possible, till, upon taking a little of the liquor out, it is found to be full of minute flakes, like curdled soap. These flakes consist of the gluten and starch of the malt separated from their former solution in the wort, by the joint action, in all probability, of the heat, and the bitter extract of the hops. For the ascertainment of this important question, no regular experiments, however, have been as yet instituted.

The boiling copper is in most breweries uncovered, but in some it is fitted with a steam-tight cover, from the centre of which passes a cylindrical pipe, that terminates by several recurved branches in the upper or mashing copper: the steam,

therefore, produced by the boiling, instead of being wasted, is let into the cold water of the upper copper, and thus raises it very nearly to the temperature required for mashing, besides impregnating it very sensibly with the essential oil of the hops, in which the whole of the flavour resides, and which would otherwise be discharged into the air, and thus be lost.

§ 3. Cooling.

When the liquor is sufficiently boiled, it is discharged into a number of shallow tubs called coolers, where it remains exposed to a free draft of air, till it has deposited the hop-seeds and coagulated flakes with which it was charged, and is become sufficiently cool to be submitted to the next process, which is that of fermentation. It is necessary that the process of cooling should be carried on as expeditiously as possible, particularly in hot weather; for unfermented wort, by exposure to a hot close air for a few hours, is very liable to contract a nauseous smell and taste, when it is said technically to be *foxed*, in consequence of small spots of white mould forming on its surface. Liquor made from pale malt, and which is intended for immediate drinking, need not be cooled lower than 75° or 80° , and in consequence may be made all the year through, except perhaps during the very hottest season; but beer from brown malt, especially if intended for long keeping, requires to be cooled to 65° or 70° , and therefore cannot possibly be made except in cool weather; hence it is that the months of March and October have always been reckoned peculiarly favourable to the manufacture of the best malt liquor.

§ 4. Tunning and barrelling.

From the coolers the liquor is transferred into the fermenting or working tun, which is a large cubical wooden vessel capable of being closed at pleasure. As soon as the wort is let in, it is well mixed with yeast, in the proportion of about one gallon to four barrels, and in about five hours afterwards the fermentation commences. The signs of fermentation are muddiness of the liquor, the formation of froth or yeast on the surface, and a copious disengagement of carbonic acid. In the first stage of fermentation, on taking some of the yeast in a bowl it soon falls down into a liquid; but when the fermentation is sufficiently established to allow of barrelling, the yeast has a certain degree of toughness, and will remain a long time without falling in. When the wort is let down hot into the working tun, the fermentation is conducted with the tun closed, and proceeds rapidly, so that in about 18 or 20 hours it is fit to be cleaned or put into the barrels; but when the wort is let down at 65° it requires 48 hours for the first fermentation, and is peculiarly liable to be affected by a considerable change of weather.

Although, in common practice, the coagulated fecula and gluten are deposited and left in the coolers, yet, skilful brewers mix them again with the wort by agitation, and ferment the liquor in this state. Fermentation is considerably retarded by this practice; but, in return, the liquor is much clearer and more completely fermented, as is obvious from the remarkable diminution of specific gravity which it undergoes.

The last process is transferring the liquor from the working tun to the barrels, when the fermentation is completed. During a few days, a copious discharge of yeast takes place from the bung hole, and the barrels must be carefully filled up every day with fresh liquor: this discharge gradually becomes less, and in about a week ceases; at which time the bung-hole is closed up and the liquor is fit for use, after standing from a fortnight to three months according to its strength, and the temperature at which it has been fermented.

BREWING, among *Distillers*, denotes the method of extracting the more soluble parts of vegetables with hot water, and thus procuring a solution or decoction fitted for vinous fermentation.

In which sense brewing is a necessary step towards distillation.

A fermentable solution, fit for yielding a spirit or brandy, is obtainable from any vegetable, under proper management; but the more readily and perfectly the subject dissolves, the better it is disposed for fermentation, and the production of brandies. Thus sugar, honey, treacle, manna, and other inspissated vegetable juices, which totally unite with water, into a clear and uniform solution, are more immediate, more perfect, and better adapted subjects of fermentation than roots, fruits, or herbs, in substance, the grains, or even malt itself; all which dissolve but very imperfectly in hot water.

Yet malt, for its cheapness, is generally preferred in England, and brewed for this purpose, much after the common manner of brewing for beer; only the worst malt will serve for distillation; and the tincture, without the addition of hops, and the trouble of boiling, is here directly cooled and fermented.

The grain intended for brewing is previously malted, to prepare it for dissolving more easily and copiously in the water, so as to afford a richer tincture or solution, which, after due fermentation, will yield about one half more of proof spirit than the tincture of an equal weight of unmalted corn.

Brewing is also used, in an ill sense, for the counterfeiting and compounding especially of wines. Vintners and wine-coopers are suspected of brewing wines, or mixing divers inferior sorts, to imitate some better kind. The necessity of accommodating their liquors to the palates of their guests, is another cause of brewing; inasmuch that some have confessed they commonly draw out of two or three casks for every pint.

BREWING, the appearance of a collection of black and tempestuous clouds, arising gradually from a part of the horizon, being an indication of an approaching storm.

BREWINGTON, FORT, in *Geography*, lies in the township of Mexico, New-York, and at the west end of lake Oneida, about 24 miles S.E. from fort Oswego.

BREWOOD, or **BREWWOOD**, a market town of Staffordshire, England, consists of 581 houses, and 2863 inhabitants, the greater number of whom are engaged in the iron manufactories. The bishop of the diocese had formerly a seat here, and a small Benedictine nunnery was founded here in the time of Richard I. A large free grammar school is established in this town. Here are a market on Fridays, and one fair annually. Gough's edit. of Camden's *Britannia*, vol. ii.

BREY, a small town of Germany, in the circle of Westphalia, and bishopric of Liege, seated on the river Neer, 29 miles N. of Liege.—Also, a town of Upper Guelderland, 6 miles W. of Venlo.

BREYDA FIORDUR, a bay of Iceland, in the west quarter, and in the district called Dala-Syssel.

BREYDEL, CHARLES, called *Cavalier*, in *Biography*, a painter of landscapes, was born at Antwerp, in 1677, and remained under the instruction of old Rysbrack, the landscape painter, for three years, after which period he became, in consequence of his close application, competent to commence the practice of his art. Having been diverted from his purpose of visiting Italy, by the encouraging reception which he met with at Frankfort and Nuremberg, he spent two years with his brother, Francis Breydel, at the court of Hesse-Cassel; and he afterwards went to Amsterdam, where

he copied several views of the Rhine, from the designs of Grissier, and thus improved his colouring, pencilling, and taste of design, so that the works of this artist may be regarded as his second and best school. At length he settled at Ghent, where his performances were much admired; but he was reduced, by extravagance in his dress, furniture, and table, to the necessity of earning money expeditiously, and to multiply pictures much inferior in design and execution to others, which had been produced by his pencil. His health declined towards the close of his life; and his performances, during the intervals of ease which he enjoyed, amidst recurring paroxysms of the gout, wanted the spirit, delicate finishing, and firmness of touch of his better days. Whilst the ideas and style of Grissier were his models, his pictures, which were views of the Rhine, were well designed, neatly executed, and excellently coloured. But he changed this manner, in order to imitate Velvet Breughel, whose works were universally admired, and selected for his subjects battles, sieges, and encampments. He often copied the prints of Vandermeulen; but afterwards composed very readily in this style, without borrowing from any other artist. His best pictures are full of spirit, his touch is firm and well adapted to his style, and his design is correct. Some of them appear too laboured, but others are full of harmony. He died in 1744. Pilkington.

BREYDEL, FRANCIS, brother of the preceding, was born at Antwerp, in 1679; and is supposed to have been a disciple of old Rysbrack. At an early age he excelled in portraits, and was appointed painter to the court of Hesse-Cassel, where his works were held in high estimation. From Hesse-Cassel he removed to England, and continued here for several years, with his friend Vandermyn. Besides portraits, he painted conversations, feasts, assemblies, and carnivals; and his conversations, as well as his other compositions, are finely executed, agreeably coloured, and well disposed. This artist died in 1750. Pilkington.

BREYER, in *Geography*, the name of an island on the coast of N. America. N. lat. 44° 19'. W. long. 66° 25'.

BREYNIA, in *Botany*, (in memory of Jac. Breynius, and his son, Jac. Phil. Breynius, both celebrated botanists). Forster 73. Schreb. 1605. La Marck Illust. 860. Class, *polygamia diœcia*.

Gen. Char. 1. Complete flowers. *Cal.* perianth one-leaved, top-shaped, minute, with six segments; segments, concave, blunt, closely converging, depressed, flat at the end, so that it is pervious only by a small hole. *Cor.* none. *Stam.* filaments none; anthers five, linear, erect, flattened longitudinally to the style, approximating. *Pist.* germ, very small. Style cylindric, as long as the calyx; stigma obtuse. *Pericarp.* berry, dry, globose, three-celled, supported by the perianth, now increased to three times its former size, and spreading very wide. *Seeds*, two in each cell, convex at the back, flat on the sides. 2. Stameniferous flowers. *Cal.* one leaved, with five segments; segments roundish, concave, nearly equal. *Cor.* none. *Nectary*, five glands, on short pedicells, alternate with the stamens. *Stam.* filaments five, very short; anthers roundish, as long as the calyx. 3. Pistilliferous flowers. *Cal.* and *Cor.* as in the stameniferous. *Pist.* germ globose; style none; stigmas five, obcordate, resembling petals. *Pericarp.* five-celled. *Seeds*, solitary, rather three-sided. Native of New Caledonia and Tannan, in the South Seas.

BREYNIA, (Brown). See *CAPPARIS CYNOPHALLOPHORA*, and *SILQUOSA*.—(Jacquin). See *CAPPARIS BREYNIA*.

BREYNIA, (Pet.) See *SERITHIUM CHINESEUM*, and *PLUMOTUM*.

BREYRELDE, in *Geography*, a town of Flanders, 8 miles S. of Aloft.

BREYSICH. See **BRISICH**.

BREZAN, a town, having a castle, of Poland, in the palatinate of Lemberg, and district of Halicz.

BREZE, a town of France, in the department of the Mayne and Loire, 8 miles S. of Saumur.

BREZOLLES, or **BRESSOLLES**, a town of France, in the department of the Eure and Loire, and chief place of a canton in the district of Dreux; 4 leagues W. of Dreux. The place contains 810, and the canton 9951 inhabitants: the territory comprehends $267\frac{1}{2}$ kilometres, and 22 communes.

BREZOWA, a populous town of Lower Hungary, in the Ujhely district. The inhabitants follow agriculture and handicrafts.

BRIAC, **St.**, a town of France, in the department of the Ille and Vilaine, and in the district of St. Malo, $1\frac{1}{2}$ league W. of St. Malo.

BRIACK island, about 2 miles long from N.N.E. to S.S.W. lies on the coast of France, in the English channel. See **BREHAT**.

BRIADEN, a town of Asiatic Turkey, in Syria, 100 miles N.N.E. of Damascus.

BRIANÇON, a town of France, and chief place of a district, in the department of the Higher Alps, situate on the Durance, surrounded with rocks and mountains, and defended by forts and redoubts; 14 leagues N.N.E. of Gap. The place contains 2976, and the canton 7187 inhabitants; the territory includes $257\frac{1}{2}$ kilometres and 8 communes. N. lat. $44^{\circ} 46'$. E. long. $6^{\circ} 45'$.

BRIANÇONNET, a fortress of Savoy, in the Tarentaise, near the town Mouffliers, situate on a rock which is inaccessible, except by the side of a river, where it is ascended by 200 or 300 steps. The common passage from Savoy to the Tarentaise and Italy is by this fortress.

BRIANÇONNOIS, the name, before the revolution, of a district of France, in the province of Dauphiny, about 12 leagues long and 6 wide, comprehending several vallies, which are situated among the Alps. The air is cold in winter, and warm in summer. The inhabitants are sober, active, industrious; they cultivate some wheat and fruit, and feed flocks of sheep; they gather manna from the trees, and make some wine. This district now forms apart of the department of the Lower Alps. Its inhabitants were formerly known to the Romans under the appellation of Brigantes.

BRIANSK. See **BRANSK**.

BRIANZA, mountains of Italy, near the lake of Como, in the Milanese.

BRIAR, in *Botany*, a name given to many species of the rose.

BRIAR Creek, in *Geography*, a water of Savannah river, in Georgia; the mouth of which is about 50 miles S.E. by S. from Augusta, and 55 north-westerly from Savannah.

BRIARE, a town of France, in the department of the Loiret, and chief place of a canton, in the district of Gien, seated on the Loire, and 2 leagues S.E. of Gien. The place contains 1655, and the canton 7700 inhabitants; the territory includes 330 kilometres, and 14 communes. At this town commences the canal, which unites the Loire and Seine. N. lat. $47^{\circ} 40'$. E. long. $2^{\circ} 45'$.

BRIAREUS, in *Fabulous History*, a giant, the son of Æther, Titan, or Cælus, and Terra. This was his celestial appellation; on earth he was called "Ægeon." Jupiter derived singular succour from him, when Juno, Pallas, Neptune, and the other gods, endeavoured to bind him in chains, and to dethrone him; though he afterwards conspired with

his brethren, the giants, to dethrone Jupiter. Virgil describes him (*Æn.* x. 365.) on this occasion, as having 100 hands, 50 heads, and breathing out fire. According to the fable, Jupiter punished him by throwing him under Mount Ætna, which, as often as he moves, belches out fire.

BRIAREUS, in *Natural History*, a species of **GORGONIA**, found in the West Indian seas. This kind is subramose, round, thick, rising from a broad dilated base; the flesh white within; externally grey; florets large, bearded, with eight tentacula; bone composed of small glassy needles of a purple colour irregularly, and compactly disposed in a longitudinal manner. Ellis, Solander, &c.

BRIASCA, in *Geography*, a town of European Turkey in Moldavia; 76 miles E. of Jassi.

BRIATEXTE, a town of France, in the department of the Tarn, and the district of Lavaur: $1\frac{1}{2}$ league N.E. of Lavaur.

BRIATICO, a town of Naples, in the province of Calabria Ultra; 11 miles N.E. of Nicotera.

BRIBACH, a river of Swabia, in the Black forest, which rises near the source of the Danube, and unites with the Brege below the town of Doneschingen.

BRIBE, a reward given to pervert the judgment, or corrupt the conduct. See **BRIBERY**.

The word is French, *bribe*, which originally denotes a bit, fragment, or relic of meat taken off the table; on which footing, bribe imports as much as *panis mendicatus*, and still keeps up the idea of the matter whereof bribes anciently consisted. Hence also the Spaniards use *bribar* and *briwar* for begging; and *brivia*, *brivoneria*, and *brivonismo*, for beggary. Menag. Orig. Franc. p. 131. Skinner Etym. in voc. In *Middle Age Writers*, a bribe given to a judge, is called *quota litis*; and the receiver, *campi particeps*, or *campi particeps*; because the spoils of the field, i. e. the profits of the cause, were thus shared with the giver. Du-Cange. Gloss. Lat. tom. i.

BRIBERY, in *Common Law*, is when a person, occupying a judicial place, takes any fee, gift, reward, or brokerage, for doing his office, or by colour of his office, except of the king only. In a larger sense, bribery denotes the receiving or offering of any undue reward, to or by any person concerned in the administration of public justice, as an inducement for acting contrary to duty; and sometimes it signifies the taking or giving of a reward for a public office.

In the east it is the custom never to petition any superior for justice, kings not excepted, without a present; a practice adapted to the genius of despotic countries. The Roman law, though it contained many severe injunctions against bribery, as well for selling a man's vote in the senate or other public assembly, as for the bartering of common justice, nevertheless tacitly encouraged this practice; because it allowed the magistrate to receive small presents, provided they did not in the whole amount exceed a hundred crowns in the year. Plato, in his Ideal Republic (*De Leg.* l. 2.) more wisely orders those who take presents for doing their duty to be punished in the severest manner: and by the laws of Athens, the offerer as well as the receiver of a bribe were prosecuted. In England, this offence of taking bribes is punished, in inferior officers, with fine and imprisonment; and in those who offer a bribe, though not taken, the same. (3 Inst. 147.) But in judges, especially the superior ones, it has been always regarded as a very heinous offence; inasmuch, that anciently it was punished as high treason, and the chief justice Thorp was hanged for it in the reign of Edw. III.; and at this day it is punishable with forfeiture of office, fine, and imprisonment. By statute

11 Hen. IV. all judges and officers of the king, convicted of bribery, shall forfeit treble the bribe, be punished at the king's will, and be discharged from the king's service for ever.

Officers of the customs taking any bribe, whereby the crown may be defrauded, forfeit 100*l.*, and are rendered incapable of any office; and the person giving the bribe or offering any bribe to officers of the customs, to induce them to connive at the running of goods, shall forfeit 50*l.* See CUSTOMS. Candidates that bribe electors, after the date or *teste* of the writs, or after the vacancy, by giving or promising any money or entertainment, are disabled to serve for that place in parliament; and he that takes as well as he that offers a bribe, forfeits 500*l.* and is for ever disabled from voting, and holding any office in any corporation, unless, before conviction, he discovers some other offender of the same kind, whereby he is indemnified for his own offence. The oath against bribery in the election of members of parliament, is as follows: "I do swear, I have not received, or had, by myself, or any person whatsoever, in trust for me, or for my use and benefit, directly or indirectly, any sum or sums of money, office, place, or employment, gift, or reward, or any promise or security, for any money, office, employment, or gift, in order to give any vote at this election." Upon this oath, archdeacon Paley (*Principles of Moral and Political Philosophy*, vol. i. p. 208.) remarks, that the several contrivances to evade this oath, such as the electors accepting money under colour of borrowing, and giving a promissory note, or other security for it, which is cancelled after the election; receiving money from a stranger or a person in disguise, or out of a drawer or purse, left open for the purpose; or promises of money to be paid after the election; or stipulating for a place, living, or other private advantage of any kind; if they escape the legal penalties of perjury, incur the moral guilt: for they are manifestly within the mischief and design of the statute, which imposes the oath; and within the terms indeed of the oath itself; for the word "indirectly" is inserted on purpose to comprehend such cases as these. See PARLIAMENT. Blackstone's *Comm.* vol. i. p. 179. vol. iv. p. 139.

BRIBEKOU, in *Geography*, a town of Africa, on the Gold Coast.

BRIBESCA. See BRIVIESCA.

BRICE, St., a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the district of Fougères; 2½ leagues N. W. of Fougères. The town contains 1193, and the canton 13,830 inhabitants; the territory comprehends 150 kilometres, and 11 communes.—Also, a town of France, in the department of the Seine and Oise; 3 leagues N. of Paris.—Also, a town of France, in the department of the Yonne; 2 leagues S. E. of Auxerre.—Also, a town of France, in the department of the Marne, and in the district of Reims; 1 league N. W. of Reims.

BRICHERASCO, a town of Piedmont, in the district of the Four Vallies; 2½ miles S. S. W. of Pignerolo.

BRICIANI, *Knights of St. Bridget*, a military order, resembling that of Malta, established by St. Bridget, princess of Sweden, in 1366, and approved of by pope Urban V. who gave it the rule of St. Augustin. The arms of the Briciani were a cross azure, like that of the knights of Malta; under which was a tongue of fire, to express the ardour of their zeal: their office was to fight against heretics, bury the dead, assist widows and orphans, &c.

BRICK, a kind of scattitious stone, composed of an argillaceous earth, tempered and formed in moulds, dried in the sun, or burnt in kilns.

The use of bricks is of the highest antiquity. The earliest buildings of Asia were of bricks, dried in the sun, and cemented with bitumen. In this manner, we learn from the historical books of the Old Testament, Nineveh was built by Nimrod; and the famous walls of Babylon, reckoned by the Greeks among the wonders of the world, were of the same materials.

Unburnt bricks were used in Egypt: the making of them was one of the oppressions to which the Israelites were subjected during their servitude in that country. The antique edifices which at present exist in Egypt are principally of stone: however, Pococke describes a pyramid of unburnt brick, called "Kloube-el-Menshie" (the bricks of Menshie), from a village near, called Menshie-Dashour. It was doubtless built near the plain, on account of the bricks, which seem to be made of the earth brought by the Nile, being of a black sandy earth, with some pebbles and shells in it. It is mixed up with chopped straw, in order to bind the clay together; as they now make unburnt bricks in Egypt, and many other eastern parts, which they use very much in their building. I found some of these bricks 13½ inches long, 6½ inches broad, and 4 inches thick; and others 15 inches long, 7 inches broad, and 4½ inches thick. I observed on the north side the bricks were laid lengthways from north to south, but not every where in that direction; however, I particularly took notice that they were not laid so as to bind one another. It is much crumbled and ruined, but as it is I measured it, and found it to be 157 feet on the north side, and 210 feet on the west side; it is 150 feet high. By what I could judge, from the present slope of it, I concluded that it was built with five degrees, like the pyramid of Saccara, each being about 10 feet broad and 30 deep, so that the ascent to it is easy, as the bricks are crumbled away."

The Greeks and Romans also used this material, both sundried and burnt. Vitruvius instances several celebrated buildings, as the walls of Athens; the cells of the temples of Jupiter and Hercules, which were of brick, the surrounding columns and entablature being of stone; the ancient walls of Arezzo in Italy; the house built by the Attalic kings at Tralles, which was always given for the habitation of those who bore the office of priests in that city. The paintings which were brought from Lacedæmon to ornament the Comitium, in the edileship of Varro and Murena, were cut from walls of brick; the house of Cræsus at Sardis; and the celebrated tomb of Mausolus, in which, though the ornaments were all of Proconnesian marble, the walls were built of brick, and (says Vitruvius) remain to this time exceedingly substantial, and the incrustation appears as polished and shining as glass.

The following directions for making unburnt bricks are given by Vitruvius. They should not be made of sandy, stony, or gravelly loam, for such kind of earth renders them heavy; and upon being wetted with rain after being laid in the wall, they swell and dissolve, and the straw which is put in them does not adhere on account of their roughness: the earth of which they are formed should be light chalky white or red. They should be made in spring or autumn, as being the best time for drying; for the intense heat of summer parches the outside before the inside is dry, which afterwards drying in the building, causes them to shrink and break. They are best when made two years before they are used, as they cannot be sufficiently dry in less time. If they are used when newly made and moist, the plaster work which is laid on them remaining firm and stiff, and they shrinking, and consequently not preserving the same height with the incrustation, it is by such contraction, loosened and separated.

separated. At Utica, therefore, the laws allow no bricks to be used before they have lain to dry five years.

Vitruvius proceeds to describe the different kinds of bricks, which were of three sizes; the first, called *didoron*, were in general use among the Romans; they were a foot long, and half a foot broad. The other two sorts were used by the Greeks; one called *tetradoron*, which were on every side four palms, or one foot; the other *pentadoron*, five palms, or fifteen inches every way: the first were used in private, and the latter in public edifices. They had also half bricks of each sort; and in building, the whole bricks were laid in one course, and the half in the next.

At Pitane in Asia, at Calentum in Spain, and at Marfeilles, they had bricks so light as to swim on water, the earth of which they were made being of the nature of pumice stone.

When Vitruvius mentions bricks, it appears that he means sun-dried bricks; for he observes, that bricks could not be used by the Romans within the city; as to save room in so crowded a town, the laws did not permit any walls in public places to be made thicker than one foot and a half, while brick walls of that thickness would not support more than one story. Accordingly, the walls were built with hewn stone, *testaceous substances* (structuris testaceis,) or rubble. That these testaceous substances were tiles, is evident, for he observes, that it could not be known at first whether they were of good loam and well burnt, but that they should be laid in a roof during a winter and summer before they were used in a wall.

Augustus boasted that he had found Rome of brick, and left it of marble. It could be only sun-dried bricks that he referred to, for baked bricks were used in the most sumptuous edifices: the temple of Peace, the Pantheon, and all the Thermæ were of this material.

Whatever may be the precise time of the introduction of baked bricks in the edifices of Rome, they appear to have been always square. M. Quatremere de Quincy, in the *Encyclopedie Methodique*, observes, that in his researches among the antique buildings of Rome, he has found bricks of three sizes. The least were $7\frac{1}{2}$ inches square, and $1\frac{1}{2}$ thick; the medium ones $16\frac{1}{2}$ inches square, and from 18 to 20 lines in thickness; and the larger ones 22 inches square, by 21 or 22 lines thick. The smaller bricks were employed to face walls of rubble work; and to make a better bond with the wall, they were cut diagonally into two triangles, the longer side was placed on the outside, and the point towards the interior of the work. To tie more effectually the facing with the rubble, they placed at every four feet in height one or two courses of the large square bricks. The large bricks were also used in the arches of openings or discharge, which were necessary in the building.

No long bricks, such as are used at present, are found in antique constructions.

In modern times, bricks have been used in all countries. Chardin thus describes the manufacture of bricks in Persia. The material of Persian buildings is bricks, either dried in the sun or burnt in the fire. The tiles or bricks of earth are made in thin wooden moulds, 8 inches long, 6 wide, and $2\frac{1}{2}$ inches thick. The labourers temper with their feet the earth, which is generally mixed with straw cut very small, to give it more consistence, and that the bricks may last longer and not break. They pass the hands over the bricks to smooth them, after having dipped them in a vessel of water mixed with straw, still finer than was at first used. Then taking off the mould they leave the bricks to dry for two or three hours, after which they are ranged over one another, where they remain till the drying is completed.

The baked bricks are made of two parts of earth and one of cinders well tempered together, in moulds larger than for the others. They leave them to dry in the sun for several days, then place them in a large furnace, ranged one over the other, at some distance, which they fill with plaster. They close the furnace and light the fire, which is kept up for three days and nights.

Bricks have several advantages over stone as building materials. From their porous structure they unite better with the cement used; they are lighter than stone, and not subject to attract damps and moisture.

The earth proper for the manufacture of bricks is a clayey loam, neither abounding too much in sand, which renders the ware heavy and brittle, nor yet with too large a proportion of argillaceous matter, which causes it to shrink and crack in drying.

The general process of the manufacture is as follows: The earth should be dug in the autumn; it should lie during the whole of the winter exposed to the frost, as the action of the air, in penetrating and dividing the particles of the earth, facilitates the subsequent operations of mixing and tempering. During this time the earth should be repeatedly turned and worked with the spade. In the spring the clay is broken in pieces, and thrown into shallow pits, where it is watered and suffered to remain soaking for several days. The next step is that of tempering the clay, which is generally performed by the treading of men or oxen. In the neighbourhood of London, however, this operation is performed by means of a horse-mill. The tempering of the clay is the most laborious part of the process, and that on which the perfection of the manufacture essentially depends. It is to neglect in this part, that we are chiefly to attribute the bad quality of modern bricks, in comparison with the ancient. All the stones should be removed, and the clay brought to a perfectly homogeneous paste, using the least possible quantity of water.

The following experiment, made by M. Gallon, merits attention. He took a certain quantity of the earth, prepared for the making of bricks; he let it remain for seven hours, then caused it to be moistened and beaten during the space of thirty minutes: the next morning the same operation was repeated, and the earth was beaten for thirty minutes; in the afternoon it was again beaten for fifteen minutes. Thus this earth had only been worked for an hour and a quarter longer than usual, but at three different times. The material had acquired a greater density by this preparation; for a brick made with this earth weighed five pounds eleven ounces, while another brick, made in the same mould, of the earth that had not received this preparation, weighed only five pounds seven ounces. Then having dried these bricks in the air, during the space of thirteen days, and having burnt them along with others, without any particular precautions, they were examined when taken from the kiln, and it was found that the bricks made of the earth which had been the most worked still weighed four ounces more than the others, each having lost five ounces by the evaporation of the moisture. But their strength was very different; for on placing them with the centre on a sharp edge, and loading the two ends, the bricks formed with the well tempered earth, were broken with a weight at each end of 65 pounds or 130 pounds in all, while the others were broken with 35 pounds at each end, or 70 pounds in the whole.

The earth being sufficiently prepared in the pits, is brought to the bench of the moulder, who works the clay into the brick-moulds, and strikes off the superfluous earth. The bricks are delivered from the mould and ranged on the ground; and when they have acquired a sufficient hardness

BRICK.

to admit of handling, they are dressed with a knife, and flaked or built up in long dwarf walls, and thatched over, where they remain to dry.

The burning of bricks, which is the next operation, is performed either in a kiln or a clamp. In the former, the bricks being set in, and the kiln covered with pieces of brick, they put in wood to dry them with a gentle fire; and this they continue till they are pretty dry, which is known by the smoke turning from a whitish to a thin black smoke. They then cease to put in wood, and proceed to burn with brush, furze, straw, brake, or fern faggots, having first closed up the mouth of the kiln with a thin log (pieces of brick piled upon one another and closed with wet brick earth instead of mortar), then they continue to put in mere faggots till the kiln and its arches look white, and the fire appears at the top, upon which they slacken the fire for an hour, and let all cool by degrees. Thus they continue alternately heating and slacking, till the ware be thoroughly burnt, which is usually effected in 48 hours.

About London they burn in clamps, built of the bricks themselves, after the manner of arches in kilns, with a vacancy between each brick's breadth, for the fire to play through; but with this difference, that instead of arching, they gather the flues over by making the bricks project over one another. The place for the fuel is carried up straight on both sides till about three feet high; they then nearly fill it with wood, and over that lay a stratum of sea coal, and then overspan the arch; sea-coal is also strewed between every row of bricks in the clamp; lastly, they kindle the wood which communicates with the coals; and when all is burnt out, they conclude that the bricks are sufficiently burnt.

The proper burning of bricks is a matter of considerable difficulty, and requires an experienced workman; as it is necessary to maintain an equal heat throughout the whole mass, neither too little, which would leave the bricks weak and crumbly, nor too great, which would cause them to run together into a vitrified slag. This operation is much better performed in kilns than in clamps, as the fire can be kept up and regulated at discretion; while in clamps, as the whole of the fuel must be put in at once, the manufacturer is always tempted to use too little, and the outside bricks are necessarily under-burnt. These are called *smel bricks*, and are sold at an inferior price.

The legislature has often interfered to regulate the manufacture of bricks. By stat. 12 Geo. I. cap. 35, earth or clay, designed for making bricks for sale, shall be dug and turned at least once between the 1st of November and the 1st of February, and not be made into bricks till after the 1st of March, and no bricks be made for sale but between the 1st of March and 29th of September. But by statute 10, Geo. III. cap. 49, earth may be dug for making bricks at any time in the year, provided such earth be turned once before it be made into bricks. And by the former statute, no Spanish is to be mixed with the earth or breeze used in the burning of bricks: and all bricks are to be burnt either in kilns, or distinct clamps, each sort by itself.

By stat. 3 Geo. II. cap. 22, there may be mixed with the brick-earth any quantity of sea-coal ashes, sifted or screened through a sieve or screen half an inch wide, and not exceeding 20 loads, to the making of 100,000 bricks, each load not exceeding 36 bushels. And breeze may be mixed with coal in the burning of bricks in clamps for sale, &c. Stock-bricks and place-bricks may be burnt in one and the same clamp, so that the stock-bricks be set in one distinct parcel, and not mixed and surrounded with place-bricks.

For the more effectually securing the observation of these

laws, it was enacted, by 12 Geo. I. cap. 35. for the better discovery of offenders, that the master and wardens of the company of tylers and bricklayers should have power to search brick-kilns, &c.; but they having permitted, and even encouraged divers persons to make bricks contrary to the directions in the said act, by 2 Geo. II. cap. 15. they are divested of that power, and any two, three, or more persons, appointed by the justices of peace, are empowered, within 15 miles of London, to go in the day-time into any grounds, sheds, or places where any clay or earth shall be digged or digging for bricks or pan-tiles, or any bricks or pan-tiles shall be making or made for sale, and there to view, search, and inspect the same, &c. Offenders to forfeit 20s. for every thousand of unlawful bricks, and 10s. for every thousand of such tiles; one moiety to the use of the prosecutor, the other to the poor of the parish where the offence shall be committed.

By 17 Geo. III. cap. 42. all bricks made for sale shall, when burned, be not less than 8½ inches long, 2½ thick, and 4 wide.

By 43 Geo. III. c. 69. (consolidating the excise duties) passed July 4, 1803, every thousand of bricks made in Great Britain, not exceeding 10 inches long 3 inches thick, and 5 inches wide is liable to a duty of 5s. and exceeding the fore-mentioned dimensions to 10s.; and every thousand of bricks made in Great Britain, and smoothed or polished on one or more sides, not exceeding the superficial dimensions of 10 inches long by 5 inches wide, is subject to a duty of 12s. and if such bricks exceed these dimensions to the duty on paving tiles. The said duties are to be paid by the makers. An additional duty of 10d. per thousand was imposed on bricks and tiles in the ways and means for the year 1805.

The different kinds of bricks made in this country are principally place-bricks, grey and red-stocks, marble facing bricks and cutting bricks. The place-bricks and stocks are used in common walling. The marbles are made in the neighbourhood of London and used in the outside of building; these are very beautiful bricks, of a fine yellow colour, hard, and well burnt and in every respect superior to the stocks. The finest kind of marble and red bricks are called cutting bricks, they are used in the arches over windows and doors, being rubbed to a centre, and gauged to a height. There is also a fine kind of white bricks made near Ipswich, which are used for facing, and sometimes brought to London for that purpose. The Windsor bricks, or fire-bricks, which are made at Hedgerley, a village near Windsor, are red bricks, containing a very large proportion of sand; these are used for coating furnaces, and lining the ovens of glass-houses, where they stand the utmost fury of the fire. Dutch clinkers are also imported, long narrow bricks, of a brimstone colour, very hard and well burnt; they are frequently warped, and appear almost vitrified by the heat. The use of them is for paving yards and stables.

Brick-walls. See WALL.

Bricks, Oil of. See OIL of Olives.

Brick-dust. It is a custom with some persons to reduce this substance to a very fine powder, and give it, instead of chalk, in the heart-burn. Many of the lozenges, so much famed for the cure of this disorder, and sold under the pompous name of coral lozenges, are only made of a mixture of this uncouth medicine, and sugar, made into the consistence of paste, with gum tragacanth reduced to a mucilage with rose-water.

Brick is also used in speaking of divers other matters made in the form of bricks.

In which sense, we say a penny-brick, or brick-bread. Some also mention brick-tin, a sort of tin in that shape brought

brought from Germany; and brick-soap, made in oblong pieces, from a pound and a half to three pounds.

BRICK, *πλυνσιον* or *πλυνθια*, *laterculus*, in the *Military Art*, denotes one of the forms of the Grecian army, which was drawn up in the figure of a brick or tyle, with four unequal sides; its length being extended towards the enemy, and exceeding its depth. That of the brick inverted, denominated *πυργος*, *turris*, was an oblong square, after the fashion of a tower, with the small end towards the enemy. Homer. *Iliad*, μ. v. 43.

BRICKS, or BRIQUES, in *Heraldry*, are figures or bearings in arms, resembling a building of bricks; being of a square form, like billets; from which they only differ in this, that they shew their thickness, which the other do not.

BRICK earth, in *Agriculture*. See *Brickish Soil*.

BRICK kiln, a place to burn bricks in.

BRICK-layer, an artificer whose business it is to build with brick, or make brick work.

Brick-layers work or business, in London, includes tiling, walling, chimney work, and paving with bricks and tyles. In the country, it also includes the mason's and plasterer's business. The materials used by brick-layers, are bricks, tyles, mortar, laths, nails, and tyle-pins. Their tools are, a brick-trowel, wherewith to take up mortar; a brick ax, to cut bricks to the determined shape; a saw, for sawing bricks; a rub-stone, on which to rub them; also a square, wherewith to lay the bed or bottom, and face or surface of the brick, to see whether they be at right angles; a bevel, by which to cut the under sides of bricks to the angles required; a small trammel of iron, wherewith to mark the bricks; a float stone, with which to rub a moulding of brick to the pattern described; a banker to cut the bricks on; linepins, to lay their rows or courses by; plumb-rule, whereby to carry their work upright; level to conduct it horizontal; square, to set off right angles; ten-foot rod, wherewith to take dimensions; jointer, wherewith to run the long joints; rammer, wherewith to beat the foundation; crow and pick-ax, wherewith to dig through walls.

The London brick-layers and tylers make a regular company, which was incorporated in 1568, and consists of a master, two wardens, twenty-eight assistants, and one-hundred and eight on the livery.

A brick-layer and his labourer will lay in a day about 1000 bricks, in whole work, on a solid plane, when the wall is but a brick and a half, or two bricks thick; and since a cubic yard contains 460 bricks, he will lay above two cubic yards in a day: and hence it may be easily computed how many brick-layers are required to finish a certain piece of work in a given time.

Brick-laying is one of the arts subservient to architecture. Moxon has an exercise express on the art of brick-laying, wherein he describes the materials, tools, and methods of working used by brick-layers. See *Brick Walls*.

BRICK-work. There is very little to be added under this head, to what has been said in the preceding article, to which the reader is referred.

Bricks, when used in external walls, are generally worked in what is called Flemish bond, that is, with headers and stretchers alternately, and the courses so disposed, that the middle of the bricks of one fall over the joints of the next. Brick-work is measured by the square foot reduced to the thickness of one brick and a half; thus a wall two bricks thick, ten feet long, and three feet high = 30 square feet would be called 40 feet reduced. It is valued by the rod of 272 feet. Facing and gauged arches are measured by the superficial square foot, and cornices by the foot running or the length.

BRICKWELL, CHARLES, and JAMES, in *Biography*, two brothers, who appear to have made their travels serve to the improvement of natural history. The elder published "A natural and political History of Portugal," 8vo. London, 1726; the other, "A natural History of Carolina," 8vo. 1739, Dublin, in which he gives a particular account of plants, indigenous to that country; and the same year, also at Dublin, "A Catalogue of American Trees and Shrubs, which will bear the Climate of England," fol. with engravings. Haller. Bib. Botan.

BRICON, in *Geography*, a town of France, in the department of the Upper Marne, and district of Chaumont; 7 miles W. of Chaumont.

BRICZANI, a town of European Turkey, in the province of Moldavia; 30 miles S.E. of Cokzim.

BRIDE, a woman just married, or a wife in the first days of her matrimonial state. See *MARRIAGE*.

Among the Greeks, the bride was usually conveyed in a chariot from her father's house to that of her husband in the evening, as the most convenient time for concealing her blushes; she was placed in the middle, her husband sat on one side, and his intimate friend on the other; torches were carried before her, and in the procession they were sometimes accompanied by singers and dancers. When they arrived at the end of their journey, the axle-tree of the carriage was broken, signifying, by this action, that the bride was never to return to her father's house. The day on which the bride left her father's house was celebrated as a festival, distinct from the nuptial solemnity; which was kept at the house of the bridegroom, and began in the evening, at the time of the bride's arrival. A banquet was prepared for her reception, from respect due to the gods of marriage, who had been previously invoked, and that the marriage might be made public, as it was usually attended by a concourse of friends. Before the bride was conducted to the marriage-bed, which was richly adorned, according to the quality of the person, she bathed her feet in water, which the Athenians fetched from the fountain "Callirhoe," afterwards called *Ενεακρήνη*, from nine cisterns, supplied by it with water; which water was brought by a boy nearly allied to one of the married pair. The bride was then lighted to bed with several torches, round one of which the married person's mother tied her hair-lace, taken from her head for this use, to which custom Seneca alludes, *Theb.* v. 505. Whilst the married couple were shut together in a chamber, the laws of Athens obliged them to eat a quince, thus intimating that their first conversation ought to be mutually agreeable; and then the husband proceeded to loose his bride's girdle, called *ζώνη*; during which time the young men and maids stood without the door dancing and singing songs, called *ἐπιθαλαμια*, *epithalamia*. In the morning they returned again, and sung other epithalamia. See *APAUZIA* and *ANACALYPTERIA*.

Among the Romans, the maid espoused remained a *bride*, *sponsa*, till she entered the husband's house; from which time she commenced a wife, *uxor*.

The bridegroom was attended by a brideman, *paranympus*; the bride by a *pronuba*, or bridemaids, whose business was to instruct her young mistresses in the duties of the genial bed, and to prepare every thing for a prosperous copulation.

The ancient ceremonies practised in respect of a bride were numerous; most of them emblematical, or significant of some part of her duty; as, dressing her hair after a peculiar manner, and parting it with a spear; putting on her a crown; girding her with a girdle, which the bridegroom was to loosen; putting a yoke on her neck; dressing her in yellow socks;

sock; and veiling her with the *flammeum*. She was to seem to be ravished or torn by force from her mother, in memory of the rape of the Sabines under Romulus; she was to be carried home in the night-time to the bridegroom's house, accompanied by three boys, called *patrini* and *matrimi*, one of whom carried a torch, and the other two, called *para-*
gami, led the bride, a spindle and a distaff being carried with her: she brought three pieces of money, called *asses*, in her hand to the bridegroom, whose doors, on this occasion, were adorned with flowers and branches of trees: being here interrogated who she was, she was to answer, *Caia*, in memory of *Caia Cæcilia*, wife of Tarquin the Elder, who was an excellent *lanifica*, or spinners; for the like reason, before her entrance, she lined the door-posts with wool and smeared them with grease.

Fire and water being set on the threshold, she touched both; but starting back from the door, refused to enter, till at length she passed the threshold, being careful to step over, without touching it; here the keys were given her; a nuptial supper was prepared for her, and minstrels to divert her; she was seated on the figure of a Priapus, and here the *patrini* and *matrimi* resigned her to the *pronuba*, who brought her into the nuptial chamber, and put her into the genial bed. This office was to be performed by matrons who had only been once married, to denote that the marriage was to be for perpetuity. When the bridegroom was brought to her, epithalamia were sung by the women, who were divided for that purpose into two bands, one whereof sung in the evening, the other the next morning; and, for the like purpose, nuts were also thrown about for the boys to scramble for. Potter Archæol. lib. iv. cap. 11. tom. ii. Val. Max. 10. Plut. Quæst. Rom. 30. Serv. ad Æn. lib. iv. ver. 450. Ken. Rom. Ant. p. ii. lib. i. c. 9. Fabr. Bibl. Ant. cap. 10. § 5.

BRIDE, in *Geography*, the name of a river in Ireland, which rises in the Nagle mountains, county of Cork, and having passed near the towns of Rathcormuck and Tallow, from the latter of which it is navigable, joins the Blackwater about 8 miles above Youghall.

BRIDE, in *Ichthyology*, a French name of the fish called by Linæus *Chatodon capistratus*, which see. *Sparus capistratus* of Linæus also bears this name among the French.

BRIDE'S bay, *St.* in *Geography*, a bay of St. George's channel, on the west coast of the county of Pembroke, in South Wales, having good anchorage in 7 to 10 fathoms; but as the westerly winds cause a great sea, in the mouth of the bay, the island of Ramsey affords shelter. This island is its northern limit, and Scaumore is its southern point; and on the north of the bay is the city of St. David's. N. lat. 51° 43'. W. long. 5° 23'. In spring tides it has high water at 6 o'clock.

BRIDEGROOM, the spouse or mate of a bride.

Among the Spartans, the bridegroom, as we are informed by Plutarch, in his "Lycurgus," (Op. t. i. p. 43. ed. Xylandr.) committed a kind of rape on his bride. After the preliminaries of marriage were settled, the woman, that conducted the business, shaved off the bride's hair close to her skin, dressed her in man's clothes, and left her upon a mattress; whilst she was in this state the bridegroom stole privately into the room, untied her virgin girdle, and took her into his embraces; and after a short interval, he returned to his companions, with whom he continued to spend his life, remaining with them by night as well as by day, unless he stole a short visit to his bride, which he had no opportunity of doing without great circumspection, and fear of being discovered.

VOL. V.

Among the Romans, the bridegroom was decked to receive his bride; his hair was combed and cut in a peculiar form; he had a coronet or chaplet on his head, and was dressed in a white garment. Pitisc. Lex. Ant. tom. i.

By the ancient canons, the bridegroom was to forbear the enjoyment of his bride the first night, in honour of the nuptial benediction given by the priest on that day. John. Ecclef. Law. ann. 740. § 88.

In Scotland, and perhaps also some parts of England, a custom, called *marchet*, obtained, by which the lord of the manor was entitled to the first night's habitation with his tenants' brides. See *BOROUGH English* and *MARCHET*.

BRIDEMIF, in the *Persian Tables*, the constellation *LUPUS*, or the Wolf.

BRIDEWELL, in our *Customs*, denotes a work-house, partly for the correction of vagrants and disorderly persons, and partly for the employment of the parish poor.

They are supplied during their abode here with cloathing and diet; and those who are committed for correction are not only made to work, but according to their crimes, they receive occasionally such a number of stripes as the governor of the house of correction ordains.

Bridewell, near Fleet-street, is a foundation of a mixt and singular nature, partaking of the hospital, the prison, and work-house; it was founded in 1553, by Edward VI. who gave the place, where king John had formerly kept his court, and which had been repaired by Henry VIII. to the city of London, with 700 marks of land, bedding, and other furniture. Several youths are sent to this hospital as apprentices to manufacturers, who reside there; they are clothed in blue doublets and breeches, with white hats. Having faithfully served their time of seven years, they have their freedom and a donation of ten pounds each, for carrying on their respective trades.

BRIDGE, in *Architecture*, from the Saxon *byric*, is a structure of carpentry, masonry, or iron-work, built over a river, canal, or valley, for the convenience of passing from one side to the other, and may be considered as a road supported in the air by arches or lintels, and these again supported by proper piers or buttments.

Bridges generally form the continuation either of an highway or of a street; in the first case they are frequently built in a rude and cheap manner, and too often without proper attention to those principles which would ensure permanence and solidity to the structure; but when they take their lead or direction from a principal street in a capital city, their construction is attended with great expence, and a degree of elegance and durability is required in their formation, which calls for the utmost judgment and skill in the architect. The magnitude of bridges also varies with their situation. When they are erected in places not much frequented, they are often, without any impropriety, made about eight or ten yards wide, but the breadth of a bridge for a great city should at least be such as to allow a safe and easy passage for three carriages, and two horsemen abreast, and for three or four foot passengers in the same manner on each banquet.

A stately bridge over a large and rapid river, while it is one of the most difficult, is justly esteemed one of the most noble and striking specimens of human art. To behold grand arches composed of an immense quantity of small materials, so disposed and united together as to form one compact body, which, belinding the stream, affords above an ample communication with the distant shores, and allows below an uninterrupted passage to navigation, is enough to awaken the admiration of every spectator. The art of bridge-building, accordingly, has received considerable attention from writers on architecture, the earliest of whom is Alberti, who

has given several judicious precepts, which, with little alteration, were afterwards laid down by Palladio, Serlio, and Scamozzi. The best of these rules are also given by Goldman and Baukhurst, and by Hawkesmoor in his history of London bridge. M. Gautier has a considerable volume upon bridges ancient and modern. M. Belidor has treated on this subject, in his "Archit. Hydraulique;" and M. Parent, in his "Essais and Recherches Mathemat." vol. iii. De la Hire, too, has touched upon the subject, in his "Traité de Mécanique;" Perronet also has given the result of his experience in a magnificent work, which has acquired great credit in France; Boffut has given an excellent treatise in the "Mémoires de l'Académie;" and Regemortes, in the year 1771, published an account of a bridge constructed by him on the river d'Allier at Moulins. This bridge consists of thirteen arches, 64 feet span each, and 24 feet high; semi-elliptical.—The top of the bridge is level. Mr. Rion published, in 1760, "Short Principles for the Architecture of Stone Bridges;" and Mr. Semple has given some excellent practical remarks in his "Treatise on Building in Water," published in 1776. Other writers on the subject of arches and bridges, are Muller, Labelye, Atwood, Emerson, and Dr. Hutton in his "Principles of Bridges."

History of Bridges.—We have no records which will enable us to trace the art of bridge-building from its first rude and imperfect state, through its various stages of improvement, to its present maturity and grandeur. It cannot, however, be doubted, that men in the earliest ages would do as our villagers do at present: the accidents of nature would present a model; a fallen tree, or a wave-worn cavern would frequently form a natural bridge, and the first bridges were composed of lintels of stone or wood, either of length sufficient to stretch from bank to bank, or when this was impracticable, supported by piers or posts placed in the bed of the river. There are still considerable structures of this kind in China, and many of them in this country on a rural scale. This method, however, would in many situations be opposed by insuperable difficulties: the frequent piers required for the support of lintels would, by contracting the water-way, increase a strong current to a dangerous, rapid torrent, impeding navigation, and undermining and destroying the piers themselves. It would, therefore, be found necessary, in constructing bridges over rapid rivers, to have the supports as few and distant, and the openings as wide as possible; this could only be effected by the use of arches of stone and trusses of wood; accordingly these inventions must have been completed before bridges of importance had become common.

The origin of arches is so obscure, and our lights so few, that it is, perhaps, impossible at this time to determine to whom this invention is due. The Egyptians, skilful as they were in architecture, do not appear to have possessed arches; their temples were roofed with slabs laid horizontally from column to column, and the openings covered with masonry lintels, or, as in the passages within the great pyramid, with courses of stones projecting over one another like inverted steps, till they met at top. Some of their tombs, however, which are excavated in the solid rock, have the appearance of vaults, as the ceilings are hollowed out in a circular form, and there are instances of hemispherical niches. Similar forms also prevail in the Hindoo excavations at Ellore, in the Deccan, and in the island of Salsette. See Mr. Daniel's Plates of Indian Antiquities and Hindoo Excavations. This practice, though it has the form, has not the principle of an arch; for it is evident that a solid lintel gains no strength by being hollowed in the middle, neither is the execution more difficult; and though both the Hindoos and Egyptians attained this step, they never, at least there are no remains which authorize

us to suppose that they ever did make any further progress in the discovery of arches.

The Chinese are acquainted with the use of arches, and from the known adherence of this nation to ancient modes, we may attribute a very high antiquity to this practice among them. Their arches are of various forms, pointed, semi-circular, semi-elliptical, and horse-shoe shaped; their construction, as described by Mr. Barrow, is curious, "each stone, from five to ten feet in length, is cut so as to form a segment of the arch, and, as in such cases there is no key-stone, ribs of wood fitted to the convexity of the arch are bolted through the stones by iron bars, fixed fast into the solid parts of the bridge. Sometimes, however, they are without wood, and the curved stones are morticed into long transverse blocks of stone." Mr. Barrow proceeds to observe, that "there are, however, arches wherein the stones are smaller, and pointed to a centre as in ours. I have understood from the late captain Parish, that no masonry could be superior to that in the great wall, and that all the arched and vaulted work in the old towers was exceedingly well turned."

However, the most ancient arches, of whose erection we have dates, are those in the cloacæ of Rome, which were begun by Tarquinius Priscus. There are also arches in several Greek theatres, stadia, and gymnasia; among others, the theatre of Bacchus at Athens, erected, probably, 400 years before the Christian era.

The Greeks, it is well known, often neglected the most necessary objects to lavish enormous sums on works of magnificence, though destitute of any essential utility. Pericles, so far from thinking of aqueducts, could never be prevailed upon even to construct a bridge over the little Cephissus. The Romans discovered, in this respect, a more solid manner of thinking; they were, it is true, much attached to pomp, but they never neglected works of public utility: they never risked their lives unnecessarily in crossing a torrent, as the Athenians must have done previous to the arrival of the emperor Adrian; for it was Adrian who undertook to form, by a bridge, a safe communication across the Cephissus, between the territories of Attica and Eleusis, on the most frequented road of Greece. While, therefore, we ascribe to the Greeks the use of arches and vaults, properly constructed for covering various openings in their buildings, we must look to the Romans for the application of arches to bridges, and for the chief improvements in these useful structures.

The construction of the Roman bridges is best described by Bergier: they possessed all the requisites which are met with in a modern bridge; they consisted of *pila*, or piers, *fornice*, or arches, *sublices*, or buttments, *pavimenta*, and *aggeres*; the roads over in the middle for carriages, on each side of which were *decurforia*, or banquets, somewhat higher than the rest of the road for foot passengers, and separated from it by a *sponde*, or railing, and sometimes even covered over to shelter passengers from the rain, as in the Pons Ælius. Among the Romans, the building and repairing of bridges was first committed to the priests, thence named *pontifices*, then to the censors and curators of the roads, and lastly, the emperors took the care of the bridges into their own hands.

The ancient bridges of Rome were eight in number. The bridge of *Fabritius*, which joins the island of the Tyber to the city; it is now called *Ponte Quattro Capi*, from the four heads of Janus, which are placed upon it. The bridge of *Cestius*, now called of *San Bartholomeo*, which from the other side of the island passes to Trans-Tevere. The first bridge built at Rome, which was of wood, and thence called *Pons Sublicius*, was afterwards rebuilt of stone by Æmilius Lepidus;

BRIDGE.

Lepidus; some vestiges are still to be seen at the bottom of the Aventine mountain. The bridge called *Senatoriæ*, and also *Palatinæ*, of which some arches remain near to Santa Maria. The bridge of *Janiculus*, which, as it was rebuilt by Sixtus IV. is now called *Ponte Sisto*. The *Milvius*, now called *Ponte Molle*. There are also, near the hospital of Santo Spirito, the remains of the Triumphal Bridge, so named because the procession of the triumphs passed over it to go to the Capitol. Near to this is the bridge of Santo Angelo, formerly called *Pons Ælius*, from the Emperor Ælius Adrianus; it was repaired by Nicholas V. and afterwards ornamented with statues by Clement IX. Of these bridges the last mentioned is the only one at all remarkable for size.

One of the most celebrated of the bridges of antiquity was that built by Trajan over the Danube. It was erected by that emperor for the convenience of sending succours to the Roman legions on the other side of the Danube, in case they should be suddenly attacked by the Daci, but demolished by his successor, Adrian, lest the barbarians, over-powering the guards set to defend the bridge, should, by means of it, pour into Mœsia and cut off the garrisons there. Some of the piers are still to be seen in the middle of the river, near the town of Warhel in Hungary. According to the description given by Dion Cassius (lib. 68. cap. 13.) this bridge consisted of twenty piers of squared stone, each of them 150 feet high above the foundation, 60 feet in breadth, and 170 feet distant from each other, which was the span or width of the arches, so that the whole length of the bridge was nearly 1500 yards. Considerable doubt, however, is thrown on this account by Montfaucon, who observes, that in the basso-reliefs of the Trajan column, this bridge is represented with only four piers besides the abutments, which support three larger arches or trusses of wood, with two smaller stone arches at the extremities.

On the road from Loretto to Rome, at the bottom of the hill on which the town of Narni is situated, there are the broken remains of an ancient bridge, which appears to have been very magnificent. Its form and dimensions are stated by Agostino Martinelli, in a book printed at Rome in 1676, entitled "Descrittione de diversi Ponti essistenti sopra la Fiume Nera & Tevere." This bridge which joined two mountains, between which flows the river Nera, was of an extraordinary height, and was built in this manner by Augustus, that the inhabitants of Narni might pass on a level from one mountain to another. The whole length was 850 palms (637 feet). It consisted of four large and unequal arches; the first, which was entire in the time of Martinelli, while all the others were broken, was 100 palms (75 feet) in span, and 150 palms (102 feet) in height; the second arch 180 palms (135 feet) in span; the third 152 palms (114 feet); and the fourth, which abutted against the other mountain, 190 palms, or 142 feet.

The *Pont du Garce*, about 3 leagues from Nîmes, is a very considerable Roman work. This structure was at once a bridge over the river Gardon, and an aqueduct which carried water to Nîmes. The first row of six arches, which is the bridge, supports a second arcade of 11 arches, which is continued upon the slope of the two mountains forming the valley; above the second is a third arcade of 35 arches, much smaller than those below, supporting the canal on a level with the two mountains, along which the water was conducted to Nîmes by a continued aqueduct. This remarkable edifice is built of stones of an extraordinary size, connected together without cement by iron cramps. The length of the first arcade is about 465 feet, of the second 780, of the third 850, and the height from the river 190 feet.

The celebrated Roman bridge *Pont St. Esprit*, near Lyons, has long been reckoned one of the finest and boldest of the ancient bridges in France. Its whole length is upwards of 800 yards; it is very crooked, bending in many places, and making several unequal angles, especially in those parts where the Rhone has the strongest current. The arches are from 15 to 20 fathoms wide, and have their feet, or the bottoms of the piers, protected by two pedestals which project from them; the lower part of the piers consists of several courses of footings jutting out like steps. Between the great arches there are smaller arches like windows that come down nearly to the top of the pedestals, about the middle of the pier. This mode of construction was adopted with a view of breaking gradually the mighty force of the Rhone, the several courses of steps jutting out from the piers were intended to oppose and break the stream by portions, and prevent it from coming with its whole force at once upon the fabric; and when the flood should rise so high as to cover the steps and pedestals, then the small window-like arches would assist to convey the water through, which might otherwise endanger the great arches.

The bridge of Brioude is of great antiquity, and very remarkable, as the largest stone arch with which we are acquainted. This bridge has only one arch, under which passes the whole stream of the river Allier. The arch is formed of two ranks of squared stones; all the rest of the fabric is of rubble work. The two extremities of the arch are founded upon the rock, which occasions the springing on one side to be higher than on the other; its span is 181 feet, and its greatest height from the water to the soffit of the arch is 68 feet 8 inches, and the width of the bridge between the parapets is 13 feet.

In the middle ages bridge-building was reckoned among the acts of religion; and a regular order of hospitaliers was founded by St. Benezet, towards the close of the 12th century, under the denomination of pontifices or bridge-builders, whose office was to assist travellers by making bridges, settling ferries, and receiving strangers in hospitals or houses built on the banks of rivers. We read of a hospital of this kind at Avignon, where the hospitaliers dwelt under the direction of their first superior St. Benezet. The Jesuit Raynaldus has a treatise expressly on Saint John the bridge-builder.

The bridge of Avignon was begun in the year 1176, and finished in 1188; it consisted of 18 arches, and was about 1000 yards in length. Several of its arches have been destroyed by the rapidity of the current together with the force of the ice.

Over the several canals at Venice are laid nearly 500 bridges of different sizes; the greater number of them are of stone. The chief of these, called the *Rialto*, is celebrated as a master-piece of art: it consists of one flat and bold arch, nearly 100 feet span, and only 23 feet high above the water, and was built in 1588 to 1591, after a design of Michael Angelo. The breadth of the bridge, which is 43 feet, is divided by two rows of shops into three narrow streets, that in the middle being the widest; and there is in the centre an open archway, by which the three streets communicate with one another. At each end of the Rialto is an ascent of 56 steps; the view from its summit is very lively and magnificent. The whole exterior of the shops and the bridge is of marble. The foundation extends 90 feet, and rests upon 12,000 elm piles. This structure cost the republic 250,000 ducats.

The aqueduct bridge of Alcantara, near the city of Lisbon, is one of the most magnificent works of the kind ever executed. It was begun in the reign of John V. king of

BRIDGE.

Portugal, in the year 1713, and finished the 6th of August 1732. The architect, under whose inspection it was begun and finished, was the brigadier Mansel de Maza. The streams which pass through this duct, for the use of the inhabitants of the city of Lisbon and villages adjacent, have their chief supply from a spring near the Riberia de Caranque, about three leagues and a half from Lisbon, where the aqueduct commences; and the water is conveyed from thence through the hills by subterraneous passages, where some other springs unite with it, and across many valleys on the tops of ranges of very magnificent arches, of which that crossing the vale of Alcantara is the chief. From a subterraneous course the water is conveyed through the building on the top of the arches by means of two channels, each of which is about 12 inches deep; it generally flows about the depth of 7 inches, and is an abundant and never-failing supply of water to Lisbon. The interior height of the building is about 13 feet; and through the centre, between the streams, is a wide handsome walk or foot-path, paved with beautiful free-stone. The building is continued the same height and width through the whole of the aqueduct from Lisbon to the spring, near the Riberia de Caranque, so that if by accident any part becomes out of repair, the workmen have easy access to it. The subterraneous passages are lighted and ventilated by frequent openings made from the surface of the earth into the aqueduct; and over each of these openings turrets or square towers are erected, which have windows latticed with iron bars to admit the light and air, and at the same time to prevent mischievous persons from throwing any thing into the building to injure it.

This pile is lighted and ventilated by 79 windows and 16 turrets; the former are three feet seven inches long by 13 inches wide, railed with iron and latticed with bars; the latter rise 23 feet six inches above the roof, and are 16 feet square; beneath every second turret is an arched door-way into the aqueduct on each side of the building, wherein the water flows, and between that building and a parapet wall is a foot-path leading from Lisbon towards the very pleasant village of Bemfique, about 4 miles from Lisbon, where several gentlemen have their quintas or country-seats: one in particular, the quinta of Gerard de Visme esq. an English merchant of the first eminence, must not pass unnoticed; it is a perfect palais enchanté, whose shady bowers, beautiful gardens, fine ponds, purling streams, and sportive fountains, are frequently honoured with visits by the queen and royal family.

The water channel under the grand arch is about 24 feet wide, and seven feet deep, but, except in very rainy seasons, no water passes through this channel; the small running stream constantly passing through the vale of Alcantara is conveyed by a very narrow channel under the pavement through the grand arch, and then continues its course through the valley, in a stream between two and three feet wide till it empties itself into the Tagus at Alcantara bridge, about the distance of two miles from the aqueduct. The expence attending the execution of so magnificent a work, and keeping the same in repair, has been immense, yet the small tax of a single rey on every pound of meat, raises a fund sufficient for the purpose. There is a chapel seen through the eleventh arch, dedicated to Nossa Senhora dos Terramotos, our Lady of the Earthquakes; in commemoration of that dreadful event the earthquake in 1755, when the greatest part of the city of Lisbon, with most of her stately buildings, and magnificent temples, were levelled with the ground.

The width of the different Arches are as under:

WIDTH.		WIDTH.	
Number.	Feet. Inches.	Number.	Feet. Inches.
1	22 0	19	44 4
2	29 0	20	36 5
3	43 0	21	36 5
4	43 0	22	36 5
5	56 0	23	36 5
6	65 0	24	29 2
7	70 0	25	29 2
8 Grand A.	108 5	26	29 2
9	72 0	27	29 2
10	65 10	28	29 2
11	65 10	29	29 2
12	65 10	30	21 10
13	54 8	31	21 10
14	54 8	32	21 10
15	54 7	33	21 10
16	44 4	34	21 10
17	44 4	35	21 10
18	44 4		

The height of the grand arch is 227 feet, and the total length of the piers and arches 2464 feet.

Several of the bridges in France are remarkable for their size and boldness of construction, among which may be mentioned the bridge of Neuilly, built by M. Perronet, over the Seine, on the alignment of the great avenue of the Champs Elysées, in front of the palace of the Tuilleries. This bridge, which is level at top, consists of five equal arches of 120 feet French (128 feet English) in span, and 30 feet French (32 feet English) rise. The arches are oval, composed of eleven arcs of circles of different diameters; thus the upper portion of the arch was formed with a circle of 160 feet radius, which, by its settlement during the building, and after the striking of the centres, was flattened, till it became an arc of a circle of 259 feet radius, differing so little from a platband, that, as Perronet observes, the rise of the curve, in a length of 33 feet, amounted only to 6 inches 9 lines. The piers are 14 feet wide, and the breadth of the bridge 48 feet. It was begun in the year 1768, and terminated in 1780.

The bridge on the Seine, at Mantes, consists of three arches, that in the centre having an opening of 120 feet French (128 English), and the two others 108 feet French (116 English); the piers being 25 feet 6 inches wide, and the abutments 29 feet. This structure was begun by M. Hupeau in 1757, and completed by Perronet.

The bridge of Pont-Sainte-Maixence, on the river Oise, on the great road from Paris into Flanders, is also a work of Perronet's. This bridge, which is 41 feet wide, has three arches of 77 feet opening each, being a segment of a circle described with a radius of 118 feet. Each pier is singularly composed of four cylindrical pillars 9 feet diameter, leaving, therefore, three spaces or intercolumniations between them, which are arched over, the two external ones closed with a thin walling, and the middle one left open.

The bridge over the Loire, at Orleans, is composed of nine arches, which spring at 12 inches above low water; the middle arch is 106 feet in span, with a rise of 30 feet; the two arches at the extremities being 98 feet wide and 26 feet high, and the others in proportion; the four middle piers 19 feet, the four others 18 feet, and the abutments 23 feet 6 inches thick, making the whole length 1100 feet; the arches are oval, described from three centres. This bridge was built by M. Hupeau, begun in 1750, and finished in 1760.

BRIDGE.

We have many bridges of considerable note in our own country. The triangular bridge at Croyland in Lincolnshire, which was erected about the year 860, is said to be the most ancient Gothic structure remaining entire in the kingdom. There are two circumstances in the construction of this bridge, which render it an object of great curiosity. First, it is formed by three semi-arches, whose bases stand in the circumference of a circle, at equal distances from each other. These unite at the top; and the triune nature of the structure has led some to imagine that it was intended as an emblem of the Trinity. Secondly, the ascent on each of the semi-arches is by steps paved with small stones set edge ways, and is so steep, that none but foot-passengers can go over the bridge: horsemen and carriages frequently pass under it, as the river in that place is but shallow. For what purpose this bridge was really designed, it is difficult, if not impossible, to determine. Utility, it is obvious, was one of the least motives to its erection. To boldness of design and singularity of construction it has more powerful claims; and these qualities it must be allowed to possess in as great a degree as any bridge in Europe. Although this bridge has been erected so many centuries, it exhibits no marks of decay: twelve months ago there were no fissures to be perceived in either of the arches, and all that was missed were a mound and sceptre which have been torn from the hands of a statue of king Ethelbert by the ruthless hand of time.

London bridge is in the old Gothic style, and had twenty small locks or arches; but there are now only 19 open, two having lately been thrown into one in the centre. It is 940 feet long, 44 high, and 47 clear width between the parapets. The piers are from 15 to 35 feet thick, with sterlings projecting at each side and end, so that the greatest water-way, when the tide is above the sterlings, is 545 feet, scarcely half the breadth of the river; and below the sterlings the water-way is reduced to 204 feet, causing a dangerous fall at low water. London bridge was first built with timber in the reign of Ethelred, between the years 993 and 1016; it was repaired, or rather rebuilt of timber in 1163, and the present stone bridge was begun under king Henry II. in 1176, and finished under king John in the year 1209. It is probable there were no houses on the bridge for upwards of 200 years, since we read of a tilt and tournament held on it in 1395. Houses were erected upon it afterwards, but being found a great inconvenience and nuisance, they were removed in 1758, and the avenues to the bridge enlarged, and the whole made more commodious: the two middle arches were then thrown into one, by removing the pier from between them. The expence of the repairs amounted to above 80,000*l*.

There were other bridges in England built in the manner of London bridge; as the bridge at Rochester, which is 550 feet long, and has 11 arches; also the late bridge at Newcastle upon Tyne, which was broken down by a great flood in the year 1771, for want of a sufficient space for water-way through the arches. The longest bridge in England is that over the Trent at Burton, built by Bernard abbot of Burton, in the 12th century. It is all of squared free-stone, and is strong and lofty, 1545 feet in length, and consisting of 34 arches.

The bridge at Blenheim consists of three arches, the chief of which spans 151 feet 6 inches.

Near Old Aberdeen there is a bridge over the river Don, very much celebrated. It is in the Gothic taste. There is also a remarkable bridge called Sarah or Island bridge, built over the Liffey above Dublin, in the year 1792, by Mr. Alexander Stevens, a mason from Edinburgh: it consists of a single elliptical arch 106 feet span, and only rising 22 feet;

it is therefore six feet wider than the Rialto at Venice, and one foot less in height.

But the most extraordinary bridge in Great Britain is, doubtless, that over the river Taff, near Llantriffent, in Glamorganshire, called in Welsh *Pont y ty Prydd*. This is the work of William Edwards, an uneducated mason of the country, who was only indebted for his skill to his own industry and the power of his genius. He had engaged, in 1746, to build a new bridge at this place, which he executed in a style superior to any thing of the kind in this or any part of Wales, for neatness of workmanship, and elegance of design. "It consisted of three arches, elegantly light in their construction. The hewn stones were excellently well dressed and closely jointed. It was admired by all who saw it. But this river runs through a very deep vale that is more than usually woody, and crowded about with mountains. It is also to be considered, that many other rivers of no mean capacity, as the Crue, the Bargoed Taff, and the Cunno, besides almost numberless brooks that run through long, deep, and well-wooded vales or glens, fall into the Taff in its progress. The descents into these vales from the mountains being in general very steep, the water in long and heavy rains collects into these rivers with great rapidity and force, raising floods, that in their descriptions would appear absolutely incredible to the inhabitants of open and flat countries, where the rivers are neither so precipitate in their courses, nor have such hills on each side to swell them with their torrents. Such a flood unfortunately occurred after the completion of this undertaking, which tore up the largest trees by the roots, and carried them down the river to the bridge, where the arches were not sufficiently wide to admit of their passage. Here, therefore, they were detained. Brush-wood, weeds, hay, straw, and whatever lay in the way of the flood, came down, and collected about the branches of the trees, that stuck fast in the arches and choked the free current of the water. In consequence of this obstruction to the flood, a thick and strong dam, as it were, was thus formed. The aggregate of so many collected streams being unable to get any further, rose here to a prodigious height, and, with the force of its pressure, carried the bridge entirely away before it. William Edwards had given security for the stability of the bridge during the space of seven years; of course he was obliged to erect another, and he proceeded on his duty with all possible speed. The bridge had only stood about two years and a half. The second bridge was of one arch, for the purpose of admitting freely under it whatever incumbrances the floods might bring down. The span or chord of this arch was 140 feet, its altitude 35 feet, the segment of a circle whose diameter was 170 feet. The arch was finished, but the parapets not yet erected, when such was the pressure of the unavoidably ponderous work over the haunches that it sprung in the middle, and the key-stones were forced out. This was a severe blow to a man who had hitherto met with nothing but misfortune in an enterprise which was to establish or ruin him in his profession. William Edwards, however, possessed a courage which did not easily forsake him; he engaged in it a third time, and by means of cylindrical holes through the haunches, so reduced their weight, that there was no longer any danger from it. The second bridge fell in 1751; the third, which has stood ever since, was completed in 1755." (Mr. Malkin's Tour in South Wales.) The present arch is 140 feet in span, and 35 feet high, being a segment of a circle of 175 diameter. In each haunch there are three cylindrical openings running through from side to side; the diameter of the lowest is nine feet, of the next six feet, and of the uppermost three feet. The width of the bridge is about

eleven feet. To strengthen it horizontally, it is made widest at the abutments, from which it contracts towards the centre by seven offsets, so that the road-way is one foot nine inches wider at the extremities than at the middle.

The bridges of Westminster and Blackfriars, over the river Thames at London, are among the finest structures of the kind in Europe. The former is 1220 feet long, and 44 feet wide, having a commodious broad footpath on each side for passengers. It consists of thirteen large, and two small arches, fourteen intermediate piers and two abutments. The length of each abutment is 76 feet; the opening of each of the smaller arches is 25 feet; the span of the first of the large arches at each end is 52 feet, of the next 56 feet, and so on increasing by four feet at a time to the centre arch, the span of which is 76 feet. The two piers of the middle arch are 17 feet wide, and the others decrease equally on each side, by one foot at a time, every pier terminating with a salient right angle against either stream. The arches are semi-circular, and spring from about the height of two feet above low water. The breadth of the river in this place is about 1220 feet, and the water-way through the bridge amounts to 870 feet. The bridge was begun in 1738, and opened for passengers in 1750, at a neat expence of 218,800*l*. It is constructed of the best materials, and in a neat and elegant taste; but the arches are too small in proportion to the quantity of masonry.

Blackfriars bridge, nearly opposite to the centre of the city of London, was begun in 1760, and completed in ten years and three quarters, at a neat expence of 152,840*l*. It is an exceedingly light and elegant structure; but, unfortunately, the materials do not seem to be of the best kind, as many of the stones in the piers are decayed. The bridge consists of nine large, handsome, and nearly elliptical arches; the central arch is 100 feet wide, and the four arches on each side, reckoning towards the shores, decrease gradually, being 98, 93, 83, and 70 feet respectively, leaving a water-way of 788 feet. The whole length from wharf to wharf is 995 feet, the breadth of the carriage-way 28 feet, and that of the raised foot way on each side seven feet. The upper surface of the bridge is a portion of a very large circle, which forms an elegant figure, and admits of convenient passage over it. On each pier there is a recess or balcony, with two Ionic columns and pilasters, which stand on a circular projection of the pier above high water mark. The bridge is rounded off at each extremity to the right and left, in the form of a quadrant of a circle, rendering the access commodious and agreeable. This edifice must be regarded as a fine specimen of Mr. Mylne's ingenuity and judgment, though the method of construction has never been made public.

Besides the bridges already mentioned, there are many other neat and elegant structures in different parts of Great Britain and Ireland. The bridge over the Tees at Winston in Yorkshire, was designed by sir Thomas Robinson, and built by John Johnson, a common mason at Wallingham, in the year 1762. It consists of a single arch 108 feet 9 inches span; is built of rubble-stone; and cost only 500*l*. An elegant stone bridge has lately been built over the Tweed at Kelfo, upon the plans and under the direction of Mr. John Rennie. This has five elliptical arches of 72 feet span each; is quite level at top. It has two Doric pilasters, which stand on a circular projection of the pier, with a simple block cornice. The cost of this bridge was about 13,000*l*. exclusive of the roads at each end, which cost about 3000*l*. more, in all 16,000*l*.

The bridge over the Pease, or rather Peaths, on the road from Dunbar to Berwick upon Tweed, is rather an uncommon structure. This bridge crosses a deep ravine called the

Peaths. It consists of four semi-circular arches. That at the east side of the ravine is 54 feet span; the second 55 feet; the third 52 feet, and the further or western arch 48 feet. The height of the bridge, from the bottom of the ravine to the surface of the road, is 124 feet. The situation is beautiful, and has a most romantic appearance. It was designed and built by the late Mr. David Henderson, architect in Edinburgh, and does him considerable credit.

The aqueduct bridge, constructed by Mr. Rennie on the river Lune at Lancaster, is one of the most magnificent works of the kind which has been erected for the purposes of navigation. At the place where it is built, the water is deep and the bottom bad. It consists of 5 arches of 70 feet span each, and about 39 feet above the surface of the water. It has a handsome cornice, and every part of it is finished in the best manner. The foundations are laid at the depth of 20 feet under the surface of the water, and stand on a flooring of timber, supported by piles. The foundation alone cost 15,000*l*. The superstructure cost above twice that sum, although the stone was found within about a mile and a half of the place where the aqueduct was built. Barges of 60 tons burthen navigate the canal. The total height from the surface of the river to the surface of the canal is 51 feet.

It may be observed in this place, that the Romans always, without any exception that we are acquainted with, made their arches either of a semi-circle, or of a lesser segment of a circle. The voussiors were generally included between two concentric curves, on which account these are called extradosed arches. The earlier Italian architects followed the example of the Romans in the forms of their arches, which are either semicircular, or of a smaller segment, called by them *arco intiero*, and *arco scemo*, from which term our workmen have taken that of *skeme arch*. Elliptical arches are very much used by the engineers of France, most of the bridges in that country being in this manner. The French distinguish their arches into three kinds, *l'arc plein-cintre*, *l'arc surbaissé*, and *l'arc surbaissé*; the first is a semi-circle, the second higher, and the third lower than a semi-circle, being formed by the greater or smaller axis of an ellipsis; in practice, however, these are generally composed of several arcs of circles of different diameter, as in this case the joints are more easily traced. The arcs *surbaissés* are also called *anse de panier*. The *arc bombé* is an arc *surbaissé*, formed by a segment of a circle.

The ancients always laid their wrought stones without mortar between the joints, frequently using iron cramps to connect them more firmly together. Their large arches, and those which had to bear very great weights, were composed of several ranks of voussiors extradosed, and breaking joint, as is seen in the great cloaca of Rome, and in several bridges and aqueducts. Modern architects, however, generally use only one rank of voussiors, each of which is terminated at top by a horizontal joint, and laterally by a perpendicular joint, for the purpose of ranging better with the courses of the haunches and spandrels.

The decoration of bridges ought to be simple and large, their beauty consisting chiefly in the proportion of the voids and solids, the contour of the arches, and apparent strength and solidity, together with boldness of construction. However, many modern architects have carried simplicity to excess, particularly in Paris, where the arches of all the bridges are plain, and without any member of architecture. A happy introduction of rustic work of various forms and sizes breaks the monotony of the large masses, and enriches the edifice. This method was often employed by the ancients, and we never find that they neglected to ornament the arches of their bridges with archivolts more or less rich.

BRIDGE.

Palladio, in all his designs of bridges, has never omitted this simple and best decoration of arches. Cornices and balustrades also are both useful and ornamental in these structures.

Generally speaking, large arches are more expensive than smaller. In a bridge lately designed over a river, wherein the foundations were very difficult to construct, one design with three arches of 116 feet each, was estimated at 53,174*l*. and another of five arches of the same kind was estimated at 12,041*l*., which was contracted for and built for the above sum.

Wooden bridges now demand our attention. The simplest case of these edifices is that in which the road-way is laid over beams placed horizontally, and supported at each end by piers or posts. This method, however, is deficient in strength and width of opening: it is therefore necessary, in all works of any magnitude, to apply the principles of trussing, as used in roofs and of arches. Wooden bridges of this kind are stiff frames of carpentry, in which, by a proper disposition, beams are put, so as to stand in place of solid bodies, as large as the spaces which the beams enclose; and thus, two or three or more of these are set in abutment with each other, like mighty arch-stones.

Palladio has given several very elegant designs of wooden bridges, which he thus describes. The bridge of the Cismone. The Cismone is a river, which, falling from the mountains that divide Italy from Germany, runs into the Brenta a little above Bassano. And, because it is very rapid, and great quantities of timber are sent down it by the mountaineers, it was resolved to make a bridge there, without fixing any posts in the water, which were liable to be carried away by the violence of the current, and the shock of the stones and trees that continually came down. The invention of this bridge, (says Palladio,) is, in my opinion, very worthy of attention, as it may serve on all occasions where these difficulties may occur, and because that bridges thus made are strong, beautiful and commodious; strong, because all their parts mutually support each other; beautiful, because the texture of the timbers is very agreeable; and commodious, being even, and in the same line with the remaining part of the street. The river where this bridge was erected is 100 feet wide; this width is divided into six equal parts; and at the end of each part, excepting at the banks, which are strengthened with pilasters of stone, the beams are placed, that form the breadth of the bridge, upon which, a little space being left at their ends, were placed other beams lengthways, which form the sides. Over these, directly upon the first, the *colonelli* (king-posts) were disposed on each side; these king-posts are connected to the beams which form the breadth of the bridge by means of irons passing through the projecting ends of the beams, and bolted and pinned through both. See *fig. 1. Plate XXXII. of Architecture*.

Palladio proceeds to describe three other methods of constructing wooden bridges without posts in the water, like the bridge over the Cismone. The bridges after the first method are to be made in this manner: the banks being strengthened by pilasters as necessity shall require, one of the beams forming the breadth of the bridge, is to be placed at some distance from it, then the first strut is to be placed with one end upon the pier, and the other end abutting against the first queen-post, which is to be connected with the beams by irons. Then the second beam for the breadth is to be placed at a distance equal to the space between the first beam and the pier, which is to be supported in like manner with a strut and queen-post, and thus proceeding as far as is required, observing to have a king-post in the

middle of the length in which the struts meet both ways, and with collar beams between all the posts which stiffen and support the whole construction. Bridges after this manner are to be wider at the extremities, and contract towards the middle. See *fig. 2. Plate XXXII. of Architecture*.

The invention of the following bridge has the upper part which supports the weight in the form of a polygon, inscribed in a flat segment of a circle; the beams forming the breadth of the roadway are upheld by king-posts and irons, and the whole stiffened and supported by braces crossing one another between the king-posts. Struts at each end, reaching from the piers to the first beams, are also added to shorten the bearing, and increase the strength of the fabric. See *fig. 1. Plate XXXIII. of Architecture*.

The third design may be made with a greater or smaller arch than is here represented. The height of the bridge in which are placed the braces between the king-posts, or rather radii, is to be an eleventh part of the span. See *fig. 2. Plate XXXIII. of Architecture*.

Mr. Coxe, in the first volume of his Travels, has slightly described a very singular bridge at Wittingen, in Switzerland, the construction of which is quite simple. The span is 230 feet, and it rises only 5. The sketch (*fig. 3. Pl. XXXIII.*) will make it sufficiently intelligible. ABC is one of two great arches approaching to a Catenarian shape, built up of 7 courses of solid logs of oak, in lengths of 12 or 14 feet, and 16 inches or more in thickness. These are all picked of a natural shape, suited to the intended curve; so that the wood is no where cut across the grain to trim it into shape. These logs are laid above each other, so that their abutting joints are alternate, like those of a brick wall; or, in the language of the workmen, they *break joint*. It is indeed a wooden wall, simply built up by laying the pieces upon each other, taking care to make the abutting joints as close as possible. They are not fastened together by pins or bolts, but held together by iron straps, which surround them at the distance of five feet from each other, where they are fastened by bolts and keys. These two arches being erected and well butted against the rock on each side, were freed from their supports and allowed to settle. They are so placed that the intended road *abc* intersects them about the middle of their height. The roadway is supported by cross joists which rest on a long horizontal summer-beam; and this is connected with the arches on each side by uprights bolted into them. The whole is covered with a roof, which projects over the arches on each side, to defend them from the weather. Three of the spaces between these uprights have struts, or braces, which give the upper work a sort of trussing in that part. This bridge is of a strength much more than adequate to support any load that can be laid upon it; though it is manifest, by the attempt to truss the ends, that it was the contrivance of a person ignorant of principle. It was the work of one Ulrich Grubenhamm, of Tussen, in the canton of Appenzel, a carpenter without education, but celebrated for several works of the same kind.

At Schaffhausen, in Switzerland, where the Rhine flows with great rapidity, several stone bridges had been destroyed, when, in 1754, Grubenhamm offered to throw a wooden bridge of a single arch across the river, which is nearly 390 feet wide. The magistrates, however, required that it should consist of two arches, and that he should, for that purpose, employ the middle pier of the last stone bridge, which would divide the new one into two unequal arches of 172 and 193 feet span. The carpenter did so; but contrived to leave it a matter of doubt, whether the bridge is at all supported by the middle pier. It was erected on a plan nearly similar to the Wittengen bridge, at the expence of about 800*l*. sterling.

ling. Travellers inform us, that it shook if a man passed over it; yet waggons heavily laden also went over it without danger. We are sorry to add, that this curious bridge was burnt by the French when they evacuated Schaffhausen, in April 1799.

Besides the wooden bridges already described, there are several elegant and well constructed edifices in Great Britain; the most eminent of which was that at Walton-upon-Thames. This bridge consisted of three wooden arches, and five brick arches at each end; the middle arch was 130 feet in span, with a rise of 28 feet, constructed of three principal ribs, framed in the manner represented in *Plate XXXIV. of Architecture*. It was the design of the ingenious carpenter, Mr. Etheridge.

Iron bridges. Iron being the most abundant, cheap, and generally useful of all metals, has of late been employed in many works where great strength was required in proportion to the weight of the material: hence cylinders, beams, and pumps for steam engines, boats, and barges for canals and navigable rivers, beams and pillars for warehouses, and other large buildings, and at length bridges have been constructed of iron.

Iron bridges are the exclusive invention of British artists. The first that has been erected on a large scale is that over the river Severn, at Coalbrook Dale, in Shropshire. This bridge is composed of five ribs, and each rib of three concentric arcs connected together by radiating pieces. The interior arc forms a complete semicircle, but the others extend only to the sills under the roadway. These arcs pass through an upright frame of iron at each end, which serves as a guide; and the small space in the haunches between the frames and the outer arc is filled in with a ring of about seven feet diameter. Upon the top of the ribs are laid cast iron plates, which sustain the roadway. The arch of this bridge is 100 feet 6 inches in span; the interior ring is cast in two pieces, each piece being about 70 feet in length. It was constructed in the year 1779, by Mr. Abraham Darby, iron master at Coalbrook Dale, and must be considered as a very bold effort in the first instance of adopting a new material. The total weight of the metal is $378\frac{1}{2}$ tons.

The second iron bridge, of which the particulars have come to our knowledge, was that designed by Mr. Thomas Payne, author of many political works. It was constructed by Messrs. Walkers at Rotherham, and was brought to London, and set up in a bowling-green at Paddington, where it was exhibited for some time. After which it was intended to have been sent to America; but Mr. Payne not being able to defray the expence, the manufacturers took it back, and the malleable iron was afterwards worked up in the construction of the bridge at Wearmouth.

The third iron bridge of importance erected in Great Britain, was that over the river Wear, at Bishop Wearmouth, near Sunderland, the chief projector of which was Rowland Burdon, esq. M. P. As this is the most considerable structure of the kind, it may be proper to give a brief sketch of its history. In consequence of the increasing trade and population of Sunderland and the two Wearmouths, the ancient ferry, which was almost in the middle of the harbour had become very insufficient and unsafe, so that, besides frequent delays and disappointments, several instances had occurred of the loss of lives. About the year 1790, in which Mr. Burdon was returned to parliament by the county of Durham, some gentlemen interessed in the welfare of the town and neighbourhood of Sunderland, united for the purpose of removing the evils arising from the ferry, and Mr. Burdon was appointed one of the committee. Conceiving at first that a stone bridge would be proper, they began to adopt measures for its erection. An architect was

chosen to carry on the necessary works, who in due time produced plans, estimates, and a model of the intended edifice. But as the work was of considerable magnitude and importance, it was thought expedient to refer the design to the opinion of some gentlemen of celebrity for scientific and practical knowledge in and near the metropolis; their report being unfavourable, the scheme of erecting a stone bridge was abandoned. The committee, however, being now warmly engaged in the business, continued to prosecute their inquiries; and Mr. Burdon in particular being frequently called by his parliamentary duty to London, was very diligent in his endeavours to obtain information and hints from various quarters, as to the peculiar advantages and disadvantages of different materials, as well as of various modes of construction. Mr. Burdon had the good fortune to be assisted in the maturing of his plans by Mr. Thomas Wilson, a truly ingenious man, and at the same time to learn much of the construction of iron bridges from Messrs. Walkers, of Rotherham, so that at length he became persuaded that iron would be the most proper material of which to form the proposed bridge. He thought it best, however, to adhere to the ancient construction, by dividing the arch into portions in the manner of arch stones, and taking advantage of the ductility and tenacity of iron to produce an arch of that metal at least fifteen times lighter than a corresponding arch of stone, and capable of being put together upon an ordinary scaffolding, instead of an accurate centre, in a much shorter space of time.

Mr. Wilson, in conjunction with Messrs. Walkers, constructed and set up an experimental rib at Rotherham, which being found to answer expectation, the success of the experiment was communicated by Mr. Burdon to the town of Sunderland and the county; and his proposition for the erection of an iron bridge was acceded to. The first stone was laid in September, 1793; and Mr. Wilson was appointed to the superintendence of the work. The iron-work was cast by Messrs. Walkers, of Rotherham, and the arch was turned upon a very light but firm scaffolding, so judiciously constructed that not any interruption was given to the passage of the numerous vessels which navigate the busy river of Sunderland. The mode of bracing the ribs was so simple and expeditious, that the whole was put together and thrown over the river in ten days; the scaffolding was immediately removed, and the bridge opened for general use on the 9th of August, 1796.

During the period occupied in erecting the bridge, Mr. Burdon took out a patent to secure the invention of "a certain mode or manner of making, uniting, and applying cast iron blocks to be substituted in lieu of key-stones, in the construction of arches." He thus proceeds to describe his invention, which "consists in applying iron or other metallic compositions to the purpose of constructing arches upon the same principle as stone is now employed, by a subdivision into blocks easily portable, answering to the key-stones of a common arch, which being brought to bear on each other gives them all the firmness of the solid stone arch, whilst, by the great vacuities in the blocks, and their respective distances in their lateral position, the arch becomes much lighter than that of stone, and by the tenacity of the metal the parts are so intimately connected that the accurate calculation of the extrados and intrados, so necessary in stone arches of magnitude, is rendered of much less consequence. *Fig. 4. Plate XXXIII. of Architecture* represents a block of cast iron, five feet in depth from A to A, and four inches in thickness, having three arms B, B, B, and making a part of a circle or ellipsis; the middle arm is two feet in length from B to C, and the

It will be readily admitted, by those who attend to these subjects, that whatever properties may be shewn to relate to a geometrical or lineal arch, considered without thickness, and of its superincumbent plane, may be easily and safely transferred to a real arch of solid materials, and the heavy matter sustained by it; for it is manifest that a solid arch may be conceived either to be generated by the motion of a linear arch, and its plane in a direction perpendicular to that plane, or to be made up of an indefinite number of such equal linear arches and corresponding planes: and in either case, what is shewn to obtain with respect to the former, may without hesitation be applied to the latter. This the reader will keep in mind.

The first hint of a principle which we recollect, is contained in Dr. Hooke's assertion, that the figure into which a chain or rope, perfectly flexible, will arrange itself when suspended from two hooks, is, when inverted, the proper form for an arch composed of stones of uniform weight. The reason assigned for this principle is, that when the flexible festoon of heavy bodies becomes inverted, still touching one another in the same points, the force with which they press on each other in this last case, is equal and opposite to the forces with which they draw each other in the case of suspension. The curve formed by a rope, or flexible chain, of extremely small links, when thus suspended, is well known to our geometers by the name of the *catenarian* curve; by the French it is called *la chaînette*. If a curve of this kind be disposed in such a manner that its vertex shall be uppermost; and if a multitude of globes be so arranged that their centres shall be in the circumference of this curve, they will all remain motionless and in equilibrium: much more will this equilibrium subsist, if, instead of globes, we substitute thin voussoirs, having flat sides, which touch each other in directions perpendicular to the curve. In the former case, the equilibrium will be destroyed very easily, just as a globe resting on a plane surface is easily put into motion; in the latter, the equilibrium cannot be destroyed without considerable force, just as when a heavy body is placed upright on a broad flat base, it will not only stand, but will require considerable force to push it over.

Since the catenarian curve is readily described mechanically, it is no wonder that this principle of Dr. Hooke's should be very generally received; but many of those who adopted it, forgot that it could not be extensively applied, without certain modifications: these modifications, it will be seen farther on, cause this principle to coincide exactly with the true theory of equilibration. As to the contrary, it is manifest, from what we have already said, that it is only the form of a very slender arch rib of uniform thickness, and unfit for the purpose of a bridge; which requires a considerable mass of masonry to lie upon the arch and fill up the space to the roadway, thus completely destroying the equilibrium at first established in the arch itself. It would be possible, indeed, to construct a catenarian curve of equilibration, having a horizontal line for the extrados, but then the thickness of the mass above the crown of the arch must be enormous; thus, for a catenarian of 100 feet in span, and 40 feet high, the distance from the top of the arch to the horizontal extrados must have been nearly 37 feet to ensure an equilibrium. For these reasons the catenarian curve has been very seldom used in the erection of bridges.

Another principle, which was first assumed about the end of the 17th century, is, that every perpendicular column of masonry above the arch is merely kept from sliding down the arch by the next adjoining column. It is very obvious, at first sight, that this principle is not consistent with nature; it has therefore found but few advocates. When analytical expressions are deduced for the curvature of arches con-

structed on this principle, it is worth observing, that they coincide exactly with those which would flow from the supposition that the arch was in equilibrio, in consequence of having a fluid, with a horizontal surface, pressing upon every part of it.

A third principle is drawn from the consideration of the arch stones being frustums, or parts of wedges. This principle, we believe, originated in France, and has been presented in various forms by De la Hire, Belidor, Varignon, Parent, and other French philosophers, and lately by our ingenious countryman Mr. Atwood.

In the method now alluded to, it is considered what weight, in or upon a wedge, is balanced by forces acting against the sides; or what force such a wedge exerts both horizontally and perpendicularly to its sides; and thence it is computed what must be the position and shape of the contiguous wedges of given weights; or what must be their weights to a given shape and position, so as just to exert the adequate degree of resistance required by the first wedge; and so on, from wedge to wedge, till the whole is balanced. A mere arch constructed in this way, would remain in equilibrio as long as the constituent voussoirs had liberty to slide, without friction, down the respective inclined planes on which they lay. This method is, indeed, liable to many objections. First, this theory requires, that either the density or the magnitude of the respective voussoirs, from the crown to the foot of the arch, should keep constantly increasing in proportion to the differences of the tangents of the several angles, which the joints of the voussoirs make with the vertical axis of the curve. Now, if the architect should wish to change the density of his materials in the required proportion, we know not what materials he could use; for the density must always be very great towards the spring of the arch; and, in many cases, it must be infinitely great. If, on the other hand, the magnitudes of the voussoirs were gradually increased, it would be necessary that those at the spring, and consequently the abutments, should be immensely great, and often infinite; besides, that the wedges must be cut to different oblique angles, very difficult in execution, and totally unsafe when erected, as the acute angles would be in constant danger of flushing off. Here, too, in real practice, there would be a total want of balance, on account of the mass of masonry and rubble work, which fills the space between the arch and the roadway. But even this is not all; the arch stones cannot be made, nor indeed ought they, to act as the true mathematical wedge, the properties of which were employed in attempting to establish the equilibrium. The wedge of these theorists is supposed to have its butting sides perfectly polished, and to have its weight or other force on its back balanced by proper equivalent forces acting perpendicularly against those sides. Now this is so far from being the case in the practice of bridge-building, that architects contrive to have the butting sides of their wedges so rough as to occasion a great deal of friction between them; and to increase the adhesion of these sides the more, they introduce between them the best and strongest cement they can procure. By these means, so far from the arch stones being kept in their places only by forces perpendicular to their butting sides; and having liberty to slide along those sides, as in the wedge theory, they are absolutely prevented from the possibility of so sliding, and in a great measure kept in their places in the arch, by forces that act even perpendicular to those which the wedge theory requires. On these accounts, then, we conceive that, however specious and plausible this theory may appear on paper, it ought not to be admitted, since it is manifestly inapplicable to any case which can ever occur in real practice.

On the contrary, the theory which we have adopted, or that given

given by Emerson in his Fluxions, published in the year 1742, and which has been so ably and judiciously handled by Dr. Hutton in particular, is consistent with nature and with truth. This theory establishes an equilibrium among all the vertical pressures of the whole fabric contained between the soffit, or under-side of the arch, and the road-way over all. It is now very generally adopted by the most skilful engineers and architects, as the only true one; because it secures a balance in the whole of the ponderating matter, by making an equality at every point of the curve, between all the adjacent pressures when reduced to the tangential directions, or perpendicular to the joints, which are supposed to be at right angles to the curve of the arch in every part, as such structures naturally require them to be: for, if the joints be perpendicular to the curve, there will arise a lateral pressure, whose direction is not along the tangent; which, wanting a force to sustain it, will destroy the equilibrium, and some of the stones will endeavour to fly out.

When speaking of the principle advanced by Dr. Hooke, we observed that by means of peculiar modifications, it was capable of universal application to cases occurring in practice, and was at the same time consistent with the theory we have assumed. This we shall now proceed to shew. In *Pl. XXXVIII. Architecture, fig. 1. is fig. 2. Pl. VI.* (referred to in the article ARCH) completely inverted. Let this represent a flexible chord or chain, void of gravity, hanging from the points A and G, which are fixed; at the points B, C, D, E, F, suppose weights to be suspended (acting in the directions B H, C I, D K, &c.) proportional to the several lines B i, C m, D n, E s, and F y. Then the case now before us will be the complete inversion of that which is first stated in *Prob. 1. article ARCH*, the drawing forces in this instance being respectively equal and opposite to the several pressing forces in that: therefore, every thing proved there by means of the composition and resolution of forces, will be found to obtain here, only in a contrary direction. Consequently, if the number of weights hanging from the chord A D G be indefinitely increased, it will assume a curvilinear shape, similar in its nature to the arch of equilibration, only in an inverted position; and the various theorems which relate to the weights and pressures of the standing arch, apply with equal facility and accuracy to the weights hanging from the suspended arch. Whether, therefore, we consider the standing or the hanging arch, it is equally true, that in the case of just equilibration, the column either pressing or drawing at any point of the arch is reciprocally as the radius of curvature and the cube of the sine of the angle, in which the vertical line cuts the curve in that point (*Cor. 2. pr. i. ARCH*); or, since the cosecant varies as the sine inversely, the column abovementioned is reciprocally as the radius of curvature, and directly as the cube of the secant of the curve's inclination to the horizon, in the given point.

But the analogy between the standing and the hanging arch has been traced out, not so much for the purpose of corroborating the true theory of equilibration, as for the sake of deducing from it a very popular and general mode of construction; strictly accurate in its principle, and yet so simple in its application, that the most illiterate artist may safely practise it. Suppose it were required to ascertain the form of an arch which shall have the span A G (*fig. 2. Pl. XXXVIII. Architecture*) and the height D H, and which shall have a road-way of the form B E C above it. Let the outline figure A B E C G be inverted, so as to form a figure A b e c G. Suspend a line chain of uniform thickness from the points A and G, and of such a length, that its lower point will hang a little below d, corresponding to D. Divide A G into a number of equal parts (the more the better) in the points 1,

2, 3, &c. and draw vertical lines, cutting the chain in the corresponding points 1, 2, 3, &c. Now take pieces of another chain, whose links are easily separated, and hang them on at all the points 1, 2, 3, &c. of the chain A d G: trim these pieces of chain, by taking off links at some places, and hanging on at others, till their lower ends all coincide with the inverted road-way b e c. The greater lengths hung on in the vicinity of A and G, will pull down those points of the chain, and cause the middle point d, which is less loaded, to rise a little, and bring it near to its proper height. It is obvious this is an arch of equilibration for a bridge so loaded, that the weight of the arch-stones is to that of the superincumbent matter between the arch and road-way, as the weight of the chain A d G, is to the sum of the weights of all the little bits of chain, very nearly. But this proportion is not known before-hand; we must, therefore, proceed thus: adapt to the curve produced in this way such a thickness of the arch-stones as may be thought sufficient to ensure stability; then compute the weight of the arch-stones, and the weight of the rubbles, or other materials with which the haunches are to be filled up to the road-way. If the proportion of these two weights be nearly the same with the proportion of the weights of the chain, we may rest satisfied with the curve now found: but if it be much different, we may soon find how much should be added to, or taken from, the appended bits of chain, in order to make the two proportions equal. We shall then have a curve infinitely near to the inversion of the curve wanted. This method we can safely recommend, as we know it to have been frequently used with facility and success.

It would draw us far beyond the limits we are obliged to assign ourselves, were we to give a complete view of the theory in all its branches; those who are desirous of obtaining a more intimate acquaintance with the subject are, therefore, referred to Dr. Hutton's ingenious treatise on bridges; for our own parts, we must content ourselves with just touching upon a few of the most important particulars. Under the article ARCH, and the corresponding plate, we have given figures of the extrados, of a circular and elliptical arch of equilibration; from which it may be seen how far the extrados extends from the vertex of the curve, before it becomes unfit for a road-way by reason of its bending upwards: in this respect, it appears, that the flat ellipse has the advantage of the circular arch; but the cycloidal arch of equilibration, though similar to these, has the advantage of both, because the extrados runs farther on, nearly parallel to the arch before it comes to the point of inflection. We should observe, however, that in many cases, even of circular or elliptical arches, the evil arising from the inflection of the extrados may be thrown off to a greater distance, by a very simple expedient; for, in an arch of equilibration, as N B H, *fig. 3. Pl. XXXVIII. of Architecture*, whose extrados is E I K S F, since the points at m, n, o, &c. are kept in equilibrium by the heights of the wall I m, K n, L o, &c. if the lines I m, K n, L o, &c. be divided in a given ratio, in i, k, l, &c. the smaller mass, under the new extrados e, i, k, l, f, will still secure the equilibrium. Now it is obvious, that the lower extrados runs much farther from the crown than the upper one, before it has a point of inflection: and hence appears one great advantage arising from the use of iron in bridges instead of stone. Suppose, for instance, that an arch was to be constructed, having the span A D, and height C B, and that the necessary thickness of a stone arch at the crown was B S; here it is plain, that if the road-way were made, having a practicable slope as S K a, it would fall far below the required extrados at K I E, and consequently, the arch, for

want of a sufficient weight over the portion *A m n*, and an equal portion on the other side of the vertex, would be in constant danger of rising in the haunches. But a bridge formed of hollow iron voussiors would be abundantly strong, with far less thickness over the crown, as *B s*; and then the true extrados *e i k s s f* would, in every part, have a proper slope for a road-way; while, at the same time, the structure is in no danger of being destroyed for the want of an equilibrium in all its parts.

We have mentioned under the article *ARCH*, what kind of arches ought to be preferred in the erection of bridges; and have shewn which are strongest: we may here observe, that if there be two arches of the same kind, with an equilibrated load over each of them, the strength of the one will be to the strength of the other reciprocally as the radii of curvature at the vertices of the two arches: hence an elliptical arch, standing on its shorter axis, will be stronger than a semicircular arch of the same span; and the semicircular arch of equilibration will be stronger than a flat elliptical arch of the same span. As to the effect of an additional weight over any part of an arch, it will vary in proportion of the horizontal distances from the extremities of the arch. Hence the greatest danger arising from an additional weight, is when it lies over the crown of the arch; for then the product of the horizontal distances from the abutments is equal to the square of the semi-span, and is the greatest that can be.

Since in any arch of equilibration, the pressure arising from the incumbent weight at any point is reduced to the direction of the tangent at that point, we have in any such arch *V B*, *fig. 4. Pl. XXXVIII. of Architecture*, the weight of the part *V B E A*, the pressure along the tangent *F B*, and the horizontal pressure in direction *D B*, respectively as the lines *F D*, *B F*, and *B D*, or as the corresponding lines in a triangle, whose sides are severally perpendicular to those in *B D F*. Hence, it is easy to find the area of the portion *A E V B*, thus: make *c v* parallel and equal to *C V*, the radius of curvature at the vertex; and draw *c b* perpendicular to the tangent *B F*, meeting *v b* the perpendicular to *c v* in *b*; then in the triangle *c v b*, *c v* corresponds to *D B*, and *v b* to *D F*; and the area of the parallelogram *a v*, having *v c* = *V E*, is equal to the area of *A B V E*: in like manner, by drawing *c g* perpendicular to *G I*, the tangent at *G*, we should have the parallelogram *h b* equal to the portion *H B* over the part *G B* of the arch. The area of the space *H E V G*, between the arch and the road-way, being thus ascertained, its weight of course becomes known, and, consequently, its horizontal pressure against the abutment, as at *G*: for it will be, as the line *v g* : *v c* :: the weight over the semi-arch : the horizontal thrust against the abutment, or a pier, at *G*.

But in estimating the thrust against the piers, &c. it is most common to ascertain the position of the centre of gravity of the load above the arch. Now, in cases of equilibration, this may sometimes be effected without much difficulty: for it is well known, that if a heavy body be sustained by two forces, their directions must meet, either at the centre of gravity of that body, or in a vertical line which passes through it: therefore, since the whole incumbent weight over a properly balanced arch, is sustained in equilibrium by two forces, acting in the direction of the tangents to the extreme points of the curve, the centre of gravity of the materials upon the arch will be in the vertical line which passes through the intersection of these tangents: and in most cases occurring in practice, the centre of gravity will be nearly equidistant from the extrados and intrados of the equilibrated arch. Thus, in the curve *A V B*, loaded to the equilibrium, *fig. 5. Pl. XXXVIII. of Architecture*,

the centre of gravity of the superincumbent mass is in the vertical line *D d*, passing through the intersection of the tangents *A D*, and *B D*. And the centre of gravity of the materials *A V H K*, between the crown and the abutment, is about the middle of the vertical line *E e*, passing through the intersection of the tangents *A D* and *V i*. If the arch be part of a circle, *i V* is the tangent of half the arch *A V*, which, subtracted from half the span, leaves *A G* = sine of *A V* — tangent of half *A V*: and since *G e* = versed sine of arc *A V* — versed sine of arc *e V*, we shall, by adding $\frac{1}{2} E e$ to *G e*, have the altitude of the centre of gravity, from *A C* the horizontal line. If *A V* be a parabola, $A G = \frac{1}{2} A C$; but if it be an equilibrated curve, with a horizontal extrados, then $A G = \sqrt{\frac{V H \times C V \times R}{2 V H + C V}}$, where *R* is the radius

of curvature of the arch at the crown. When the arch is not justly equilibrated, other methods of finding the centre of gravity of the mass supported must be had recourse to. See *Hutton on Bridges*, p. 45—56. It may be worth while, however, to describe here an easy practical method, accurate enough, for most purposes: namely, to draw, on a piece of card paper, a plan of the arch, and its load; then to cut out half of it as *D A B C*, *fig. 6. Pl. XXXVIII. of Architecture*, and to determine experimentally the point *K* in the piece cut out, on which, when supported, the whole will rest; for this point will manifestly correspond with the centre of gravity.

The place of the centre of gravity being determined, we may now shew how to ascertain the thickness of a pier, necessary to support a given arch. Let *A B C D*, *fig. 6. Pl. XXXVIII.* represent the mass over half the arch; *D E F G* the pier. From the centre of gravity *K* of the mass, draw *K L*, perpendicular to the horizon: then the weight of the arch in the direction *K L*, will be to the horizontal push, or lateral pressure at *A*, in the direction *L A*, as *K L* to *L A*. For the weight of the arch in the direction *K L*, the horizontal push in the direction *L A*, and the oblique push in the direction *K A*, will be as the three sides *K L*, *L A*, *K A*. So that if *A* denote the weight or area of the arch, then $\frac{L A}{K L} \cdot A$, will be

its force at *A* in the direction *L A*; and $\frac{L A}{K L} \times G A \times A$, its effect on the lever *G A*, to overset the pier, or to turn it about the point *F*. Again, the weight of the pier will be as its area *E F* \times *F G*, and, supposing the load over the arch and the pier to be of similar materials, $E F \times G F \times \frac{1}{2} F G$ or $\frac{1}{2} E F \times F G^2$, is the effect on the lever $\frac{1}{2} F G$ to prevent the pier from being overset. Here it is supposed, that the length of the pier, from point to point, is the same as the thickness of the arch, and that the centre of gravity of the pier falls in the vertical plane bisecting *F G*. Now, that the pier and the arch may be in equilibrio, the two effects just stated must be equal: therefore, we have $\frac{1}{2} E F \cdot F G^2 = \frac{L A}{K L} \times G A \times A$, from which it follows, that the thickness of the pier is $F G = \sqrt{\frac{2 G A \cdot A L}{E F \cdot K L}} \times A$.

In the above investigation, it is supposed, that the whole of the pier is out of water: but if any part of it be immersed in water, that part will lose so much of its weight as is equal to its bulk of water, if the water can get below the pier or into the joints. This, however, may easily be brought into the calculation. By applying the above theorem to the several cases which may arise, the thickness of the pier may be found, so that it shall just balance the spread or

BRIDGE.

or shoot of the arch, independent of any arch on the other side of the pier. But the weight of the pier ought a little to preponderate, or exceed in effect, the shoot of the arch; and the thickness ought to be taken a little more than what the theorem will give: indeed, in most cases occurring in practice, the thickness must be between the fifth and the seventh part of the span of the arch.

The only remaining consideration in the theory, relates to the form of the ends of a pier, so as to afford the least resistance to the force of the stream of water. Now it may be found by a fluxional process, that if the water strike every part of the pier with equal velocity, the end of the pier should be a right-angled triangle, when the force of the water upon it is the least possible: when the variably increased velocity, as in the case of a flood, is used, the form of the ends comes out a little curved. One-third of the absolute force is taken off, by making the ends of the pier semicircular; $\frac{1}{4}$ would be taken off, if the ends were parabolic; but when the ends are right-angled triangles, with the right angles pointed into the stream, the absolute force of the water upon the pier is reduced to one-half; and an acute angle pointed to the stream will reduce its force still more. But in rivers, on which heavy craft navigate, and pass the arch, it is generally better to make the ends nearly semicircular: for, although it does not divide the water so well as the triangle, yet it will bear the shock of the vessels better, and, at the same time, be more likely to turn them off towards the middle of the arch.

BRIDGE, in *Cannery*, the two pieces of timber which go between the two transoms of a gun-carriage, on which the bed rests.

BRIDGE, in the *Military Art*. *Flying bridge*, *pont volant*, or *pont de guerre*, signifies a bridge constructed of pontoons, leather boats, barks, hollow casks, thaves of rushes, blown bladders, called *cyphophori*, or the like, laid upon a river, or marshy and boggy ground, and covered over with planks, for the passage of a body of troops.

Flying bridge, *pont volant*, taken in a more particular signification, denotes a bridge composed of several boats, connected by a flooring of planks, and surrounded by a balustrade or railing. It is furnished with one or more masts, to which is fastened a strong cable, supported at proper distances by boats, and extending to an anchor to which the other end is made fast, in the middle of the water. By this contrivance, the bridge becomes moveable, like a pendulum, from one side of the river to the other, without other help than a pulley. Such bridges were formerly sometimes constructed of two stories, for the quicker passage of a great number of men, or that both infantry and cavalry might pass at the same time. The use of this kind of flying bridge is, however, attended with great difficulty and danger, and subject to the most fatal accidents. An unfortunate instance of this occurred at the occupation of Nimeguen in the campaign of 1794, where, while the Dutch garrison was occupied in crossing the river, an unlucky shot from the French batteries carried away the top of the mast, and the bridge falling round to the French's side of the Waal, three hundred of the garrison were immediately made prisoners. Those who remained on the tower, to a much greater number, bereft of the means of escape, surrendered to the besiegers.

Another kind of *flying*, or *floating bridge*, is formed of two small boats laid over one another in such a manner, as that the uppermost stretches and runs out by the assistance of cords drawn through small pulleys, placed along the sides of the undermost bridge, which is thus pushed for-

ward, till the farther extremity of it rests against the place it is intended to be fixed upon.

When these two bridges are extended to their utmost length, so that the two middle ends meet, they should not be above four or five fathoms long; for if longer, they will break. Their chief use is for surprising out-works, or fortified posts that have but narrow moats. In the memoirs of the Royal Academy of Sciences, we find a new contrivance of a floating bridge, which lays itself on the other side of the river. Vide Hist. Acad. R. Scienc. an. 1713. p. 104.

Draw-bridge, or *pont submersible*, is a bridge fastened at one end with hinges, so that the other end may be lifted up or let down by some easy contrivance. The most common method is by a kind of balance called *flyers* (which see); in which case the bridge stands upright, to hinder the passage of a boat, or the like; the breadth of this bridge is usually about nine or ten feet, and its length about fifteen feet. There are others so constructed as to be drawn back, for hindering a passage, and to be thrust over again for affording a passage. Others open in the middle, half turning to one side, and the other half to the other, being joined again at pleasure; but these are subject to an obvious inconvenience, as one half of them remains on the enemy's side. The marquis de L'Hopital has given the construction of a curve, in which a weight will always be a counterbalance to a draw-bridge; which the younger Bernoulli has shewn to be no other than the cycloid. Act. Erud. Lips. an. 1695.

Draw-bridges are likewise frequently used on canals, navigable rivers, and wet-decks; for small canals they consist of one leaf or frame only, moveable on hinges; but for large canals, such as the Forth and Clyde canal, in Scotland, and for wet-decks, &c. they are made in two pieces which meet in the middle, forming an arch, and are raised or lowered by means of balance frames, moveable on the tops of uprights, suited in height to the magnitude of the bridge. Such bridges, however, have been found inconvenient in use, owing to the obstruction they give to the yards and rigging of ships in passing through them. This gave rise to the invention of a different sort of bridge, which, for small canals, consists of one frame or leaf only, turning on a centre or series of balls or rollers; and for large canals, or navigable rivers, they are formed of two parts, which meet in the middle. The first that have come to our knowledge are those at Cherbourg and Toulon. Neither of them, however, are so complete as those that have lately been constructed at the West India and London docks; the latter spans 40 feet, and 15 feet wide in the roadway, and is made of thin ribs of cast iron, about an inch and a half thick, turning on a number of concentric rollers, moving between two circular rims of cast iron, which are very nicely turned, and there is a flap for each leaf, which lets down by a screw, and shuts against the stone work on each side, forming the whole, when shut, into an arch, capable of carrying any weight which can ever pass over it.

The whole, though weighing 85 tons, moves with great ease, and can be opened and shut in less than three minutes, thereby occasioning very little obstruction to travellers, while vessels pass through the locks.

Bridge of communication, is a bridge made over a river, to preserve a free intercourse between two armies, or fortified places, separated by the stream.

The bridge now most generally employed, and which, by reason of its superior efficacy, has gradually almost superseded the use of all those above-mentioned, is that constructed of copper or wooden boats, fastened with stakes or anchors to the bed of the river, and covered over with planks.

BRIDGE.

planks. Modern armies generally carry with them a number of these copper boats, or pontoons, that they may always be in readiness for throwing over bridges. Several of these being joined side by side, till they reach across the river, and planks laid over them, make all plain for the troops to march upon.

The most remote ages of antiquity furnish us with many remarkable instances of bridges of this kind. One of the earliest upon record, is that laid by Darius Hystaspes over the Ister, or Danube, in his Scythian expedition, about the year before Christ 508. Herodotus, l. iv. c. 98. Darius also crossed the Thracian Bosphorus with 700,000 men by means of a bridge of boats, the strait being five stadia, or 1008 yards in breadth. That of Xerxes, in the year 480 before Christ, seven Greek stadia, or, as some estimate them, nearly a mile in length, across the Hellespont, is still more remarkable. The boat-bridges of Xerxes began at Abydos, and terminated a little below Sestos. This passage, which is the narrowest part of the strait, is only about 375½ toises, or 800 yards wide. But, as the length of the bridges is said to have been seven stadia, M. D'Anville (M. de l'Acad. des Bell. Lettr. t. 28. p. 334.) has from thence inferred, that these stadia were only 51 toises, or 108 yards, each. The first bridge of Xerxes having been carried away by the force of a tempest, he substituted two others, that towards the Pontus Euxinus, consisting of 360 vessels of the largest dimensions used in the ancient navies; the other of 340. These were steadily moored by means of large anchors. Six immense cables, fastened to large piles driven into the opposite shores, extended the whole length of the bridges. Across these were laid trunks of trees, and upon them a flooring, which was covered with earth for the passage of the army. The whole was secured by a railing on each side. This contrivance is the model of most of the bridges of boats which have since been constructed, with this difference, that the vessels of Xerxes were arranged stem and stern upon the water, a plan exactly contrary to the present method. That the Persians were in the habit of constructing bridges of this kind, appears from these examples, and from another recorded by Xenophon, who mentions that of Sitace over the Tigris, composed of 27 boats. The Greeks and Romans were very expert in this part of the military science. Several bridges of boats are mentioned by Appian, in his account of the social war. That of Cæsar over the Rhine is familiar to the readers of ancient history; and in all his campaigns, we observe particular attention on the part of that celebrated commander with regard to the passage of rivers, or preserving communications by means of bridges. In the contest between the armies of Otho and Vitellius about Cremona, a bridge of this kind is noticed by Tacitus. That of Trajan over the Danube has been already mentioned. Where boats were wanting, the ingenuity and cruelty of the ancients found other expedients for overcoming the obstacles presented by the rivers to their progress. Hamilcar Barca, in his war against the mercenaries, crossed the Macar by means of the following stratagem. He observed that when the west-north-west wind prevailed, the sand it agitated almost choked up the mouth of the river, and formed a kind of natural bridge for the passage of his troops. He availed himself of this discovery to pass the Macar in the night, and obtain by surprise an easy victory. Sapor the Persian, by a refinement in cruelty, made use of the bodies of his prisoners to facilitate the passage of his army. (Vid. Herod. lib. iv. cap. 97, 101.—Ibid. lib. vii. cap. 33—36.—Xenophon Anab. lib. ii.—Appian, de Bel. Civ.—Cæsar de Bel. Gall. lib. iv.—Tacitus, hist. lib. ii.—Dion Cassius, hist.—Polybius, lib. i.—Trebell. Poll. in Valerian.)

Of late years the laying of bridges across rivers has been greatly improved and facilitated. In the campaigns of 1799 and 1800 in particular, this branch of the military science attained that pinnacle of excellence which it will be difficult to surpass. Few objects present more varied details than the crossing a river by open force, and in presence of an enemy. In operations of this kind, localities and other physical circumstances differ so infinitely, and give rise to such numerous combinations of advantages or disadvantages, that it is impossible to lay down any given precepts which may be very applicable in all cases. What may be very proper and feasible upon one river; or at a certain season of the year, may be impracticable elsewhere, or in any other period. Sometimes the necessities for the expedition must be transported by water; at others, by land. Rivers which have marshy banks, a smooth bed, an even current, and a muddy bottom, require totally different precautions from those with a rapid and formidable current, which are overhung with thick woods, or have a rocky bottom. The best commentary upon these several cases, will be a detailed account of the operations adopted in them.

The passages of the Rhine by the French troops at Urdingen, Neuwied, Kehl, and Diersheim; at Reichlingen, Atzmoor, and Lucistieg in Switzerland; those of the Limmat, the Danube, the Lech, the Inn, and finally of the Mincio, will evince the progress lately made in the construction of bridges of pontoons. Two of these have been treated with great precision by an engineer in the French service, whose work well deserves the attention of military men in general. (Dedon, relation des passages, de la Limmat et du Rhin. Par. 1801, 8vo.)

Under this article of *bridges* we may also mention *portable bridges*, easily taken asunder, and put together again. M. Couplet mentions one of this kind, 200 feet long, and which 40 men may carry. See Du Hamel. Hist. Roy. Acad. Scienc. l. iii. § 5. c. 4.

Pendant, or hanging bridges, called also *philosophical bridges*, are those which are not supported by posts or pillars, but hang at large in the air, being sustained only at the two ends or buttments. Of such bridges, consisting of a single large arch, instances have been already mentioned. Bridges of this kind are used by the Spaniards for passing the torrents in Peru, over which it would be difficult to throw more solid structures either of stone or timber. Some of these hanging bridges are formed so strong and broad, that loaded mules pass along them. Ulloa, tom. i. 358. Dr. Wallis gives the design of a timber bridge, 70 feet long, without any pillars, which may be useful in places where pillars cannot be conveniently erected. Phil. Trans. N° 163, p. 714. Dr. Plott informs us, that there was formerly a large bridge over the castle-ditch at Tutbury in Staffordshire, made of pieces of timber, none much above a yard long, and yet not supported underneath, either with pillars or arch-work, or any other sort of prop whatever.

It has been already mentioned, that the ancient Romans paid particular attention to the construction and reparation of bridges; and that in the middle ages the building of bridges was reckoned among the acts of religion. By our ancient laws, *pontium reparatio*, or the reparation of bridges, was part of the *trinoda necessitas*, to which every man's estate was subject. However, by the great charter, 9 Hen. III. c. 15. no town, nor freeman shall be distrained to make bridges nor banks, but such as of old time, and of right, have been accustomed. And none can be compelled to make new bridges, where none were ever before, otherwise than by act of parliament. 2 Inst. 701. By the common law, some persons are bound to repair bridges by reason of the tenure of

of their lands or tenements; and some by reason of prescription only. 2 Inst. 700. But if a man make a bridge for the common good of all the subjects, he is not bound to repair it; and if none are obliged by tenure or prescription at common law, then the whole county or franchise shall repair it. 2 Inst. 701. By 22 H. VIII. c. 5. it is enacted, that, as in many places it cannot be known and proved, what hundred, town, parish, person, or body politic, ought to repair bridges broken in the highways, in every such case, the said bridge, if they be without a city or town corporate, shall be made by the inhabitants of the county; if within a city or town corporate, then by the inhabitants of such city or town corporate; if part be in one shire, city, or town corporate, and part in another, or part within the limits of a city or town corporate, and part without, the inhabitants of the shire, cities, or towns corporate, shall repair such part as lies within their limits. The decays of bridges are presentable in the leet, or torn. 2 Inst. 701. By the above act, the justices, or four of them at the least, shall have power to inquire, hear, and determine in the general sessions, of all manner of annoyances of bridges broken in the highways, to the damage of the king's liege-people, and to make such process and pains upon every presentment against such as ought to be charged to make or amend them, as the king's bench usually doth, or as it shall seem by their discretions to be necessary and convenient for the speedy amendment of such bridges. Such part of the highways as lies next adjoining to any ends of any bridges within the space of 300 feet, shall be made and repaired as often as necessary; and the justices shall inquire into, and determine annoyances in such highways. By 12 Geo. II. c. 29. no money shall be applied to the repair of bridges, until presentment be made by the grand jury at the assizes or sessions, of their insufficiency, inconvenience, or want of reparation. Again, by 1 Ann. st. 1. c. 18. no fine, issue, penalty, or forfeiture, upon any presentment or indictment for not repairing bridges, or the highways at the ends of them, shall be returned into the exchequer, but shall be paid to the treasurer, to be applied towards the said repairs, and not otherwise: and no presentment or indictment for not repairing bridges, or highways at the ends of bridges, shall be removed by "certiorari" out of the county into another court. The charges of repairing and amending bridges, and highways at the ends of them, shall be paid out of the general county rate. 12 Geo. II. c. 29. The four justices in session may appoint two surveyors, with salaries, to see the bridges amended. 22 H. VIII. c. 5. This business of surveying bridges is usually annexed by the justices to the office of the high constables, with the allowance of salaries. The stat. 14 Geo. II. c. 33. gives justices the power of changing the situation of bridges, as it enables them to purchase lands adjoining any county bridge, for the more commodious enlarging, and convenient rebuilding the same. By 12 Geo. II. c. 29. justices, at their general or quarter sessions, after presentment made by the grand jury of bridges wanting reparation, may contract for rebuilding and repairing the same, for any term not exceeding seven years, at a certain annual sum. They shall give public notice of their intention to contract, make contracts at the most reasonable prices, and take security of the contractors for due performance.

If a man has toll for men or cattle passing over a bridge, he is to repair it. And toll may be paid in these cases by prescription or statute.

By many special statutes, enacted upon the occasion, it is made felony to destroy bridges, &c. erected by virtue of these acts of parliament.

BRIDGE-MASTERS, are officers of the city of London, chosen

by the citizens, who have certain fees and profits belonging to their office, and the care of London bridge, &c.

BRIDGE, in *Music*, a small wooden machine for strings to rest on, in tuning violins, tenors, bassetts, guitars, monochords, &c. In this last the bridges are moveable.

BRIDGEND, in *Geography*, a town of Glamorganshire, in South Wales, situated on the banks of the river Ogmore, over which is a stone bridge, dividing the town into two parts. One of these is called Bridgend, and the other Newcastle. The latter, being seated on high ground, commands some very fine and extensive prospects. There is another part of the town called Oldcastle, by way of distinction from the former, each of which was formerly protected by a castle, and some remains of both are still standing. At Oldcastle is a chapel of ease under Coity, that being the mother-church; and at Newcastle is a large well-built parish church. The river Ogmore abounds with salmon, trout, sewin, and various other fish, with which the markets are generally well supplied. The soil round Bridgend is fertile and well cultivated; and the town is also in a state of considerable improvement. The agricultural society of the county has established a woollen manufactory in this town, and supplied it with different machines. About two miles east is the village of Coity, where are the remains of a very large and venerable castle, which, next to Caerphilly, was the largest in South Wales. Bridgend has a good weekly market on Saturdays, and two fairs annually. It is 20 miles from Cardiff, 181 W. from London; contains 1688 houses, and 7140 inhabitants. Malkin's Tour in South Wales, 4to. 1804.

BRIDGENORTH, a large ancient borough town of Shropshire, England, is built on the top and declivities of a hill, which rises steeply from the river Severn. It covers a considerable extent of ground; many of the streets are narrow, and some alleys which lead from those to the river, consist of long flights of steps. Bridgenorth appears to have obtained some consequence as early as the time of Ethelreda, wife of king Ethelred; and was fortified and furnished with a castle by Robert de Belleme, or Beliasme, son of Roger de Montgomerie, in the time of Henry I. Collecting a few associates, he here made a stand against the forces of that monarch, but, being vanquished, was obliged to fly into Normandy; where, according to Speed, he continued to "blow those embers that others had kindled." The castle at this place appears to have been of great extent and importance, and was mostly occupied by the Normans during their wars against the Welsh. In the reign of Richard II. it was committed to the custody of Hugh de Burnell, a favourite of that monarch, whose remains were interred at Hales Owen church in this county. In the civil wars, this castle was the scene of a violent struggle between the forces of the king and those of the parliament. It was then much battered; and one of the towers, which now leans about ten degrees out of the perpendicular, was then partly undermined. The singular position of this building very much resembles one at Pisa in Italy, and is often contemplated with wonder by the passing traveller. Part of the site of the castle is occupied by a large handsome new church, and at the other end of the town is an ancient church, which suffered much in its ornaments, painted glass, &c. in the above wars.

Bridgenorth is separated into two parts, divided by the Severn, and respectively called, from their relative situations, upper and lower town. The hill on which the former stands rises almost perpendicularly from the river, and consists mostly of solid rock, in which many cellars are excavated.

This borough had several privileges granted it by charters from

from Henry II. and king John; and returned members to parliament *ab origine*. It is governed by two burgeses, annually elected out of twenty-four aldermen; and the right of election is vested in the burgeses and freemen within and without the borough, amounting to about 700. There are a large well supplied weekly market on Saturdays, and three annual fairs. The town contains 945 houses; and 4408 inhabitants, 3806 of whom are employed in the manufactures and trade of the place.

David Caldwell died at Bridgenorth in November 1796, at the advanced age of 107 years. He was born in the army in the shire of Ayr, Scotland, and served as a drummer in king William's army, and many years a soldier under queen Anne. He perfectly retained his faculties to the last. Camden's Britannia. Magna Britannia. History of the Boroughs of Great Britain.

BRIDGES. JAMES, in *Biography*, published, in 1751, a well-known work on the subject of farriery, in which he appears to have been well versed, with the following quaint title: "No Foot, no Horse; or, an Essay on the Anatomy of the Foot of a Horse. With particular Directions for the Cure of the chief internal Diseases the Horse is subject to." With plates, 8vo. London. Haller. B.b. Anat.

BRIDGET, St. in *Heraldry*, an order of knighthood instituted in Sweden in 1766. They were to oppose heresy, secure the confines of the kingdom, bury the dead, succour widows and fatherless children, and to keep up hospitality. Their ensign was a cross of eight points, four of which were moline, the other slower de lis, azure, and under a tongue of five proper. This badge or ensign was embroidered on a short white robe.

BRIDGE-TOWN, in *Geography*, the capital of the island of Barbadoes, situate in the south-western part of the island, in the parish of St. Michael, and in the innermost part of Carlisle bay. This bay is large enough to contain 500 ships, being one league and a half long, and one broad; but the bottom of it is foul, and apt to cut the cables. The town lies at the entrance of St. George's valley, which runs several miles into the country. It has a free-school, an hospital, and a college, founded and liberally endowed by colonel Codrington; but its success is said not to have answered the designs of its founder. It has also commodious wharfs for loading and unloading goods, and is well defended by a number of forts; such as James fort on the west, Willoby's fort on a tongue of land running into the sea, Needham's fort, and St. Anne's fort, which lies more within the land. But thus secured from foreign enemies, it is very subject to hurricanes, and it has often suffered by fires. It was burnt down in 1683; and in 1756, 1766, and 1767, the greatest part of the town was destroyed. Before the devastation occasioned by the two last of these fires, it contained 1500 houses, mostly constructed of brick, very elegant, and said to be the finest and largest in all the Caribbee islands; the town has been since rebuilt; but it had scarcely risen from its ruins, before it was made a scene of desolation by a violent storm in 1780. See BARBADOES. It is again recovering its former splendour. The streets are paved, and the houses lofty, and well built. The church of St. Michael is as large and beautiful as many cathedrals, and is furnished with an excellent organ and ring of bells, and a curious clock. Upon the whole, the town is destitute of few elegancies or accommodations for entertainment and amusement which are to be found in the cities of Europe. This is the seat of the governor, council, assembly, and court of chancery, &c. Within a mile of the town to the north-east, the governor has a handsome country villa, built by the assembly, called "Pilgrims." The number of militia for Bridge-town and the precinct of St.

Michael is 1200 men, who are called the royal regiment of foot-guards. Packet boats have been lately established to carry letters to and from Great Britain monthly. The adjacent grounds are low and flat, and were often overflowed by the spring tides, which rendered the situation of the town insalubrious; but most of them have been drained, and it is now reckoned as healthy as any place in the island. N. lat. 13° 5' 30". W. long. 60° 2' 30".

BRIDGE-TOWN, a post-town of America in Cumberland county, and district of Maine, having Hebron on the N.W. and Bakers-town (on the west side of Androscoggin river) on the S.E.; which three settlements lie on the northern side of little Androscoggin river. It contains 646 inhabitants; and lies 40 miles N.W. from Portland, and 156 N.E. from Boston. Bridge-town consists of large hills and vallies; the highland affords red oak of large size, and the vallies are covered with rock maple, bals, ash, birch, pine, and hemlock. In this district is a pond, on the east side of which is a cove, extending about 100 rods farther to the east than the general course of the shore, and so shallow, that a man may wade 50 rods into the pond. On the bottom of this cove are stones of various sizes, which appear to have an annual motion towards the shore, though some of them are two or three tons in weight! The shore of the cove is lined with these stones, which seem to have moved out of the water.

BRIDGE-TOWN, the chief town of Cumberland county in New Jersey, near its centre; 50 miles S.S.E. of Philadelphia, 80 S. by E. of Trenton, and 145 S.W. of New York.—Also, a post-town of Cumberland county, on Cohanzié creek, 35 miles S. from Philadelphia.—Also, a post-town in Queen's county, Maryland, lying on the western side of Tuckahoe creek, 8 miles E. from Centreville, as far S.E. from Church-hill, and 65 S.W. from Philadelphia.—Also, a town of Kent county in the same state, seated on the north bank of Chester river, 7 miles S.E. from Cross Roads, and 4 southerly from Newmarket.

BRIDGE-TOWN, in the island of Antigua. See WILBOUGHBY Bay.

BRIDGEWATER is a large, populous borough, and market town of Somersetshire, England, seated on the river Parret, which winds in a bold stream hence towards the estuary of the Bristol channel. The town is situated in a flat and rather woody country, having rich moors to the north and east. It was formerly of much greater importance than at present; as it has suffered material injury by means of conflagrations, and various vicissitudes of warfare; particularly in 1645, when the town was besieged by the parliament's army under the command of sir Thomas Fairfax, who committed great devastations. The markets are on Thursdays and Saturdays; and for the accommodation of those who frequent them, a spacious and convenient market-house has been lately erected. There are also four annual fairs. Bridgewater is a very ancient corporation, governed by a mayor, recorder, two aldermen, and twenty-four common-councilmen. The town was formerly protected by a castle, the greater part of which was demolished during the civil wars. It was in the castle yard, or castle fields at Bridgewater, that the duke of Monmouth encamped his raw and undisciplined troops, previously to his battle on Sedgemoor, where he was defeated. The castle and manor were formerly held by the queens of England. The corporation have also their peculiar manor within the town. The church dedicated to St. Mary is a large handsome structure, with a tower and spire at the west end. A very fine altar piece was given by the Hon. Anne Powlett. Here was formerly an ancient hospital founded by William Briwere in the time of Henry III., but not a vestige of it remains.

males. Bridgewater sends two members to parliament; and the right of voting is vested in the inhabitant householders paying foot and lot. The revenues of the corporation, consisting of the manor of the borough, the great and small tithes, with some manors in Dorsetshire, are valued at 2000*l.* per annum. The authority of the magistrates extends throughout the parish, and the corporation are conservators of the river Parret. The burgesses are free in all parts of the united kingdom, except London and Dublin; and the sheriff of Somersetshire cannot send any process into the borough, it having been made a county within itself by Henry VIII. It was made a free borough by king John, a mayor town by Henry IV. and sent to parliament 23d Edward I. This borough was formerly under the patronage of the celebrated Bubb Doddington, and has been the object of strong contest in different elections. The Midsummer county sessions are constantly held here; and the assizes every other year. At the port the manufactures of Manchester, Liverpool, and Birmingham, &c. are landed for the use of the western counties. The duties paid for imports are very considerable. Coals are also brought from the Welch coast to supply the town and neighbourhood: the duty on which for seven years was estimated at between 16 and 17,000*l.* Thirty-two vessels belong to the port from 20 to 120 tons burthen. The town contains 493 houses, and 3634 inhabitants, 986 of whom are engaged in trade and manufactures. The houses are built in an irregular manner; but the principal street is wide, and well paved. The quay is also large and commodious. There are several meeting-houses for presbyterians, anabaptists, and quakers; and it is a singular circumstance, that in one of these there is a pew appropriated for the mayor and aldermen, should they be of that persuasion. Bridgewater is 147 miles W. from London, and 12 S. from the Bristol channel. A suburb called Eastover, is joined to the town by a strong stone bridge. See SEDGEMOOR. Collinson's History of Somersetshire, vol. iii. 4to. 1791.

BRIDGEWATER, a township of America, in Grafton county, New Hampshire, incorporated in 1769, and containing 664 inhabitants.—Also, a township of Somerset county, in New Jersey, containing 2578 inhabitants, including 357 slaves.—Also, a considerable township in Plymouth county, Massachusetts, containing 5200 inhabitants, of whom many are manufacturers of hardware, nails, &c.; about 30 miles E. of S. from Bolton.—Also, a township of Windsor county, Vermont, about 55 miles N.E. of Bennington, incorporated in 1785, and containing 780 inhabitants.

BRIDLE, from *la bride*, Fr. in the *Manege*, is an instrument for the guidance and management of the horse by the hand, and is composed of the *bits* and *reins*, which see.

“It is probable, that some time must have elapsed before the instrument called a *bit* was used for the government of horses, by putting it into their mouths. By looking back into antiquity for the practices of past times, and the origin of many customs descended to us, we every where find the greatest plainness and simplicity in their first state; and the more ancient, the ruder and simpler they were. The style of architecture, the fashion of the habits and dresses of early times, the method of preparing food, and many articles besides, are convincing proofs of this assertion. By degrees light broke in, and men advanced progressively from one improvement to another. It is curious to observe, that in ancient Greece many of the terms appropriated to navigation were also used in horsemanship. The word *κέρως*, or *keles*, which signifies a *runner*, served likewise, as Suidas says, to denote light sailing vessels, and swift horses. Homer calls ships horses of the sea; and the pilot, the coachman

or driver of the vessel. Pindar calls a bridle an anchor; and in this sense Neptune may properly be called the inventor of the horse, which implied no more than a ship. These little observations are only offered to the reader as an argument that bits and bridles were used in the most distant ages; but at what exact period to fix their origin, is a task by no means easy to perform. It is probable to suppose, that the people of the first ages of the world, prompted by their necessities, and acting from them alone, made no other use of the horse at first than what might be for domestic purposes, teaching him to submit to carry men and burdens; and having reconciled and made him patient, they taught him, by degrees, to distinguish and obey the different sounds of the voice, as well as to be directed by the guidance of a switch or wand which the rider carried in his hand.

“It is, however, apparent, that they made use of cords or thongs to stop and confine the horse in any place where they chose he should stay. These cords they fastened round the horse's neck, as may be seen in the figures, though of a much later date, carved upon Trajan's pillar at Rome. These ropes hanging down from the necks of horses, are imagined to have suggested the first hint of traces for drawing machines. Strabo says that the Moors, or Africans, used cords for bridles. It is probable to think, that after a time they might discover, that if a cord was put into the mouth, or at least over the nose, like our halters, which may be used both ways at the same time, it would be a more effectual method of guiding and controlling the horse; and hence is derived the supposed origin of bridles, which, in after ages, have been multiplied in such numbers, and under such a variety of shapes, increasing and improving as men grew more skilful in riding, and applied it to sundry purposes.” Berenger, Hist. and Art of Horsemanship, vol. i. p. 40.

When bridles came into fashion, the most remarkable were those called “*lupata*,” having bits of iron resembling wolves' teeth, to which Horace refers, l. i. od. 8.

“Cur neque militaris
Inter æquales equitat, Gallica nec lupatis,
Temperat ora franis?”

Virgil (Georg. ii. l. 115.) seems to ascribe the first invention of them to the Lapithæ, or Centaurs, who inhabited a town in Thessaly, called “*Pelethronium*,” when he says,

“Fræna Pelethronii lapithæ, gyroque dedere
Impositi dorso.”

But some are of opinion, that he speaks of bridles, as invented not by the Lapithæ, but by a person of that nation, whose name was Pelethronius, to whom Pliny (H. N. l. vii. c. 56.) attributes the invention of them.

BRIDLE, in *Anatomy*. See FRÆNUM.

BRIDLE, among *Surgeons*, is a kind of BANDAGE contrived for retaining the lower jaw in its place.

BRIDLE, *scolding*, or BRANK, an instrument formerly used in some parts of Scotland, and in Staffordshire, for correcting scolding women. It consists of a kind of head-piece, which opens and incloses the head, whilst an iron appendage is put into the mouth, and takes particular hold of the tongue, which it effectually keeps from stirring: thus harnessed, the offender is led in triumph through the streets. A figure and description of the Staffordshire bridle is given by Dr. Plott, who prefers it to the ducking-stool, which not only endangers the health of the party, but also gives the tongue liberty betwixt successive dips; to neither of which inconveniences this instrument is liable.

BRIDLE-chain, in *Husbandry*, a name given by our farmers to a part of the structure of their PLOUGH. This is an iron chain of several links, fastened at one end to the beam of the plough, near that part where the collar receives

the tow-chain; and fastened at its other end to the stake of the plough, or to that upright piece which runs parallel to the left crowstaff, and at its bottom pins in the tow-chain; this stake is fastened to the crowstaff, sometimes by the end of this *bridle-chain*, and sometimes by a wythe or cord.

BRIDLE-hand, in the *Manege*, signifies the horseman's left-hand, in respect of which the right-hand is called the spear or sword-hand.

BRIDLES, in *Sea language*, denote the upper part of the moorings in the king's harbours, to ride ships of war.

BRIDLES of the bow-line. See *Bow-line*.

BRIDLINGTON, or **BURLINGTON** as sometimes written, in *Geography*, is a sea port town of the east riding of Yorkshire in England. It is built on the shore of a bay, to which it gives name, which is found to be a safe harbour for vessels, when the wind is strong from the N.N.W. and N.E., being secured by two projecting piers of considerable extent, running out obliquely into the sea, and rendering the entrance very narrow. The principal trading vessels are colliers, and most of the inhabitants are connected with these. Here was formerly a priory of black canons, founded early in the reign of Henry I. The church has been large, but its choir, transepts, and steeple, have been entirely destroyed, leaving only the nave for parochial service. A Mr. William Hustler was a considerable benefactor to the town, and in the 16th Charles II. Richard Boyle baron Clifford was created earl of Burlington, (from this town). In the 8th William III., and 1st of George I. acts of parliament were obtained to repair the piers, &c. of the harbour. Bridlington is now frequented as a bathing place; it lies at about 10 miles S.W. of Flamborough-head, 40 east of York, and 206 north from London. The houses amount to 707, and inhabitants to 3130. Gough's edition of Camden's Britannia.

BRIDON, or **BRIDON**, in the *Manege*, is derived from the French *Bridon*, a diminutive of *la bride*. By *la bride*, the French denote the reins going to the curb; and by *bridon*, the reins going to the snaffle or lesser bit, which is held in reserve in case of any accident with the former. In the English language, it is called a *bridoon*, and a very different use is made of it. The reins of the *bridoon* pass parallel to the line of the horse's head, through a loop hanging from the head stall, and from thence to the hook of the saddle, for they are only used in harnessed horses at present, especially of the richer orders of society, and where elegance of appearance is considered.

The rein so disposed draws against the corners of the mouth, and not upon the bars, as the snaffle does, and tends more forcibly to elevate the head, as the curb does to depress it; though they are often used at one and the same time, the snaffle having an intermediate effect.

Bridles of late have been constructed with a property, somewhat similar to the *bridoon*, to be used with the hand, the rein passing from the head stall, through a tube or pipe placed in the situation of the cross piece of the snaffle, to the hand; so that when drawn tight against the mouth, it presses the cheeks upwards, and shortens the head stall, which has not a good appearance. A ring is also fixed to this hollow cross piece for the reins; as in the ordinary snaffle, so that the rider has it in his option to use either.

BRIDPORT, in *Geography*, an ancient borough, market and manufacturing town of Dorsetshire, England, is situated in a vale at the distance of about one mile north of Bridport bay. It is nearly surrounded by eminences, some of which assume a conical shape; and on its western and eastern sides, run two small rivulets, which are highly useful to the manufacturers. Seated on the great western road, at the distance of 135 miles S.W. from London, it derives many

advantages from travellers, and further advantages from its contiguity to the English channel.

It seems to have been a very considerable town before the conquest, as it is thus noticed in the *Domesday Book*: "In Edward the Confessor's time here were 120 houses, subject to every service to the king, and paying geld for 5 hides, viz. to the use of the king's domestics, (Hufcarles) $\frac{1}{2}$ a mark of silver, except the customs pertaining to the farm of one night for one night's lodging. Here was one mint-master, who paid to the king one mark of silver, and 20 shillings on the charge of coinage. Now there are but 100 houses, and the remaining 20 are ruined, that the inhabitants are unable to pay the tax." The manor anciently belonged to, and was held of the crown, in fee-farm by the burgesses, to whom it now belongs. The town received its charter of incorporation from Henry the III., who granted "to the men of Bridport that the village should be a free borough; and that they and their heirs should hold it, with all liberties, &c. paying yearly to the exchequer at Michaelmas, the farm which they usually paid, and 40s. for the increase of the village." The charter now in force was granted by Charles II. The earliest return to parliament was made in the twenty-third of Edward I. The right of election is vested in the inhabitant householders, paying scot and lot, and the number of voters is about 160. This town does not seem memorable for any historical transaction, though it appears to have been alternately the quarters of the royal and parliament's troops during the civil wars; and in the duke of Monmouth's rebellion, several excesses were committed here by his forces. In 1685, the town exhibited a solemn scene, when twelve of its inhabitants were executed for being actively concerned in that rebellion. The town is large, and has a very respectable appearance; many of the houses being new brick buildings, and its principal streets are broad and spacious. The number of houses is 288; of inhabitants 3117, who are principally supported by the manufacture of seins, and nets of all sorts, lines, twines, and small cordage, as well as sail-cloths. Large quantities of these articles are exported to America and the West India islands; but the greater part is consumed in the Newfoundland and British fisheries; it being computed that upwards of 1500 tons of hemp and flax are worked up annually. This manufacture was so flourishing in the reign of Henry VIII., that cordage for the whole English navy was ordered to be made exclusively here, or within five miles of the place. A handsome market-house and town-hall has been erected in the centre of the town, on the ruins of an old chapel dedicated to St. Andrew. Here were formerly several religious foundations, no relics of which now appear. Here are also a charity-school, three alms-houses, and a gaol. The church is a large ancient pile of building, in the form of a cross; the tower in the centre of the structure is adorned with pinnacles and battlements. The dissenters in this town have meeting-houses, and are both numerous and respectable. The haven is situated at the mouth of the river Brit, a mile south of the town. It does not appear that Bridport was of any consequence in maritime affairs; and although several attempts have been made to make it a port, they have all proved ineffectual. The cliffs here are composed of sand, though the surrounding country is covered with lime-stone full of shells. The height of the cliffs is in some places nearly 200 feet; and they contain belemnites and other fossils; besides pyrites, gypsum, hepatic ore, &c. Giles de Bridport, consecrated bishop of Salisbury March 11, 1256, was, according to Leland, "caulid Britport, because he was borne," in this town. The markets are Wednesday and Saturday: and there are three fairs annually. Hutchins's History of Dorsetshire, vol. i.

BRIDPORT,

BRIDPORT, a township in America, in Addison county, Vermont, on the east shore of lake Champlain, opposite Crown point, and W. of Middlebury.

BRIDY, or **BREDY**, a town of Asiatic Turkey, in the Arabian Irak; 140 miles N.W. of Bassora.

BRIE, the name, before the revolution, of a district of France, situated partly in Champagne, and partly in the Isle of France, and called from its particular situation "Brie Champenoise," and "Brie Françoise," or "Brie Parisienne." The principal towns are Meaux, Provins, and Chateau Thierry.

BRIE *sur Hieres*, or **BRIE Comte Robert**, so called from Robert of France, count Dreux, a former possessor, a town of France, in the department of the Seine and Marne, and chief place of a canton, in the district of Melun, seated on the Yerre, and $3\frac{1}{2}$ posts S.E. of Paris. The place contains 2571, and the canton 8089 inhabitants; the territory comprehends 170 kilometres, and 15 communes.

BRIEC, a town of France, in the department of Finistère, and chief place of a canton, in the district of Quimper; $2\frac{1}{2}$ leagues N.N.E. of Quimper. The town contains 3000, and the canton 4755 inhabitants; the territory includes $22\frac{1}{2}$ kilometres, and 2 communes.

BRIEF, formed from the French *breve*, of the Latin *brevis*, which signifies the same, denotes a thing of short extent or duration. It is more particularly used for a summary, or short state of a thing; and also for an act or writing drawn up by a notary.

BRIEF attested, *Breve testatum*, a public instrument clothed with the proper formalities.

BRIEF of devising, *Brevis devisionalis*, denotes a last will or testament, or DEVISE.

BRIEF of an oath, *Breve sacramenti*, an instrument made on oath, and authenticated by the subscription of witnesses.

BRIEF is also used for a judicial epistle, directed by a lord or other superior to his subjects or dependents, enjoining something to be done or forborn. In which sense, we say, the lord's, king's, bishop's, or pope's brief.

BRIEF also denotes the territory or district within which the lord's brief had course. In which sense, we meet with the bishop's brief, *breve episcopi*, the count's brief, *breve comitis*, &c.

BRIEF, also denotes the yearly revenue arising out of the lands usually described in briefs.

BRIEF, *Brevis*, in *Common Law*, is so called *quia breviter intentionem proferentis exponit*, because couched in a few plain words without preamble, &c. See **BREVE**.

BRIEF also signifies an abridgment of the client's case, made out for the instruction of counsel, on a trial at law; in which the case of the party is to be briefly but fully stated, the proofs must be placed in due order, and proper answers made to whatever may be objected against the cause of the client by the opposite side, and in preparing this, great care is requisite, that nothing be omitted to endanger the cause. An attachment has been granted against a party and his attorney, for surreptitiously getting possession of the brief of a counsel on the other side, and applying the same to an improper purpose in his defence. 1 Bro. P. C. 519. Although a brief is not of itself evidence against the party for whom it is prepared, yet as a discovery of the secrets and merits of his case may be productive of perjury or subornation of perjury, and thereby obstruct the justice of the court in which the suit is depending; the obtaining of it in a surreptitious manner is an offence highly deserving censure and punishment.

BRIEF, in *Scots Law*, a writ issued from the chancery,

directed to any judge-ordinary, commanding and authorising that judge to call a jury to inquire into the case mentioned in the brief, and upon their verdict to pronounce sentence.

BRIEF a l' Eveque, denotes a writ to the bishop, which, in "quare impedit," shall go to remove an incumbent, unless he recover, or be presented "pendente lite." 1 Keb. 386.

BRIEF is also used for a letter patent, granting a licence for collecting money to rebuild churches, restore loss by fire, &c.

Churchwardens are, by stat. 4 Ann. c. 14, to collect money upon these briefs, which are to be read in churches, &c. and the sums collected to be indorsed on the brief in words at length, and signed by the minister and churchwardens; after which they shall be delivered, with the money collected, to the persons undertaking them, in a certain time, under the penalty of 20l. A register is to be kept of all money collected, &c.: and the undertakers, in two months after the receipt of the money, and notice to sufferers, are to account before a master in chancery, appointed by the lord chancellor.

BRIEFS, *apostolical*, denote letters which the pope dispatches to princes and other magistrates, touching any public affair. They are thus called, as being very concise, and written on paper, without preface or preamble; by which they are distinguished from *bulls*, which are more ample, and always written on parchment, and sealed with lead or green wax; whereas briefs are sealed with red wax, and with the seal of the fisherman, or St. Peter in a boat; a seal is never applied, but in the pope's presence. The brief is headed with the name of the pope, apart; and commences with *Dilecto filio salutem, et apostolicam benedictionem*, &c. after which it proceeds directly to the matter in hand, without further preamble. Briefs are not subscribed by the pope, nor with his name but with that of his secretary. Pope Alexander VI. instituted a college of secretaries for briefs; since which time they have been made much longer, and more ample than before. See **ABBREVIATOR**. Formerly briefs were only dispatched about affairs of justice; but now they are likewise used in matters of benefices, expective graces, and dispensations.

BRIEFS of the dead, *Brevia mortuorum*, were letters sent by the monks of one monastery to those of another, with whom they were in fraternity, to inform them of the deaths or obits of their monks, for whom they were to say the stated and customary prayers and masses.

These were also called *literæ currentes*, a formula of which we have in the book of the utages of the Cistercian order.

BRIEF of remembrance, *Breve recordationis*, or *rememorationum*, or *memorable*, denotes a character, otherwise called **NOTITIA**.

BRIEG, in *Geography*, one of the largest and most fertile principalities of Silesia, surrounded by those of Oels, Döslau, Schweidnitz, Münsterberg, Neutze, Oppeln, and in a detached part of it bordering on Poland. Its form is irregular; its extent being about 36 miles in length, and from 8 to 21 in breadth. It produces corn, madder and tobacco. The first duke of Brieg was Boleslaus III. who obtained it in 1314; from him it descended to Frederick II. who embraced Lutheranism in 1523, and in 1537 concluded a compact of fraternity and succession with Joachim II. elector of Brandenburg; and on this were founded the claims of Frederick II. king of Prussia. The chief towns of this principality are Brieg, Ohlau, Strehlen, Nimptsch, Creutzburg, and Pitschen; and its chief rivers are the Ohlau and Oder.

BRIEG, in Latin *Brega*, a city of Silesia, a circle-town, and the capital of the above province; seated on the river

Oder, and formerly one of the largest and most considerable cities of Silesia; the castle, college, and arsenal being great ornaments to it, and most of the houses well built. It has also a manufacture of good cloth. But in 1618 it suffered much from a fire, and still more from the siege of the Prussians in 1741, to whom it was ceded by the peace, and who increased the fortifications, and built a new suburb. North of Brieg, at a small distance, is a large forest of oak, beech, and pines, partly belonging to the city; and between them is a spacious meadow, intersected by a broad dike paved with stones, where is held on St. James's day a yearly fair for cattle and horses. N. lat. $50^{\circ} 40'$. E. long. $17^{\circ} 33'$.

BRIEG, or BRIG, a town of Switzerland, and capital of one of the seven independent dixains or commonwealths of the Valais, bearing the same name; seated near the conflux of the river Saltina with the Rhone. The surrounding country abounds with pasture; and in the vicinity of the town are warm baths; 28 miles E. of Sion. N. lat. $46^{\circ} 18'$. E. long. $7^{\circ} 49'$.

BRIEL, or BRILL, a maritime town of Holland, situated on the north side of the island of Voorn, near the mouth of the Meuse, with which it communicates by means of a spacious and convenient harbour. In 1572 the confederates of the United Provinces laid in this place the foundation of their republic; for being expelled the Low Countries by the duke of Alva, they retired to England, and having equipped a small fleet of 40 sail under the command of count Lumay, they sailed towards this coast, being called in derision "gueux," or beggars of the sea, and geese of the sea. Upon the duke's complaining to queen Elizabeth that they were pirates, she obliged them to leave England: and accordingly they set sail for Enckhuysen; but the wind being unfavourable, they accidentally steered towards the isle of Voorn, and, attacking the town of Briel, which was incapable of effectual resistance, they took possession of it, fortified it, and made it the first asylum of their liberty. In 1585, a treaty was concluded between the States of Holland and queen Elizabeth; and Briel was one of the cautionary towns delivered into her hands for securing the fulfilment of their engagements. Accordingly it was garrisoned by the English during her reign, and part of the next; but restored to the States in 1616. N. lat. $51^{\circ} 51'$. E. long. $4^{\circ} 5'$.

BRIENNE-LE-CHATEAU, a town of France, in the department of the Aube, and chief place of a canton, in the district of Bar-sur-Aube, 4 leagues N. W. of Bar-sur-Aube. The place contains 3193, and the canton 14,692 inhabitants; the territory comprehends $277\frac{1}{2}$ kilometres, and 28 communes.

BRIENNOIS, a name given before the revolution to a small district of France, in Burgundy, near the Loire, of which Semur en Briennois was the capital.

BRIENON, or BRIESNON, a town of France, in the department of the Yonne, and district of Auxerre; 2 leagues W. of St. Florentin.

BRIENTZ, a lake of Switzerland, in the canton of Bern, about 8 miles long and 2 wide; situated nearly at right angles with the lake of Thun.—Also, a town of Switzerland in the same canton, adjacent to the lake, and N. E. of it; famous for the cheese made in its vicinity; 22 miles S. E. of Bern. The river Aar runs through the centre of this lake. N. lat. $46^{\circ} 41'$. E. long. $7^{\circ} 52'$.

BRIENZA, a town of Naples, in the Principato Citra; 20 miles N. of Policastro.

BRIES, BRIZNA, BREZNO, or BANYA, a royal free town of Hungary, seated on the river Gran, which by suc-

cessive fires has been much reduced; whose inhabitants are chiefly employed in the breeding of sheep.

BRIETZEN, or WRIETZEN, a town of Germany, in the circle of Upper Saxony, and Middle Mark of Brandenburg, near the Oder; 32 miles E. from Berlin. It has frequently suffered much from fire.

BRIEUC, ST., a city of France, capital of the department of the North Coasts, and the see of a bishop; surrounded by mountains, which intercept the view of the sea, though at the distance only of about a mile, on which it has a small harbour. The churches, of which St. Michael is the largest, streets, and squares are tolerably handsome; but the town has neither walls nor ditches. The convent of the Cordeliers is well built, and has a spacious garden; near it is the college maintained by the town for the instruction of youth. Brieuc consists of two parts; the first contains 4000, and the second 4090 inhabitants; the canton of the former contains 14,737, and that of the latter 15,108 inhabitants; and the territory of both comprehends 265 kilometres, and that of the first includes 5, and that of the second 8 communes. N. lat. $48^{\circ} 33'$. W. long. $2^{\circ} 58'$.

BRIEUL-SUR-BAR, a town of France, in the department of the Ardennes, and district of Vouziers; 3 leagues N. of Grandpré.

BRIEY, a town of France, and principal place of a district, in the department of the Moselle, 4 leagues N.W. of Metz. The place contains 1433, and the canton 9626 inhabitants; the territory includes 225 kilometres, and 32 communes.

BRIG, in *Sea-Language*. See BRIGANTINE.

BRIGA, in *Geography*, a town of France, in the department of the Maritime Alps, and chief place of a canton, in the district of Monaco; 22 miles N.E. of Nice. The town contains 2895, and the canton 4386 inhabitants; the territory comprehends 365 kilometres, and two communes.

BRIGADE, in the *Military Art*, a party or division of a body of soldiers, whether horse, foot, or artillery, under the command of a brigadier.

The word is French; some derive it from the Latin *briga*, a *brigue*, or *secret intrigue*. Du-Cange derives it from *brigand*, an ill-disciplined soldier, who scours the country, and plunders it of every thing, without waiting for the enemy; as the armies of Arab, Tartars, &c. The origin of brigand is again deduced from *brigandine*, a sort of armour used in the army raised by the Parisians, during the captivity of their king John in England, notorious for their robberies.

There are, strictly speaking, three sorts of brigades; viz. the brigade of an army, the brigade of a troop of horse, and the brigade of artillery. A brigade of the army consists of either foot or dragoons, the exact number of which is not fixed, but generally including three regiments, or six battalions; a brigade of horse may consist of eight, ten, or twelve squadrons; and that of artillery of eight or ten pieces of cannon with all their appurtenances. The eldest brigade takes the right of the first line, the second of the second line, and the rest in order; the youngest always occupying the centre: the cavalry and artillery observe the same order. The troops of horse-guards in England are divided into several brigades, according to their strength.

BRIGADE-Major, in the *Military Art*, an officer chosen from among the most ingenious and expert captains. Brigademajors are to wait, at proper times, to receive the word and orders, which they carry first to their brigadier, and afterwards to the adjutants of regiments at the head of the brigade,

gagé, where they regulate together the guards, parties, detachments, and convoys, and appoint them the hour and place of rendezvous at the head of the brigade, where the brigade-major takes and marches them to the place of general rendezvous. A major of brigade ought to keep a roll of the colonels, lieutenant-colonels, majors, and adjutants, belonging to the brigade. When a detachment is to be made, the major-general of the day regulates with the brigade-majors, how many men and officers each brigade shall furnish; and they again, with the adjutants of the regiments, how many each battalion is to send, which the adjutants divide among the companies. The complements each regiment is to furnish, are taken by the adjutant at the head of each regiment, at the hour appointed, who delivers them to the brigade-major at the head of the brigade, who again delivers them to the major-general of the day, and he remits them to the officer who is to command the detachment.

BRIGADIER-GENERAL, an officer whose rank is the next above that of a colonel, appointed to command a corps consisting of several battalions or regiments, called a brigade. Every brigadier marches at the head of his brigade upon duty. The brigadier of foot commands him of horse in garrison; and the brigadier of horse, him of foot in the field. Brigadiers of the horse-guards command youngest captains of horse, who have generally some higher rank in the army.

SUB-BRIGADIER of a troop of horse-guards, an assistant of the brigadier.

BRIGANDINE, in *Heraldry*, a jacket or coat of mail, consisting of a number of small plates of iron, sewed upon quilted linen or leather, covered with the same, and worn by troops called brigands.

BRIGANDINI, **BRIGANTINI**, **BRIGANDINARI**, or **BRIGANCHI**, in *Middle Age Writers*, military thieves, or highwaymen, who infested France and the Netherlands. See **BRABANCIONES**.

BRIGANTES, in *Ancient Geography and History*, a people of very ancient origin, who occupied several parts of Rhætia, the islands of Britain, Spain, &c. According to Stephanus Byzantinus, they were the same with the Bregi or Briges; and the Briges were, according to Strabo (*Geog.* l. xii. p. 550.) the same with the Paryges or Phrygiacs. From a passage in Herodotus (l. vii.) it appears, that they retained the name of Briges whilst they remained in Europe with the Macedonians; but that when they migrated into Asia, they were distinguished by the appellation of Phryges. Some have suggested, that the name of Brigantes was formed from Gomri or Gombri, the descendants of Gomer, one of the most ancient progenitors of the people of Europe; by subjoining the Celtic *cant*, denoting a hundred, whence is derived *Gombriant*, and expressing the termination *brigant*, by the Latin *Brigantes*. Whatever be the etymology of the name, the Briges or Brigantes are placed by Steph. Byz. in the mountains of Thrace and Macedonia; and some of them, as Herodotus informs us, passed into Phrygia, whilst others proceeded as far as Rhætia towards the west, where Strabo recognizes them. Here we find the lake "Brigantius," and a town of the Brigantes. From hence they advanced towards the north, following the course of the river Rhine, which signifies, in Celtic, the conductor, as far as the ocean, and crossed it to the British islands. It is not improbable, that others of the Brigantes migrated into Gaul, and there founded the city of the Brigantes, now called Briançon, and that other colonies of the same nation passed into Spain, where we discover a reference to their name in several places. Those Brigantes who traversed the ocean into the isle of Albion became the most numerous and

powerful people of the ancient Britons. Their territories reached from sea to sea, quite across the island, and comprehended that large tract of country, which is now divided into Yorkshire and the county of Durham on the east coast, and Lancashire, Westmoreland, and Cumberland on the west. These Brigantes are supposed to have been descended, as we have already intimated, from the ancient Phrygians, who were the first inhabitants of Europe, and to have come over into this island from the coast of Gaul, before the Belgæ arrived in that country. They were settled, without doubt, in this island in times of very remote antiquity, and esteemed themselves the Aborigines, or first inhabitants of it. The Brigantes were not in the least affected by the incursions of the Romans under Julius Cæsar; but Seneca (in *Ludo*) insinuates, more probably, with poetical compliment than truth, that they were subdued by the emperor Claudius:

"——— Ille Britannæ

Ultrò noti littora ponti, et cœcūlos

Scuta Brigantes, dare Romulæis colla catenis

Justit."

It appears, however, that they soon contracted some alliance with, or made some kind of submission to, the Romans. For, when Ostorius, the Roman governor, had defeated the Iceni, and was marching his army into the west against the Cangi, he was called away by the news of an insurrection among the Brigantes, which he soon quieted. Tacitus *Annal.* l. xii. c. 32. But it also appears (*Id.* l. xii. c. 36.) that these people were, some time after this, governed by their own princes, particularly by the famous Cartimandua, who was a faithful and useful ally to the Romans. They afterwards commenced hostilities against the Romans in the beginning of Vespasian's reign, A. D. 70, and were partly subdued by Petilius Cerialis, then governor of Britain, and soon after totally reduced by the renowned Agricola. Tac. *Vit. Agr.* c. 17. 20. The country of the Brigantes composed almost the whole of the fourth Roman province in Britain, called "Maxima Cæsariensis," and was governed by the consular president of that province. During the times of the Romans, this was a frontier province, and was therefore much frequented, and carefully guarded by that people. The towns of the Brigantes were Epiacum, Vinovium, Caturraetionum, Calatum, Isurium, Rigodunum, Olicana, Eboracum, and Camulodunum; which see respectively. Henry's *Hist.* Book i. c. 3. § 1.

The Brigantes of Ireland are supposed to have lived in that part which is now the county of Waterford, adjoining the river Brigus. It is natural to conclude that these were either a colony of the Brigantes of Britain, or sprung from the same race. Even general Vallancy seems to admit this; and he has quoted a passage from a work of Monf. Brigante, shewing the Brigantes to be Celts of the posterity of Japhet, and to have received their name from their attention to navigation. That they proceeded immediately from Germany and Rhætia is rendered probable by Ptolemy's having placed near them the Canuci and Menapii, people found in Germany on the coasts of the ocean. The English words, *brig* and *brigantine*, are supposed to be derived from the same source.

BRIGANTI, **ANNIBAL**, in *Biography*, a celebrated Neapolitan physician, who flourished the latter part of the 16th century, published, in 1577, at Naples, two small works in Italian, 4to. the one containing "Regulations proper to be observed for preventing the propagation, and diffusion of the plague;" the other, "On the prevention and cure of the measles;" also, "Epistolæ medicinales," 8vo. 1582; much commended by Toppius. The author treats largely

largely in them of the cure of lues venerea. Haller Bib. Med. Eloy Dict. Hist.

BRIGANTINE, a small, light, flat, open vessel, which goes both with sails and oars, and is either for fighting or giving chase.

It has usually twelve or fifteen benches on a side for the rowers, a man and an oar to each bench. Brigantines are principally used by the Corsairs, all the hands aboard being soldiers, and each having his musquet ready under his oar.

But the term is generally used for a merchant-ship with two masts, though mariners of different nations apply it to a peculiar sort of vessel of their own marine. Among English seamen the rigging of a brigantine or brig is little different from the fore and main masts of a ship, the braces of the sails on the main-mast leading forward. The after-main-shroud must be served from the mast-head to the dead-eye, to prevent its being chafed by the main-boom and gaff. The after-back-stay is fitted with a tackle, that it may be slackened when the main-sail jibes, or is bowled forward by the boom-pendent and tackle. Brigs carry no main-yard, but a cross-jack-yard.

BRIGANTINUS LACUS, in *Ancient Geography*, a lake of Rhætia, now the lake of Constance, which see.

BRIGANTIUM, or **BRIGANTIA**, a town of Rhætia, seated on the preceding lake, now Bregentz; which see.—Also, a town of Gallia Narbonensis, E.N.E. of Salinæ, in the country of the Caturiges, near the pass into Italy across the Alps, reckoned in the times of the Romans among the cities of the second order, and exhibiting in the inscriptions, and medals of gold, silver, and copper, which have been found in its vicinity, traces of its ancient importance, now Briançon; which see.—Also, a town of Hispania Citerior, seated at the bottom of a small gulf, north of Magnus Portus, and near it, now Betanco's; which see.

BRIGE-BOTE, **BRIGG bote**, or **BRIGH bote**, in *Ancient Law Writers*, signifies a being freed from contributing to the reparation of bridges. See **PONTAGE**. The word is formed of the Saxon *brig*, a bridge, and *bote*, compensation. It is sometimes also written *brugh bote*, or *bruch-bote*.

BRIGEUM, in *Ancient Geography*, a town of Spain, towards the S.W. of Asturica.

BRIGES. See **BRIGANTES**.

BRIGEUIL, in *Geography*, a town of France, in the department of the Vienne, 8 miles E. of Montmorillon.

BRIGGS, HENRY, in *Biography*, a celebrated mathematician, was born at Warley Wood, near Halifax, in Yorkshire, about the year 1556; and admitted a scholar of St. John's college, in the university of Cambridge, in 1579; where he took the degree of Bachelor of Arts in 1581, that of Master, in 1585, and was chosen fellow of his college in 1588. His favourite study was the mathematics, in which he excelled, so that in 1592 he was appointed examiner and lecturer in that faculty, and soon after reader of the physico-mathematic lectures, founded by Dr. Linacre. Upon the settlement of Gresham college, in London, he was chosen the first professor of geometry, in 1596; and at this time he constructed a table for determining the height of the pole from the magnetical declination; which table was published in Dr. Gilbert's book, "*De Magnete*," and by M. Blondelville, in his "*Theoriques of the seven Planets*;" London, 1602, 4to. In 1609 he commenced an acquaintance with Mr. James Usher, afterwards primate of Ireland, which was maintained by a correspondence for several years. In one of his letters, dated March 1615, he informs him, that he was wholly employed about the noble invention of logarithms, lately discovered; which he explained in his lectures, proposing an alteration in the scale of baron Napier,

from the hyperbolic form to that in which 1 should be the logarithm of the ratio of 10 to 1. This alteration was proposed to the baron in a letter; and, in 1616, Briggs made a journey to Scotland for the purpose of conversing with him on the subject; and he repeated his visit in the following year. The result of their conferences, which were conducted with singular mutual respect, was the adoption of his plan; so that upon his return from the second visit, Briggs published the "*Chilias prima*," or first thousand, of his logarithms, in 8vo. In 1619, he was appointed the first professor of geometry, at Oxford, in the institution founded by sir Henry Savile; and resigning his professorship at Gresham college, in 1620, he removed to Oxford, and settled at Merton college, where he was soon after incorporated master of arts in that university, and where he continued till his death. Although his time was much occupied in the duties of his office, and in the prosecution of his labours on logarithms, as well as other important subjects, he published, in 1622, a small tract on the "*North-west Passage to the South Sea*," through the continent of Virginia and by Hudson's bay, occasioned by his being a member of the company trading to Virginia, and reprinted in vol. iii. of Purchas's Pilgrims. His next performance was the extensive and elaborate work, entitled "*Arithmetica logarithmica*," printed at London, in 1624, folio; containing 30 chiliads of logarithms from 1 to 20,000, and from 90,000 to 100,000, calculated to 14 places of figures, besides the index. To this work he prefixed a large dissertation on the nature, construction, and use of logarithms, and on the method of supplying the intermediate numbers from 20,000 to 90,000. He also completed a table of the logarithmic sines and tangents for the whole quadrant, for every hundredth part of a degree, to 14 places of figures, exclusively of the index, with a corresponding table of natural sines, to 15 places; and of tangents and secants for the same, to ten places. These tables, in which the intermediate logarithms of the numbers from 20,000 to 90,000 were supplied by Mr. Adrian Vlacq, of Targou, in Holland, were published at Gouda, under his care, in 1628; and a translation of this edition was published at London, under the title of "*Logarithmical Arithmetike*, &c." in 1631, folio. Mr. Briggs had conceived the design of illustrating at large the use of logarithms in the doctrine of spherical triangles, and proposed to complete it in two books; but he lived to write only the first; leaving the second to the care of his old friend Mr. Henry Gellibrand, who finished the work, and it was published at Gouda, in 1633, folio, under the title of "*Trigonometria Britannica*," five, "*De Doctrina Triangulorum, libri duo*, &c." An English translation of it was published in a folio treatise by Mr. John Newton, in 1658, under the same title. In the execution of both these works, Mr. Briggs manifested a very surprising combination of assiduous application and inventive genius; and furnished several important discoveries in the mathematics, which have been usually referred to a later period; such as the binomial theorem (which see); the differential method and construction of tables by differences; the interpolation by differences; angular sections, &c.

This eminent mathematician died January the 26th 1630, in Merton college, and was buried in the choir of the chapel, under the honorary monument of sir Henry Savile, having over his grave only a plain stone, with his name inscribed on it. Dr. Smith, in his "*Comment. de Vit. et Stud. H. Briggsii*," London, 1707, 4to. gives him the character of a man of great probity, easy and accessible to all, free from arrogance, moroseness, envy, ambition, and avarice, and preferring a studious retirement to all the splendid circumstances

of life. The learned Mr. T. Gataker, who attended his lectures at Cambridge, represents him as highly esteemed by all persons skilled in the mathematics, both at home and abroad. Mr. Oughtred calls him "The mirror of the age for excellent skill in geometry." Dr. Barrow, his successor at Gresham college, in his inaugural oration, celebrates his great abilities, skill, and industry, in perfecting Napier's remarkable invention of logarithms; which, without his care and pains, might have remained an imperfect and useless design. Besides the works already enumerated, he wrote many others, the chief of which are the following: 1. "Tables for the Improvement of Navigation," published in the 2d edition of Wright's "Errors in Navigation detected and corrected," London, 1610, 4to. 2. "Euclidis Elementorum. vi. Libri priores, &c." London, 1620, folio. 3. "Mathematica ab Antiquis minus cognita," communicated by the author to Dr. George Hakewill, and published in his "Apologie," London, fol.; and also in the "Appendix to Ward's Lives, N° 9." 4. "Commentaries on the Geometry of Peter Ramus," re-published. 5. "Duz Epitole ad celeberrimum Virum, Christianum Longomontanum," re-published, and containing remarks on a treatise of Longomontanus about squaring the circle, and the other being a defence of arithmetical geometry. 6. "Animadversiones Geometricæ," 4to. 7. "De eodem Argumento," 4to. These two last treatises contain a great variety of geometrical propositions concerning the properties of many figures, with several arithmetical computations relating to the circle, angular sections, &c. 8. "An English Treatise of common Arithmetick," fol. 9. "A Letter to Mr. Clark of Gravesend," dated 1606, and containing a description of Bedwell's ruler, and directions for using it. The four last were in the possession of Mr. W. Jones, father of the late sir William Jones. Ward's Lives of the Professors of Gresham College, p. 120, &c. *Droz. Brit.* See LOGARITHMS.

BRIGGS, WILLIAM, was born at Norwich, which city his father represented in parliament, about the year 1652. At the age of 13 he was sent to Bennet college, in Cambridge, and placed under the care of Dr., afterwards archbishop Tennison. Having taken his degrees of bachelor, and master of arts, in 1682, he was chosen fellow of the college, he now quitted the university, and went to Montpellier where he applied diligently to the study of medicine, particularly attending the lectures and demonstrations of Viesiens, in anatomy. On his return from the continent he published, at Cambridge, "Ophthalmographia, sive Oculi, ejusque Partium Descriptio Anatomica, cui accessit nova Visionis Theoria," 12mo. 1576. The year following he took his degree of doctor in medicine; and fixing in London, he was made fellow of the College of Physicians, and of the Royal Society. In 1682, his "Theory of Vision," was published in a separate volume by Hooke. The year following he sent to the Royal Society, a continuation of his Theory of Vision, with answers to some objections that had been made to it. This was printed in N° 147 of the Philosophical Transactions. The fame acquired by these works brought him into considerable practice, and he was soon after made physician to St. Thomas's hospital. On the revolution he was appointed physician to king William, and continued in great favour and reputation to the time of his death, which happened at Town Mallory, in Kent, September 4th, 1704. Dr. Briggs also sent to the Royal Society, "Exemplum Cæcitatis nocturnæ et Visus duplicis," which is printed in N° 159 of their Transactions. In 1685, he published a Latin version of his Theory of Vision, with a commendatory epistle from sir Isaac Newton, affixed to it: In the preface he promises two other works on the subject, viz.

"De Ufu Partium Oculi et de Affectibus ejusdem." These, however, were never printed. *Haller Bib. Anat. Gen. Biog.*

BRIGHT, ΤΙΜΟΘΥ, a physician of eminence of the 16th century, united, as it was not unusual at that time, the clerical with the medical character. He took his degree of doctor in medicine at Cambridge, and, as we learn from Wood, he was made rector of Methley, in Yorkshire, in 1591. He appears by his writings to have had a good share of practice, and to have been well versed in the doctrines of the early Greek writers. The work by which he is principally known is his "Treatise of Melancholy," containing the causes thereof, and reasons of the strange effects it worketh in our minds, with the physical cure, and spiritual consolation for such as have thereto adjoined an afflicted conscience," 12mo. 1586, London. He excuses his writing this treatise, contrary to his usual custom, in the English language, from its being a practical work, and to be read by persons out of the pale of physic. It was also done, he observes, by the Greek and Roman writers. He entertained, however, very lofty ideas of the dignity of the medical character. "No one," he says, "should touch so holy a thing that hath not passed the whole discipline of liberal sciences, and washed himself pure and clean in the waters of wisdom and understanding." The cure of melancholy is to be attempted by bleeding, by purges, and vomits. The reasons for using these remedies are assigned. He had before, viz. in 1583, published "De Dyscrasia Corporis Humani," 8vo. London. He was also author of "Hygieine, seu de Sanitate tuenda, Medicinæ Pars prima," 8vo. 1588. "Therapeutica, hoc est de Sanitate restituenda, Medicinæ pars altera," 8vo. 1589. They were reprinted in 1598, in 16to. *Haller Bib. Med.*

BRIGHTHELMSTON, or popularly BRIGHTON, in *Geography*, is a celebrated bathing place, market, and sea-port town, on the Sussex coast, England. Its name is said to be derived from Brighthelm, a Saxon bishop who lived here, or in the vicinity. The town stands mostly on an eminence, which slopes gently to the south-east, where is that beautiful verdant walk called the Steyn, which is the general promenade of the bathing visitors. To the north and north-east, the town is sheltered by a range of hills, called the South-Downs, which, by breaking the current of cold wind from those points, render the atmosphere of the town generally mild and temperate. This, combining with a pleasant beach, and the frequent residence of the Prince of Wales, have given much celebrity to Brighton, and occasioned a considerable resort of company during the summer months. This town is mentioned in the Domesday book, by the name of Brighthelmstun; and Mr. Loe, in his History of Lewes, &c. infers that it was a place of some note in the time of Anglo-Roman dynasty, from the quantity of Roman coins, &c. that have been found in its vicinity. The landed property of Brighton is divided into three manors, and was at the conquest possessed by William de Warren. About this period a class of Flemings settled here, and appear to have applied themselves wholly to fishing. The town continued merely a small fishing place till a very recent period. It was provided with a market, by charter obtained through the influence of John de Warren, earl of Surrey, in 1313; and in 1773, an act of parliament was obtained for a daily market. The situation of the town on the coast of the island, opposite France, has subjected it to repeated attacks and much distress in the time of war with that nation. At the commencement of the wanton and impolitic war proclaimed by Henry VIII. A. D. 1513, against Lewis XII. of France, we find that Brighton was plundered by the enemy, who also wreaked their vengeance by burning many of its houses. In consequence of
this

this event, and the continued terror which prevailed during warfare, the inhabitants resolved to erect fortifications, as some security against future attacks. A block-house for ammunition, &c. walls, gates, and other means of security were therefore provided for the town in 1558, and in 1613. It does not appear that Brighton suffered any thing material from foreign foes after the latter period; but the boisterous ocean now commenced hostilities, and, previous to the year 1665, destroyed twenty-two copyhold tenements under the cliffs, besides a good deal of attached land. In the memorable storms of 1703 and 1705, one hundred and thirteen tenements, with the block-house, walls, gates, &c. were undermined by the encroaching waves, which have since made great depredations on this shore. In 1651, Charles II. secretly embarked here for the continent, and thus escaped the vigilant pursuit of his cruel enemies.

In consequence of the repeated damages done by the sea, the inhabitants of Brighton subscribed a large sum of money, and collected much more by bribe, &c. in order to raise some artificial barrier; and early in the last century the cliffs were secured by wooden fences, called groins, projecting towards the sea. This town may attribute its popularity to Dr. Richard Russell, who, having settled here, wrote a treatise on the importance of sea-bathing, and successfully recommended the practice in scrophulous, and glandular complaints. He caused a valuable mineral spring at Wick, about one mile from the town, to be inclosed in a basin. A building was afterwards erected over it. The name of Russell must be held in grateful remembrance by the inhabitants of all watering places, if they reflect that he was the restorer, and great promoter of that highly important restorative of health—sea-bathing. To commemorate his name, the late Rev. Dr. Manningham wrote the following lines,

"Clara per omne Ævum Russellii fama manebit
Dum retinet vires unda marina suas."
Admiring ages Russell's name shall know
Till ocean's healing waters cease to flow.

The successor of Dr. Russell, (Dr. Rhellan) also contributed to bring Brighton into repute, by publishing the natural history of the town in 1760.

Brighton is the station for packets between this part of England and Dieppe, &c. Here are several charities, and endowed schools; also a convenient, but small play-house, erected in the year 1789. The church, an ancient structure, stands on a hill, a little north of the town, and contains some curious, and interesting monuments, and inscriptions.

In the east street of Brighton, which forms the western boundary of the Steyn, stands the Marine Pavilion, a residence of his royal highness the prince of Wales. It was finished in the year 1787, and from its eastern front commands a fine view of the sea, &c. Adjoining to this is an excellent family mansion belonging to the duke of Marlborough; many other elegant houses, handsome rows, squares, and streets, now combine to give Brighton a respectable appearance, and render it attractive, and comfortable for its inhabitants and occasional visitors. It is 54 miles south from London, 8 from Lewes, and contained in 1801, 1427 houses, and 7339 inhabitants. Ancient and Modern History of Lewes and BRIGHTHELMSTON, by W. Lee, 8vo. 1795.

BRIGIOSUM, in *Ancient Geography*, BRION, a place of Gaul, situate, according to the Theodosian table, between Avedonacum and Raurana, in the route which leads from Mediolanum to Limonum in Aquitania Secunda.

BRIGITTINS, or BRIDGETINS, more properly BIRGITTINS, a religious order denominated from their foundress, St. Bridget, or Birgit, a Swedish lady, in the four-

teenth century, whom some represent as a queen; but Fabricius, on better grounds, as a princess, the daughter of king Bigerus, legislator of Upland: she is famous for her revelations. The Brigittins are sometimes also called the "Order of our Saviour;" it being pretended that Christ himself dictated the rules and constitutions observed by them to St. Bridget. In the main, the rule is that of St. Augustine; only with certain additions supposed to have been revealed by Christ; whence they also denominate it the "Rule of our Saviour." The first monastery of the Brigittin order was erected by the foundress, about the year 1344, in the diocese of Lincopen; on the model of which all the rest were formed. The Brigittins profess great mortification, poverty, and self-denial, as well as devotion; and they are not to possess any thing they can call their own, not so much as a halfpenny, nor even to touch money on any account. This order spread much through Sweden, Germany, the Netherlands, &c. In England we read but of one monastery of Brigittins, and this built by Henry V. in 1413, opposite to Richmond, now called Sion-house; the ancient inhabitants of which, since the dissolution, are settled at Lisbon. The revenues were reckoned at 1945*l.* per annum.

BRIGNE, in *Ichthyology*, a name given by the French fishermen to the *Perca punctata* of Linnæus. Lacepede retains this fish in his Natural History under the name of *Centropomus Loup*.

BRIGNAIS, in *Geography*, a town of France in the department of the Rhone and Loire; 2 leagues S. of Lyons.

BRIGNEUL *l'Aine*, a town of France, in the department of the Charente; and district of Confolens; 3 leagues S.E. of Confolens.

BRIGNOLA, a town of Italy, in the state of Genoa; 23 miles N.E. of Genoa.

BRIGNOLLES, a town of France, and chief place of a district, in the department of the Var, seated among mountains, in a fertile country, and celebrated for its fruit, and particularly its plums, which take their denomination from it; 6 leagues N. of Toulon. The town contains 5460, and the canton 12,114 inhabitants; the extent of the territory comprehends 160 kilometres, and 6 communes. N. lat. 43° 24'. E. long. 6° 15'.

BRIGUS, in *Ancient Geography*, a river of Ireland, mentioned by Ptolemy, supposed to be the main channel of the rivers Suire, Nore, and Barrow, which unite below the towns of Ros and Waterford. Collect. de Rebus Hibern.

BRIGUS, *Cape and Bay*, lie in the bay of Capetown, on the east coast of Newfoundland. The cape is high and rugged, and the bay narrow and deep.

BRIHUEGA, in *Geography*, a town of Spain, in New Castile, seated on the river Tajuna, the principal commerce of which consists in wool. This town was taken possession of in 1710, by general Stanhope, with the English army, in behalf of the archduke Charles; was besieged by the duke of Vendome in favour of Philip, king of Spain, and its garrison was obliged to surrender as prisoners of war. It is distant 43 miles E.N.E. from Madrid. N. lat. 41° 0'. W. long. 30° 20'.

BRIL, MATTHEW, in *Biography*, a painter of landscape and history, was born at Antwerp, in 1550, and having acquired the rudiments of his art in that city, went to Rome for further improvement; where he acquired such reputation as to be employed by Gregory XIII. in the Vatican, and pensioned till his death in 1584.

BRIL, PAUL, brother to the preceding, a painter of landscapes, was born at Antwerp, in 1554, and educated in the art of painting under Daniel Voltelmans. After his removal to Rome, where he saw the works of Titian and

Caracci, he wholly abandoned his Flemish stiff manner, and acquired a more pleasing style, and a charming tone of colour. He succeeded his brother Matthew, both in his employment and pension, but far excelled him in the exercise of his art. The figures in his landscapes were generally painted by Andrew Caracci; and by this circumstance their value was greatly enhanced. His manner of painting is represented as true, sweet, and tender; the touchings of his trees as firm, but delicate; his scenery, situations, and distances are admirable, being commonly taken from nature; and the masses of his light and shadow as strong, yet very judicious. In the latter part of life, his landscapes were always both beautiful and exquisitely finished. They were frequently painted on copper. The genuine works of Brill, especially those of the large size, are rare, and afford very high prices in every part of Europe. Within a few years one of his landscapes sold in Holland for 160*l*. and another at an auction in London for more than 120 guineas; and they were thought to be cheap. He etched several landscapes in a masterly, spirited style. This master died in 1626. Pilkington and Strutt.

BRILESUS, in *Ancient Geography*, a mountain of Greece in Attica.

BRILL in *Geography*. See **BRIEL**.

BRILLAC, a town of France, in the department of the Charente; 5 miles N. of Confolens.

BRILLIANT, in a general sense, something that has a lucid and bright appearance.

BRILLIANT, in the *Manege*, is applied to a horse, that is brisk, high-mettled, and stately, with an elevated neck, fine movements, and excellent haunches, upon which he rises, though ever so little put forward.

BRILLIANTE, Ital. *Musica*, spirited, animated, with fire.

BRILLIANTS, a name given to diamonds, of the finest water. See **DIAMOND**.

BRILON, in *Geography*, a town of Germany, in the circle of the Lower Rhine, and capital of the duchy of Westphalia; having calamine in its neighbourhood; 60 miles E.N.E. of Cologne.

BRIM, the utmost edge of a thing, as of a glass, plate, or the like. The brims of vessels are made to project a little over, to hinder liquors in pouring out, from running down the side of the vessel. The brimming, or brimming of vessels, was contrived by the ancient potters in imitation of the supercilium or drip of the cornices of columns; it is done by turning over some of the double matter when the work is on the wheel.

Among florids the brim of a flower denotes the outward edge of the petals, or that part thereof which turns.

A sow is said to brim, or go to brim, when she takes the boar.

The hart goes to rut, the roe to toun, the boar to brim.

BRIMBATUS, in *Natural History*, one of the synonyms of *Holothuria tentata*, which see.

BRIMENIUM, in *Ancient Geography*: See **BREMENIUM**.

BRIMFIELD, in *Geography*, a township of America, in the county of Hampshire, and state of the Massachusetts, situated E. of Connecticut river, and containing 1384 inhabitants; 34 miles S. E. of Northampton, and 70 W. of Boston.

BRIMOND, in *Ornithology*, one of the synonyms of *Anas bifrinnica*; or Harlequin Duck. See **DUCK**.

BRIMSTONE, a common appellation of sulphur.

BRIMSTONE, flower of. See **FLOWER**.

BRIMSTONE marble, a preparation of brimstone, in imitation of marble.

Vol. V.

BRIMSTONE medals, figures, &c. may be cast in the following manner: melt half a pound of brimstone over a gentle fire; with this mix half a pound of fine vermilion, and when you have cleared the top, take it off the fire, stir it well together, and it will dissolve like oil; then cast it into the mould, which must first be anointed with oil. When cool, the figure may be taken out; and, in case it should change to a yellowish colour, you need only wipe it over with *aqua fortis*, and it will look like the finest coral.

BRIN BLANC, Buffon, in *Ornithology*, *trochilus superciliosus*, the supercilious humming-bird.

BRIN BLEU, Buff. is *trochilus cyanurus*, the blue-tailed humming-bird.

BRINDISI, or **BRUNDISIUM**, in *Geography*, a celebrated city of Naples, in the Terra d'Otranto, situated at the entrance of the Adriatic. It was anciently large and flourishing; and may still be considered as a great city, if the extent of its walls be considered; but the inhabited houses do not occupy above half the inclosure. The streets are crooked and rough, the buildings are poor and ruinous, and it has no very remarkable church or edifice. It is, however, an archbishop's see; but the cathedral, dedicated to St. Theodore, though a work of king Roger, is inferior in point of architecture to many churches founded by that monarch. Of ancient Brundisium, the remains are merely numerous broken pillars, fragments of coarse mosaic, the column of the lighthouse, a large marble basin receiving the water from brazen heads of deer, some inscriptions, ruins of aqueducts, coins, and other small articles for furnishing the cabinet of an antiquary. Its castle, built by the emperor Frederic II. to protect the northern branch of the harbour, and repaired by Charles V. is large and stately. The port is double, and is the finest in the Adriatic. The outer part is formed of two promontories, that separate gradually as they advance into the sea, leaving a narrow channel at the base of the angle. The island of St. Andrew, on which Alphonfus I. built a fortress, lies between the capes, and secures the whole road from the fury of the waves. In this triangular space, large ships may ride at anchor. At the bottom of the bay the hills recede in a semi-circular shape, and thus leave room for the inner haven, which encircles the city in the figure of a stag's head and horns, and is supposed to have given rise to the name of Brundisium; which, in the old Messapian language, signified the head of a deer. This interior port is peculiarly beautiful, and admirably adapted to every purpose of trade and navigation. It is very deep, extending in length 2½ miles, and in its greatest breadth 1200 feet, and is sheltered on every side by the hills and town. In ancient times, the communication between the two havens was marked by lights placed upon columns of the Corinthian order; but of these only one remains entire upon its pedestal. It is of the green and white marble, called "Cipollino;" and its capital is adorned with figures of Syrens and Tritons, intermingled with the Acanthus leaf, and upon it is a circular vase, which formerly held the fire. Near it is another pedestal of similar dimensions, with one piece of the shaft lying upon it, but the rest of the column was sold to the people of Lecce, after the earthquake of 1456, which overturned it, and destroyed great part of the city. The interval between these pillars corresponded to the entrance of the harbour; which is very favourably situated for trade. Here goodness of soil, depth of water, safety of anchorage, and a central position, are all united; and yet it has neither commerce, husbandry, nor populousness. From the obstructions in the channel which communicate with the two havens arise the various evils that desolate this disastrous town. Julius Cæsar began its ruin by his attempt to block

up Pompey's fleet, by driving piles into the neck of land between the two ridges of hills, and throwing in earth, trees, and ruins of houses: however, Pompey sailed out and escaped to Greece. In the 15th century, the prince of Taranto sunk some ships in the middle of the harbour, to prevent the royalists from entering the port; and these occasioned an accumulation of sand and sea-weeds, which choked up the mouth and rendered it impassable. In 1752, the evil was increased; and from that period the port became a fetid, green lake, full of infection and noxious insects; so that no fish but eels could live in it, nor any boat ply except canoes made of a single tree. The low grounds at each end were overflowed with marshes, which produced annually a grievous pestilence, that destroyed or drove away the largest portion of the inhabitants. From 18,000 they were reduced in 1766 to 5000 livid wretches, tormented with agues and malignant fevers: and in 1775 above 1500 persons died during the autumn. Whereas 30 years before the air of Brindisi was esteemed so wholesome and balsamic, that the convents of Naples were accustomed to send their consumptive friars to this city for the recovery of their health. It was at length determined to make some efforts for opening the port afresh, and plans were drawn up for that purpose. By means of machines, and of the labour of gally slaves, the channel has been partly cleared, so as to have two fathom of water, and to admit large boats and a free passage to the sea; and thus the water of the inner port is set in motion, and once more rendered wholesome. The plan, however, was found, in 1789, to fail of complete success, and the canal was again in a great measure choked up, so that the pestilential air prevailed as much as ever. But attempts have been renewed for clearing it again, and opening a passage to the waters, and draining the adjacent marshes; and the inhabitants of Brindisi had a return of health, and are happy in the prospect of returning commerce and opulence. In cleaning the channel, the workmen have found some medals and seals; and they have drawn up many of the piles that were driven in by Cæsar, which are small oaks stripped of their bark, and are found as fresh as if they had been felled only a month, though buried above 18 centuries seven feet under the sand.

The soil about the town is light and good, and produces excellent cotton, with which the Brindisians manufacture gloves and stockings.

It is not easy to ascertain who founded Brundisium, and who were its first inhabitants. Strabo says that it was originally occupied by the Cretans, who landed here from Gnosius with Theseus. Others say that it was founded by the Japyges. The Romans took early possession of a harbour so convenient for their enterprizes against the nations dwelling beyond the Adriatic. They sent a colony hither, A. U. C. 509. Pompey sought an asylum in this city, and from hence fled to Greece. Here Octavianus first assumed the name of Cæsar, and he concluded one of his short-lived treaties of peace with Antony. Brundisium was celebrated as the birth-place of the tragic poet Pacuvius, and became remarkable for the death of Virgil. The barbarians, who ravaged every corner of Italy, did not spare so rich a town; and in 836, the Saracens gave a finishing blow to its fortunes. The Greek emperors were desirous of restoring it to its ancient strength and splendour, if the Normans had allowed them opportunity; but after obstinate struggles, and varieties of success and defeat, they were finally expelled Brindisi by William I. The crusades, which drained other kingdoms of their wealth and subjects, contributed to enrich and establish this city, as it was one of the ports where pilgrims and warriors took shipping. It was also benefited by the residence of the emperor Frederick,

whose frequent armaments for the holy land required his presence at this place of rendezvous. At length the loss of Jerusalem, the fall of the Grecian empire, and the ruin of the Levant trade, after the Turks had conquered the east, reduced Brindisi to a state of inactivity and desolation, from which it has never been able to emerge. N. lat. 40° 52'. E. long. 18° 5'. Swinburne's Travels into the Two Sicilies, vol. ii.

BRINDLEY, JAMES, in *Biography*, a person of extraordinary genius for mechanical inventions, and distinguished by his skill in planning and conducting inland navigation, was born at Tuntid, in the parish of Wormhill, and county of Derby, in the year 1716. His parents possessed a small freehold, the income of which his father dissipated by field diversions, and by associating with persons above his rank; and thus the education of the son was wholly neglected. Urged by the necessities of his family, he contributed to its support till he was nearly 17 years of age, by that kind of labour which, in country places, is assigned to the children of the poor; but at this age he bound himself apprentice to a wheelwright, whose name was Bennet, near Macclesfield in Cheshire, and soon became expert in his business, discovering at the same time a singular genius for the extension and improvement of the mechanic arts in general. Accordingly, in the early period of his apprenticeship, he performed several parts of the business without any instructions from his master, and gave so much satisfaction to the millers who employed him, that he was always consulted in preference to his master or any other workman; and before the expiration of his servitude, when Mr. Bennet, by his age and infirmities, became unable to work, he carried on the business with reputation, and provided a comfortable subsistence for the old man and his family. About this time his master was employed in constructing an engine paper-mill, the first of the kind that had been attempted in these parts; but as he was likely to fail in the execution of it, Mr. Brindley, without communicating his design, set out on Saturday evening after the business of the day was finished, and having inspected the work, returned home on Monday morning, after a journey of 50 miles, informed his master of its defects, and completed the engine to the entire satisfaction of the proprietors. Mr. Brindley afterwards engaged in the millwright business on his own account, and soon acquired the reputation of a most ingenious mechanic. The fame of his inventions and contrivances was in a little while spread far beyond his own neighbourhood; and in 1752, he was employed to erect a curious water-engine at Clifton in Lancashire, for the purpose of draining coal-mines, which had before been performed at an enormous expence. The water for the use of this engine was conveyed from the river Irwell by a subterraneous channel, nearly 600 yards long, which passed through a rock; and the wheel was fixed 30 feet below the surface of the ground. In 1755 he constructed a new silk mill at Congleton in Cheshire, according to the plan proposed by the proprietors, after the execution of it by the original undertaker had failed; and in the completion of it he added many new and useful improvements. He introduced one contrivance for winding the silk upon the bobbins equally, and not in wreaths; and another for stopping, in an instant, not only the whole of this extensive system, in all its various movements, but any individual part of it at pleasure. He likewise invented machines for cutting the tooth and pinion wheels of the different engines, in a manner that produced a great saving of time, labour, and expence. He also introduced into the mills, used at the potteries in Staffordshire for grinding flint-stones, several valuable additions, which greatly facilitated the operation. In 1756, he constructed

fructed a steam-engine at Newcastle under-Lime, upon a new plan, which evinced his genius for invention and contrivance. The boiler was made with brick and stone, instead of iron plates, and the water was heated by fire-places, so constructed as to save the consumption of fuel. He also introduced cylinders of wood instead of those of iron, and he substituted wood for iron in the chains which worked at the end of the beam. But in these and similar contrivances for the improvement of this useful engine, he was obstructed by interested engineers; and his attention was diverted from the prosecution of them by the great national object of "Inland Navigation." In planning and executing canals his mechanical genius found ample scope for exercise, and formed a sort of distinguishing era in the history of our country. However, envy and prejudice, and an attachment to established customs, raised a variety of obstacles to the accomplishment of his designs and undertakings; and if he had not been liberally and powerfully protected by the duke of Bridgewater, at the commencement of the business, his triumph over the opposition with which he encountered must have been in a very considerable degree obstructed and retarded. The noble duke possessed an estate at Worsley, about seven miles from Manchester, rich in mines of coal, from which he derived little or no advantage, on account of the expence which attended the conveyance of this article by land carriage to a suitable market for consumption. Fully apprized of the utility of a canal from Worsley to Manchester, he consulted Mr. Brindley on the subject; who, having surveyed the country, declared the scheme to be practicable. Accordingly, his grace obtained, in the years 1758 and 1759, an act of parliament for this purpose; and Mr. Brindley was employed in the conduct and execution of the undertaking, the first of the kind ever attempted in England, with navigable subterraneous tunnels and elevated aqueducts. At the commencement of the business it was determined, that the level of the water should be preserved without the usual obstructions of locks. But in accomplishing this object, many difficulties occurred; and it was soon found that it would be necessary to carry the canal over rivers and many deep vallies, and that it would not be easy to obtain a sufficient supply of water for completing the navigation. However, Mr. Brindley, patronized by the duke, and furnished with ample resources, persevered, and at length conquered all the embarrassments, occasioned by the nature of the undertaking, and by the passions and prejudices of individuals. Having completed the canal as far as Barton, where the river Irwell is navigable for large vessels, he proposed to carry it over that river, by an aqueduct 39 feet above the surface of the water. This was considered as a chimerical and extravagant project; and an eminent engineer, who was consulted on the occasion, ridiculed the attempt. "I have often heard," says he, "of castles in the air, but never before was shewn where any of them were to be erected." The duke of Bridgewater was not discouraged; but confiding in the judgment of Mr. Brindley, empowered him to prosecute the work; and in about 10 months the aqueduct was completed. This astonishing work commenced in September, 1760, and the first boat sailed over it the 17th of July, 1761. The canal was then extended to Manchester, where Mr. Brindley's ingenuity in diminishing labour by mechanical contrivances was exhibited in a machine for landing coals upon the top of a hill. It is no wonder, that an object, so curious in itself, and of such national importance, should have attracted general attention. See CANAL.

The duke of Bridgewater, having found by experience the utility of these inland navigations, extended his views to Liverpool; and obtained, in 1762, an act of parliament for

branching his canal to the tide-way in the Mersey. This part is carried over the river Mersey and Bollan, and over many wide and deep vallies. Over the vallies it is conducted without a single lock; and across the valley at Stretford, through which the Mersey runs, a mound of earth, raised for preserving the water, extends nearly a mile. In the construction of this mound Mr. Brindley displayed his mechanical genius, by rendering the canal itself subservient to his design, and by bringing the soil, necessary for his purpose, along the canal in boats of a peculiar form, which were conducted into caissons or cisterns; so that on opening the bottoms of the boats, the earth was deposited where it was wanted, and the valley was thus elevated to a proper level for continuing the canal. Across the Bollan the ground was raised by temporary locks, formed of the timber used in the construction of the caissons just mentioned. In the execution of every part of the navigation, Mr. Brindley displayed singular skill and ingenuity; and in order to facilitate his purpose, he produced many valuable machines. His economy and foresight, in every part of the work, deserve to be particularly noticed, and they are peculiarly discernible in the stops, or flood-gates, that are fixed in the canal, where it is above the level of the land. These stops are so constructed that if any of the banks should give way and occasion a current, the adjoining gates will rise merely by that motion, and prevent any other part of the water from escaping, besides that which is near the breach between the two gates.

Encouraged by the success of the duke of Bridgewater's undertakings, a subscription was entered into by a number of gentlemen and manufacturers in Staffordshire, for constructing a canal through that country, in pursuance of a scheme which had been suggested some years before; and Mr. Brindley was engaged to make a survey from the Trent to the Mersey. Upon his report that a canal for connecting these rivers was practicable, application was made to parliament, in 1765, for an act to this purpose, which was obtained in the same year. Accordingly, in 1766, this canal, "The Grand Trunk Navigation," was begun; and it was conducted, with great spirit and success, under the direction of Mr. Brindley, as long as he lived. For a further account of this canal, see CANAL.

The next object which engaged the attention of Mr. Brindley was the construction of a canal from the Grand Trunk, near Haywood in Staffordshire, to the river Severn near Bewdley, by means of which the port of Bristol was connected with the ports of Liverpool and Hull. This canal, about 46 miles in length, was completed in 1772. His next undertaking was the survey and execution of a canal from Birmingham, which should unite with the Staffordshire and Worcestershire canal near Wolverhampton. This navigation, which is 26 miles in length, was finished in about three years. Our engineer advised the proprietors, in order to avoid the inconvenience of locks, and for the more effectual supply of the canal with water, to have a tunnel at Smethwick; but his advice was disregarded; and the managers have since been under a necessity of erecting two steam-engines. The canal from Droitwich to the river Severn, for the conveyance of salt and coals, was executed by Mr. Brindley; and he also planned the Coventry navigation, which was for some time under his direction; but a dispute arising about the mode of executing it, he resigned his office. Some short time before his death, he began the Oxfordshire canal, which, uniting with the Coventry canal, serves as a continuation of the Grand Trunk navigation to Oxford, and thence by the Thames to London. The last undertaking, in which Mr. Brindley engaged, was the canal from Cheltenham to the river Trent at Stockwith. He

surveyed and planned the whole, and executed some miles of the navigation, which was finished by his brother-in-law, Mr. Henshall, in 1777. Such was the established reputation of Mr. Brindley, that he was consulted on a variety of occasions; and, indeed, few works of this kind were undertaken without his advice.

He was employed by the city of London, to survey a course for a canal from Sunning, near Reading in Berkshire, to Monkey island, near Richmond; but, on account of the opposition of the land-owners, this plan was defeated. He had also, for some time, the direction of the Calder navigation; but, on account of a difference among the commissioners, he declined any further concern in it. In 1766, he laid out a canal from the river Calder, at Cooper's bridge, to Huddersfield in Yorkshire, which has since been executed. In 1768, he revised the plan for the inland navigation from Leeds to Liverpool; but, though he was appointed engineer for conducting the works, his other engagements obliged him to decline this employment. In the same year, he planned a canal from Stockton, by Darlington, to Winstan, in the bishopric of Durham. Three plans of the like kind were formed by him in 1769; one from Leeds to Selby; another from the Bristol channel, near Uphill in Somersetshire, to Glastonbury. Taunton, Wellington, Tiverton, and Exeter; and a third from Langport, in the county of Somerset, by way of Ilminster, Chard, and Axminster, to the south channel at Axmouth, in the county of Devon. In 1770, he surveyed the country, for a canal from Andover, by way of Stockbridge and Rumsey, to Redbridge near Southampton; and, in 1771, from Salisbury, by Fordingbridge and Ringwood, to Christchurch. In 1772 he performed the same office, for a similar navigation from Preston to Lancaster, and from thence to Kendal in Westmoreland. He also planned a canal for joining that of the duke of Bridgewater at Runcorn, near Liverpool, in the execution of which scheme he proposed to have constructed an aqueduct over the river Mersey, at a place where the tide flows to the height of 14 feet. He also surveyed the county of Chester, with a view to a canal from the Grand Trunk to the city of Chester. He revised the plan for joining the Forth and the Clyde, and proposed some considerable improvements, which were afterwards adopted by the managers. A canal was also laid out by him for uniting that of Chesterfield, by the way of Derby, with the Grand Trunk at Swarkestone. He was also consulted in the various plans for the draining of the low lands in different parts of Lincolnshire, and the isle of Ely. He gave the corporation of Liverpool a plan for clearing their docks of mud, which has been practised with success; and he proposed a method, which has also succeeded, of building walls against the sea without mortar. The last of his inventions was an improved machine for drawing water out of mines, by a losing and gaining bucket, which he afterwards employed with advantage in raising coals.

When difficulties occurred in the execution of any of his works, Mr. Brindley had no recourse to books, or to the labours of other persons; but as all his resources were those of his own inventive mind, he generally retired to bed, and lay there one, two, or three days, till he had devised the expedients which he needed for the accomplishment of his objects. He then got up, and executed his design without any drawing or model, which he never used, except for the satisfaction of his employers. His memory was so tenacious, that he could remember and execute all the parts of the most complex machine, provided he had time, in his previous survey, to settle, in his mind, the several departments, and their relations to each other. In his calcu-

lations of the powers of any machine, he performed the requisite operation by a mental process, in a manner which none knew but himself, and which, perhaps, he was not able to communicate to others; and after certain intervals of consideration, he noted down the result in figures; and then proceeded to operate upon that result, until at length the complete solution was obtained, which was generally right.

Some have said that Mr. Brindley had been so much neglected in early life, as never to have learned to read and write; and it has also been affirmed, that his aspect was that of an idiot, and his language mean, obscure, and almost unintelligible. But neither of these facts is well founded. Although he read little, and wrote less, he had frequent occasion for correspondence with his friends and employers. His countenance was sensible and animated; but as he was unostentatious in his outward appearance, his dress was always plain. His conversation, on occasions of importance, and among his intimate friends, was instructive and interesting; and enlivened by the singular genius, and the benevolent and patriotic spirit, for which he was distinguished, and which gave energy to his pursuits. His want of literature, indeed, compelled him to cultivate, in an extraordinary degree, the art of memory; and in order to facilitate the revival, in his mind, of those visible objects and their properties, to which his attention was chiefly directed, he secluded himself from the external impressions of other objects in the solitude of his bed. Dr. Wallis, who was eminently distinguished by the tenaciousness of his memory, so that he could extract the cube root of any number to 100 places of figures in his mind, availed himself, for this purpose, of a similar seclusion. Mr. Brindley's incessant attention to important and interesting objects, precluded him from participating in any of the ordinary amusements of life, and indeed, prevented his deriving from them any pleasure. Accordingly, though he was once prevailed upon by his friends in London to see a play, he found his ideas so much disturbed, and his mind rendered so unfit for business, as to induce him to declare, that he would not on any account go to another. It is not improbable, however, that by indulging an occasional relaxation, remitting his application, and varying his pursuits, his life might have been prolonged, and his usefulness extended. Whereas the multiplicity of his engagements, and the constant attention which he bestowed on them, brought on a hectic fever, which continued, with little or no intermission, for some years, and at last terminated his useful and honourable career on the 27th of September, 1772, in the 56th year of his age, at Turnhurst, in Staffordshire. He was buried at New Chapel, in the same county.

The talents of Mr. Brindley were of a singular kind; and under the patronage of his grace the duke of Bridgewater, they had an opportunity of being unfolded and exercised to their full extent, in the execution of works new to this country, and which will perpetuate his fame to future generations. The brief recital which has been given of his stupendous undertakings, will enable the reader to form some judgment of this extraordinary person. Such was the enthusiasm with which he engaged in all schemes of inland navigation, that he seemed (if we may credit report) to regard all rivers with contempt, when compared with canals. To this purpose, it is said, that in an examination before the house of commons, when he was asked by a member, for what purpose he apprehended rivers were created? he replied, after some deliberation, "to feed navigable canals." As to his private character, those who knew him well, and had an opportunity of conversing familiarly with him, respected him.

him in a high degree, "for the uniform and unshaken integrity of his conduct; for his steady attachment to the interest of the community; for the vast compass of his understanding, which seemed to have a natural affinity with all grand objects; and likewise, for many noble and beneficial designs, constantly generating in his mind, and which the multiplicity of his engagements, and the shortness of his life, prevented him from bringing to maturity." *Biog. Brit.*

BRINDONES. in *Botany*, a name given to the fruit of the mangouttan of the Celebes Islands, the *GARCIANA CELENICA* of Linnaeus. In the old French Encyclopedie, it is erroneously conjectured to be a species of LIMONIUM.

BRINE. This term is used technically for a solution in water of common salt, or any saline liquid in which this salt is predominant. Thus the native springs of salt water are called *brine-springs*; the sea water is termed *brine*, &c.

Leach, or *leach-brine*, is the mother water left in the pans during the manufacture of salt, after most of the pure salt has been obtained by boiling down. It consists of muriat of soda mixed with the earthy muriats, and other impurities of natural brine.

For every thing relating to the manufacture of salt from brine, see *MURIAT of Soda*.

BRINE also denotes a pickle pregnant with salt, wherein things are steeped to keep.

BRINE pans, the pits wherein the salt water is retained, and suffered to stand, to bear the action of the sun, whereby it is converted into salt. There are divers sorts of salt-pans, as the water-pan, second-pan, sun-pan; the water being transferred orderly from one to another.

BRINE-pit, in *Salt making*, the salt spring from whence the water to be boiled into salt is taken. There are of these springs in many places; that at Nantwich, in Cheshire, is alone sufficient, according to the account of the people of the place, to yield salt for the whole kingdom; but it is under the government of certain lords and regulators, who, that the market may not be overstocked, will not suffer more than a certain quantity of the salt to be made yearly. See *PIT*.

BRINE salt. See *SALT*.

BRINE-springs. See *SALT* and *SPRING*.

BRINEK, or *BRINETI*, in *Astronomy*, the bright star in the constellation *Lyra*; more frequently called *Lucida Lyra*.

BRINGERS-UP, in a *Battalion*, are the whole last rank of men in it, or the hindmost man in every file.

BRINGING-IN a horse, in the *Manege*, is the keeping down his nose, when he boars, and tosses it up to the wind. A horse is *brought-in* by a strong hard branch.

BRING-TO, in *Seamanship*, to check, or retard, the velocity, or rate, of sailing of a ship, by arranging the sails in such a manner, that they shall counteract each other, and thereby prevent her either from advancing a-head, or getting stern-way. In this situation the ship is said to *lie-to*, or to *lie-by*. Bringing-to is generally used to detain a ship in any particular station, in order to wait the approach of some other vessel that may be advancing towards her; in waiting for a boat from the shore; or, until there be sufficient depth of water to admit the vessel to sail into a tide-harbour.

BRING up, an expression used for coming to an anchor.

BRING by the lee, is when by bad steering, or otherwise, a ship's head moves from the wind, which she brings successively astern, and then so far round upon that which was formerly the lee side, that the sails are laid aback.

BRINJAN, in *Geography*, a town of Hindoostan, in the country of Boglana; 12 miles N.N.W. of Nassuk.

BRINJAUN, or *BRINJAN*, a town in the peninsula of

India, in the Travancore country, on the coast of Malabar; 25 miles W. of Travancore. N. lat. $8^{\circ} 19'$. E. long. $77^{\circ} 5'$.

BRINING of Grain, in *Rural Economy*, the practice of immersing in some sort of liquor or pickle, with the intention of preventing the smut, or other diseases. Steeps, or pickles for this use, are prepared in various ways, and with very different sorts of materials; but chiefly by dissolving saline substances in water, urine, or some other fluid, till they are very strongly impregnated with them. The grain, after having remained in these steeps a sufficient length of time, as six, eight, or ten hours, or more, according to circumstances, and the light part that swims on the surface removed, is taken out and dried by proper draining, and the sitting of a little lime in a fine powdery state over it. The sowing should be performed as soon as possible after this has been done, as the grain is liable to be soon injured by its being delayed. How far the use of steeps or brining grain may be advantageous, or whether such practices have any other utility than that of hastening the vegetation of the seed after it is committed to the earth, has not yet been well ascertained by experiment. See *STEEP*.

BRINING of Hay, the practice of blending salt with hay in the operation of stacking, in order to preserve it more effectually, and render it more palatable to animals. It is chiefly had recourse to when hay has been much injured by rain in making. The practice is said to prevail in America.

BRINKE, in *Geography*, a town of Germany, in the circle of Westphalia, and bishopric of Osnabruck; 16 miles S.E. of Osnabruck.

BRINN. See *BRUNN*.

BRINON les Allemands, a town of France, in the department of the Nièvre, and chief place of a canton, in the district of Clamecy; 10 miles S. of Clamecy. The town contains 314, and the canton 9959 inhabitants; the territory includes $142\frac{1}{2}$ kilometres, and 26 communes.

BRINON l'Archêveque, a town of France, in the department of the Yonne, and chief place of a canton, in the district of the Joigny; 4 leagues N. of Auxerre. The town contains 2372, and the canton 12,395 inhabitants; the territory comprehends $257\frac{1}{2}$ kilometres, and 11 communes.

BRINS, a town of Bohemia, in the circle of Boleslaw; 3 miles S.S.E. of Gabl.

BRIOCA. See *BRIUEGA*.

BRIOLLAY, a town of France, in the department of the Maine and Loire, and chief place of a canton, in the district of Segré. The place contains 849, and the canton 6143 inhabitants; the territory includes $142\frac{1}{2}$ kilometres, and 8 communes.

BRION, a town of France, in the department of the Two Sevres, and district of Thouars; $1\frac{1}{2}$ league from Thouars.—Also, a town of France, in the department of the Lozère, and district of Marvejols; 3 leagues W.S.W. of St. Chely.

BRION island, one of the Magdalen islands, in the gulf of St. Lawrence, 5 or 6 leagues W. from the Bird islands. N. lat. $47^{\circ} 50'$. W. long. $60^{\circ} 47'$.

BRIONNE, a town of France, in the department of the Eure, and chief place of a canton, in the district of Bernay, seated on the Rille, $3\frac{1}{2}$ leagues N.N.E. of Bernay. N. lat. $49^{\circ} 51'$. E. long. $0^{\circ} 51'$.

BRIONI, a small island in the gulf of Venice, near the coast of Istria. N. lat. $45^{\circ} 10'$. E. long. $13^{\circ} 51'$.

BRIONY, in *Botany*. See *BRYONIA*.

BRIORD, in *Geography*, a town of France, in the department of the Ain; 10 miles S. of Belley.

BRIOS.

BRIOS-TOMBOIS, a town of France, in the department of the Oise; 10 miles N. of Beauvais.

BRIOUDE, a town of France, and principal place of a district in the department of the Upper Loire, seated on the river Allier, over which is a bridge of stone, which is regarded as a Roman work. The town contains 5386, and the district 13,897 inhabitants: the territory comprehends 265 kilometres, and 19 communes. This is called "Old Brioude," by way of distinction from "Brioude Glise," which lies also near the river Allier, in which is a collegiate church, called St. Julian. N. lat. $45^{\circ} 14'$. E. long. $3^{\circ} 25'$.

BRIOUX, a town of France, in the department of the Two Sevres, and chief place of a canton, in the district of Melle; 2 leagues S.W. of Melle. The place contains 742, and the canton 925 inhabitants; the territory includes 315 kilometres, and 22 communes.

BRIOUZE, a town of France, in the department of the Orne, and chief place of a canton, in the district of Argentan; $4\frac{1}{2}$ leagues W. of Argentan. The town contains 940, and the canton 9350 inhabitants: the territory includes $162\frac{1}{2}$ kilometres, and 17 communes.

BRIQUEBEC, a town of France, in the department of the Channel, and chief place of a canton, in the district of Valognes; $2\frac{1}{4}$ leagues W. of Valognes, and $3\frac{1}{4}$ S. of Cherbourg. The town contains 4000, and the canton 11,108 inhabitants: the territory comprehends 175 kilometres, and 11 communes.

BRIQUENAY, a town of France, in the department of the Ardennes, and district of Vouziers; 4 miles N. of Grandpré.

BRIQUERAS, a town of Piedmont, in the valley of Lucerne; 4 leagues S. of Pignerol. N. lat. $44^{\circ} 41'$. E. long. $7^{\circ} 24'$.

BRISACH, or **BREYSACH**, *Old*, a town of Germany, formerly the capital of Brisgaw, seated on the Rhine, and partly upon an eminence, which commands the adjacent champaign country. The bridge of boats over the Rhine at this place was demolished some years ago, and the passage altered to a ferry. It was formerly an imperial city, but mortgaged, in 1331, by the emperor Lewis of Bavaria, to Otto duke of Austria, and the mortgage was ratified by Charles V. in 1348. This place had formerly a fortress, which was taken by the French in 1688, but restored in 1697, and again taken in 1703, but surrendered in 1715. The fortifications were razed in 1741, by order of Maria Theresa, queen of Hungary and Bohemia, and the town became an open place. N. lat. $48^{\circ} 51'$. E. long. $7^{\circ} 49'$. See **BRISGAW**.

BRISACH, *New*, a town of France, in the department of the Upper Rhine, and chief place of a canton, in the district of Colmar, situate about a mile from the west side of the Rhine, and opposite to the old town. It was built by Lewis XIV., and fortified by M. Vauban; it stands entirely upon the plain, and its streets are so regular that in the great market all the gates of the town are to be seen. The town contains 1682, and the canton 7925 inhabitants: the territory comprehends 170 kilometres, and 16 communes. The road from this place to Basle, 9 leagues N. distant from it, is very pleasant, and commands a prospect on the left hand beyond the Rhine into the margravate of Baden. N. lat. $48^{\circ} 5'$. E. long. $7^{\circ} 46'$.

BRISAGO, a town of the Milanese, seated on the borders of the Italian baillages, and near the west bank of the Lago Maggiore, or lake of Locarno, and 5 miles S. of Locarno. N. lat. $45^{\circ} 55'$. E. long. $8^{\circ} 33'$.

BRISAU, or **BRZESOWA**, a town of Moravia, in the circle of Olmutz, 6 miles S. of Zwickau.

BRISBANE, **JOHN**, in *Biography*, originally of Kelfo, in

Scotland, practised medicine several years, towards the end of the last century in London, and published in 1769, "Anatomy of Painting, or a short and easy Introduction to Anatomy, consisting of tables of Albinus, with linear figures on a smaller scale, including Albinus's figures of the Uterus," fol. London.—Also, "Select Cases in the practice of Medicine," Svo. 1772, London. Among these, are interspersed some useful practical observations. Haller. Bibl.

BRISE', in *French Armory*, signifies broken, and implies an ordinary with part of it broken off. The *English* blazon it with the word coupé.

BRISEIS, in *Entomology*, a species of **PAPILIO**, the wings of which are dentated, brown, and glossed with shining green: on the anterior wings two ocellated spots, and a white band: two black spots beneath. Inhabits Germany. Linn. Fabr. &c.—This is *Papilio Jantbo* of Pallas.

BRISEIS, in *Fabulous History*, the wife of Mynes king of Lyrnessa, who was taken captive by Achilles, after he had taken the city and killed her husband. But when Agamemnon robbed him of this object of his ardent affection, she became the accidental cause of innumerable disorders in the Grecian army. Achilles, enraged, retired to his tent; and till the death of Patroclus refused to fight against the Trojans.

BRISELLO, in *Geography*. See **BERSELLO**.

BRISGAW, a district of Germany, in the circle of Suabia, situated on the east side of the Rhine, by which it is separated from France; a portion of it was formerly possessed by the marquis of Baden, and the principal part belonged to the house of Austria; but by the 18th article of the treaty of Campo Formio in 1797, confirmed by the 4th article of the treaty of Luneville, in 1801, his majesty the emperor, king of Hungary and Bohemia, bound himself to cede to the duke of Modena, as an indemnification for the territory which that prince and his heirs possessed in Italy, the Brisgaw; which he is to possess upon the same conditions as those, in virtue of which he possessed the Modenese.

BRISIACUS, *Mons*, in *Ancient Geography*, a town on the right or east side of the Rhine, now Old Brisach.

BRISICH, or **BREYSICH**, in *Geography*, a town of Germany, in the circle of Westphalia, and duchy of Juliers; 16 miles N.N.W. of Coblenz.

BRISIGUELA, a town of Italy, in the province of Romagna, belonging to the state of the church; 6 miles from Faenza.

BRISITINO, a town of Naples, in the province of Capitanata; 11 miles S.S.W. of Manfredona.

BRISK, a town of Germany, in the circle of Upper Saxony, and Uckermark of Brandenburg; 8 miles S.S.W. of Beeskow.

BRISKET, in the *Manege*, that part of a horse extended from the two shoulders to the bottom of the chest.

BRISKOW, in *Geography*, a town of Germany, in the circle of Upper Saxony, and Middle Mark of Brandenburg; 4 miles S. of Frankfort on the Oder.

BRISSAC, a town of France, in the department of the Maine and Loire, and district of Angers; $2\frac{3}{4}$ leagues S.S.E. of Angers.

BRISSEAU, **PETER**, in *Biography*, after receiving his degree of doctor in medicine, at Montpellier, went to Paris, where he acquired considerable reputation by his practice. In 1677, he was admitted of the college of physicians to Tournay. He was soon after appointed by Lewis XIV. physician to the military hospitals at Tournay and Mons; and on Tournay's being taken by the allies in 1709, he removed to Doway, where he died September 10th, 1717, aged 86 years. Brisseau was author of several works; but what acquired him

him most credit, was his "Nouvelles Observations sur la Cataracte," Tournay, 1706, 12mo. continued in 1708, by "Suite des Observations sur la Cataracte." He was the first who demonstrated, that the cataract is a disease of the crystalline lens. Lafner, and Quarré, who held the same opinion, had not dissected any eyes, affected with the disease, or published any thing upon the subject; nevertheless, the College of Surgeons at Paris refused to give Brisseau the credit of the discovery. "Observations faites par M. B." 12mo. 1706. These are all on surgical subjects. He cured a soldier of a wound in the skull, through which a portion of brain had escaped. Two earlier publications by him were "Dissertations on Bleeding," and on "Sympathetic Motions." Haller. Bib. Med. et Chirurg.

BRISSEAU, MICHAEL, son of Peter, and born at Tournay, was admitted member of the college of physicians there in 1696. He thence removed to Downay, where he was made first professor in medicine, and physician to the military hospital. He wrote six chirurgial observations, which are printed with Palfins' works in surgery and anatomy. Haller. Bib. Anat. Eloy Dict. Hist.

BRISSEAU, in *Natural History*. See ECHINUS.

BRISSON, BARNABAS, in *Biography*, an eminent French lawyer and man of letters, was the descendant of a respectable family at Fontenai-le-Compté, in Poitou, and entered at the bar of the parliament at Paris. His reputation was such, that Henry III. advanced him to several honourable offices, and in 1580, to the post of president à mortier; and conceiving very highly of his talents and learning, employed him in various negotiations, and sent him as his ambassador to England. Upon his return he commissioned him to make a collection of all his own ordinances, and those of his predecessors, which he completed with great expedition. The principal of his other learned works are: "De Verborum, quæ ad Jus pertinent, Significatione," fol.; "De Formulæ et Solemnibus Populi Romani Verbis," fol. Paris, 1583, a work of authority and frequently cited; "De Regio Perfarum Principatu," 1580, frequently printed, and last at Strasburg, in 1710, with the notes of Sylburg and Lederlin; "De Jure Connubiorum Liber singularis," Paris, 8vo. 1564; "Opera Varia," 4to. 1606. The termination of Brisson's life was disastrous; for having continued at Paris, during its siege by Henry IV. in 1589, he was compelled by the league to assume the place of first president of the parliament, instead of Achilles de Harlay, then a prisoner in the Bastille. In consequence of his official conduct, the faction of sixteen brought an accusation against him and some others, members of the parliament; and he was hanged in November, 1591. Several persons were afterwards punished for the concern they had in his death. His public principles are variously represented; some extolling him as a good citizen, others representing him as a man of ambition, who fell a victim to his desire of rising to consequence by means of faction. Nouv. Dict. Hist.

BRISSON, ST., in *Geography*, a town of France, in the department of the Loiret, and district of Gien; 4 miles S. of Gien.

BRISNOT, PETER, in *Biography*, was born at Fontenai-le-Comte, in the year 1478, and made doctor in medicine at Paris, in 1514. He now went to Lisbon, where he was soon distinguished for his eloquent language, and ability in his profession. As he read the Greek fathers in medicine, in their original language, he was very free in his censures on the Arabian writers, who had mutilated, and disfigured the Greek text, as to make it extremely difficult to discover the authors' opinions, in their translations. This freedom excited the indignation of the followers of the Arabians, which blazed out with great fury,

on Brissot's publishing, in 1525, "De Vena secunda tum in pleuritide, tum in aliis viscerum inflammationibus, libellus apologeticus," Paris, 4to. As he maintained, in this work, that blood might be drawn from the side affected in pleurisy, which was contrary to the then prevailing opinion, he was considered as an innovator, and treated as a man holding heretical opinions. The work was reprinted in 1533, with some additions by the author, and in 1622, by R. Moreau, with other pieces on the same subject. Haller. Bib. Med.

BRISNOT, JAMES-PETER, one of the principal agents in the late French revolution, and head of a party distinguished by his name, was the son of a "traiteur," or master of an eating-house, and born in 1754 at Chartres, in the Orleannois. The circumstances of his father enabled him to give his children a good education; and James Peter was destined for the bar. But having served five years as a clerk, with a view to the profession of the law, he abandoned the prosecution of it with disgust, and determined to devote himself to literature and the sciences. At this time, he formed an acquaintance with some English travellers, learned their language, and perused some English books; and to these circumstances he attributes the character and fortune of his future life. Attached, as he professes himself to have been, to the language and customs of England, he changed the appellation of "de Ouarville," which he derived from that of a village where his father possessed some landed property, designed for him, into "de Warville," after the English orthography; and he is thus denominated in his writings. As he had incurred his father's displeasure by relinquishing the profession of the law, his resources failed him; and he was indebted to the bounty of his friends for those supplies, which enabled him to prosecute his studies at Paris, which he continued to do for two years. At the close of this period, he entered into an engagement with the proprietor of a popular paper, entitled "Le Courier de l'Europe," and printed at Boulogne, which was committed to his superintendence. When this paper was discontinued by the interference of government, Brissot returned to Paris; and soon after, viz. in 1780 and 1781, he assumed, in a more direct and regular manner than he had hitherto done, the profession of an author. Revolting, as he says, from the instant in which he began to reflect, against religious and political tyranny, he determined to devote his whole life to the extirpation, both of the one and the other; but as the former had fallen under the reiterated strokes of Rousseau, Voltaire, Diderot, and d'Alembert, he had the vanity to think, that the demolition of the latter was an honour reserved for himself. In this work, he seems to have engaged with principles and views, resembling those of his predecessors; and that his intention might not be misunderstood, he avows his purpose to destroy that political idol, which, under the name of "Monarchy," practised the most violent despotism; and, in order the more effectually to accomplish his aim, he began with an attack on certain abuses in government, which needed reformation, and which, with judgment and moderation, might have been corrected, without destroying government itself. Accordingly, he began with directing the attention of his countrymen to the subject of criminal jurisprudence; and, with this view, he published, in 1780, his "Theory of criminal Laws," in 2 vols. 8vo. which was soon followed by two discourses on collateral subjects, which gained the prize in 1782 at the academy of Chalons-sur-Marne. He also began a work, which was afterwards completed in 10 vols. entitled "A philosophical Library of the criminal Laws;" and he published a volume "Concerning Truth," and "Thoughts on the Means of attaining Truth in all the

Branches of human Knowledge," which he intended, merely as an introduction to a work on a more enlarged and comprehensive plan. During the progress of these political and literary labours, to which, with the confidence of youth, he had annexed ideas of singular importance and utility, although his notions were crude, and his knowledge superficial, he prosecuted the study of several modern languages, and gained an acquaintance with the rudiments of various sciences.

Brissot, at the period of his residence at Boulogne, had been introduced to mademoiselle Dupont, who was employed under mad. de Genlis as reader to the daughter of the duke of Orleans, and whose mother kept a lodging house in that place; and having married this lady, whom mad. Roland extols as a pattern of every domestic virtue, he found it necessary to exert his literary talents for gaining a subsistence. But as France did not afford that unrestricted liberty, which as an author he wished to indulge, he formed a design of printing, in Switzerland or Germany, a series of works in a kind of periodical publication, under the title of "An universal Correspondence on Points interesting to the Welfare of Man and of Society," which he proposed to smuggle into France. With this view, he visited Geneva and Neuchâtel, in order to establish correspondences; and he also made a journey to London, which was to be the central point of the establishment, and the fixed residence of the writers. His intentions, however, were divulged by the treachery of some of his confidential associates; and the scheme, romantic in itself, whatever the judicious and candid may think of its ultimate design and tendency, totally failed. During his abode in London, he concerted the plan of a periodical work or journal, on the literature, arts, and politics of England, which, being published in London, was allowed to be reprinted at Paris, and first appeared in 1784. The avowed object of this publication, as he himself declares, was "the universal emancipation of men." In London, he was arrested for debt; but being liberated by the generosity of a friend, he returned to Paris, where he was committed to the *bastille*, in July 1784, on the charge of being concerned with the *marquis de Pelleport* in a very obnoxious publication. But by the interest of the duke of Orleans, obtained by mad. Genlis at the intercession of his wife, he was released, on condition of never residing in England, and discontinuing his political correspondence. In 1785, he published two letters, to the emperor Joseph II. "Concerning the Right of Emigration, and the Right of the People to revolt," which he applied particularly to the case of the *Walachians*; and, in the following year appeared his "Philosophical Letters on the History of England," in 2 vols. and "A critical Examination of the Travels of the *Marquis de Chatelleux* in North America." With a view of promoting a close, political, and commercial union between France and the United States, he wrote in 1787, with the assistance of *Claviere*, a tract, entitled "De la France et des Etats Unis, &c." "On France and the United States; or on the Importance of the American Revolution, to the Kingdom of France, and the reciprocal Advantages which will accrue from a commercial Intercourse between the two Nations." Of this work, an English translation was published, both in England and America. At this time, he was in the service of the duke of Orleans, as secretary to his chancery, with a handsome salary, and apartments in the *palais royal*; and, without doubt, employed in aiding his schemes of ambition. In this situation, he wrote a pamphlet against the administration of the archbishop of Sens, entitled "No Bankruptcy, &c." which occasioned the issuing of a *lettre de cachet* against him. But to avoid its effect, he went to

Holland, England, and the Low Countries; and at Mechlin, he edited a newspaper, called "Le Courier Belgique." For the purpose of promoting the views of a society at Paris, denominated "Les Amis des Noirs," and established for the purpose of abolishing negro slavery, he embarked for America in 1788; and, during his residence in that country, he sought for a convenient situation, in which a colony of Frenchmen might be organized into a republic, according to his ideas of political liberty. But his return was hastened in 1789 by the intelligence he received of the progress of the French revolution; after his arrival, he published his "Travels in America;" (*Nouveau Voyage dans les Etats Unis, &c.* 3 vols. 8vo. Paris, 1791.) and as he found the attention of the public directed to the approaching assembly of the States-General, he wrote his "Plan of Conduct for the Deputies of the People." At this time, he had withdrawn from the partisans of the duke of Orleans; and he took an active part in the plans that were then projected for the organization of the people, with a view to their union and energy in accomplishing the revolution. To the lodgings of Brissot, as a person who was held in estimation at this period, the keys of the *bastille*, when it was taken, were conveyed; he also became president of the Jacobin club; and he distinguished himself in various ways as a zealous promoter of those revolutionary principles, which, afterwards, gave occasion to a great number of atrocious excesses. After the king's flight to Varennes, Brissot openly supported the republican cause; nor does there seem to be sufficient reason for supposing, that he was secretly concerned in the plot for raising the duke of Orleans to the throne. But as some form of monarchy was still the object of the national wish, he was obliged to restrain his impetuosity. The popularity acquired by his writings, and conduct, was such, as to induce the Parisians to return him as one of their members in the "Legislative national assembly," which succeeded the "Constituent assembly," in October 1791, of which assembly he was appointed secretary; and he became afterwards a member of the committee of public instruction. Although inferior to many others in talents and knowledge, his activity raised him to the rank of head or chief, in the party denominated "Girondists" or "La Gironde," the name of the department to which several of its members belonged, and also from his own name "Brissotins." In his career of ambition, he does not seem to have been influenced by pecuniary considerations; power, more than wealth, being the object of his aim; for, at this time, he and his family lodged in an apartment up four pair of stairs, and subsisted on his stipend as deputy, and the inconsiderable gains accruing from a newspaper. As a determined enemy to monarchy, he was unremitting in his efforts to engage the nation in a war, with the avowed purpose of involving the king and his ministers in difficulties which would terminate in their ruin, and this part of his political conduct must ever be lamented and execrated by the friends of freedom, and of mankind. In the impeachment of M. Desfaut, the minister for foreign affairs, Brissot took a principal lead; and alleged against him several articles of accusation, in consequence of which, he was apprehended, tried by the high national court at Orleans, and condemned to die, without being first heard in his own defence, so that he became the first victim to that desperate faction, which afterwards deluged France with blood. His colleagues were so completely terrified by this event, that they requested leave to resign, and the ministry was at once completely dissolved. Their successors, appointed by the king, under the direction and influence of Brissot, were Dumourier, Roland, and Claviere. This appointment was followed by a declaration

of war, decreed by the national assembly, against the king of Hungary and Bohemia; and Brissot, during the existence of this administration, which terminated soon, was considered as the most powerful person in France. About this time, Brissot began to entertain secret jealousy and suspicion, with regard to the views of La Fayette; and he concurred with other members of the assembly, in signing an accusation against him, which, however, he was not able to substantiate. He, and his republican party, were likewise industrious in their endeavours to throw an odium on the court, by alleging, that a private correspondence was carried on between the king and queen and the emperor; and they even averred, that an "Austrian committee," and a conspiracy in favour of the enemies of the country, existed among the friends of the court. The charge seemed to be unsupported by sufficient evidence; the king publicly contradicted these accusations as calumnies; nevertheless, they made no small impression on the minds of the public. To the writings and conduct of Brissot, the horrid massacres at the Tuilleries, on the 10th of August, 1793, have been principally ascribed, though he is said to have preserved the lives of several of the Swiss guards on that fatal day. He was employed to draw up the declaration to the neutral powers concerning the suspension of the king's authority; but he is said to have regarded with horror the sanguinary spirit that was now predominant among the leaders of the Jacobins. Whilst, indeed, he was ascending to the pinnacle of power, he seems to have been the ardent advocate of insurrection and the revolutionary power; but as he found himself raised to that station, he began to inculcate "order and the constitution." To him we may not unjustly apply that expression in Tacitus, which he cites against the anarchists in the national convention: "Rerum potiri volunt; honores, quos quietâ republiâ desperant perturbatâ, consequi si posse arbitrantur." In the shocking massacre of the prisoners at Paris in September, he had probably no concern. When the "National convention," the idea of which is said to have been suggested by him, assumed the direction of the state, and assembled on the 20th of September, 1792, he was returned as member for the department of Eure and Loire, his native country. In this assembly, he openly avowed himself an advocate for a republican government, in opposition both to the Jacobins and Orleanists; and was expelled the Jacobin club. On this occasion, he wrote a vindication of his public conduct, under the title of "An Address to all the Republicans." He appears to have been shocked by the prospect of the fatal issue of the king's trial, and to have attempted the preservation of his life, by defending his execution, till the constitution should be perfected. The war with England, which soon followed the death of Louis, is ascribed to his ardour and credulity; for he was led to imagine, that the consequence of it would be a civil war in this country; and it is said, that this, as well as the war with Holland, was decreed in the national convention, Feb. 1, 1793, at his motion. This charge, however, he retorts on his accusers, and says, that the anarchists, by voting the death of the king, were themselves the authors of the war. See his "Letter to his constituents, on the situation of the national convention; on the influence of the anarchists, and the evil it has caused; and on the necessity of annihilating that influence, in order to save the republic." English translation, 8vo. 1794.

Brissot's influence gradually declined; and his party was at length overpowered by a more violent and sanguinary faction, denominated the "Mountain," so called, from its members usually sitting in the convention, on the upper seats of the hall, at the head of which was Robespierre, of

execrable memory. The treachery and desertion of Dumas, likewise contributed to hasten the downfall of this party. To their imbecility or perfidy, the public calamities that threatened the country, were generally ascribed; and, after the establishment of the "Revolutionary tribunal," for the purpose of trying crimes committed against the state, in March, 1793, a petition was presented in the following month by the communes of the 48 sections of Paris, requiring that the chiefs of the Girondists, or Brissotians, denounced in it, should be impeached, and expelled the convention. In May and June decrees of arrest were issued against them; and against Brissot among the rest, who attempted to make his escape into Switzerland. But he was stopped and imprisoned; and in the following October, he and 21 of his associates were brought before the revolutionary tribunal. Brissot, who was elevated in the midst of them, maintained a firm and tranquil mind; but, though their accusers could support their charges by little more than mere surmises, the whole party was immediately condemned to the scaffold. This band of friends, among whom were several of the most virtuous public characters of the time, passed together an heroic night, and were next morning led to execution. "There Brissot," says one of his biographers, "after seeing the blood of 16 associates stream from the scaffold, submitted to the stroke, with the utmost composure, and thus expired the political faults of his life." These consisted, perhaps, more in vanity, enthusiasm, and precipitation, than in bad intentions; though he cannot be pronounced untainted with the vices, inseparable from a course of ambition. In the relations of private life, his character stands without reproach. Life of J. P. Brissot, said to be written by himself. Gen. Biog.

BRISSUS, in *Natural History*. See ECHINUS.

BRISTLE, a thick glossy kind of hair, wherewith the swine kind more especially are covered. The name is sometimes also applied to the quills of porcupines and the multachos or whiskers of cats. Hogs' bristles are hard, transparent, horny substances, of a prismatical figure, without any appearance of cavities or pores in them, discoverable even by the microscope. Cat's bristles have a large solid pith in the middle.

Hogs' bristles constitute an important article of exportation in Russia. In 1793, the value of those that were shipped off amounted to 742,000 rubles.

BRISTLE-dice, a sort of false dice, furnished with a piece of hog's bristle stuck in the corners, or other places to hinder their falling on certain sides, and make them run high or low at pleasure.

BRISTLE-moss, in *Botany*. See ORTHOTICHTUM.

BRISTLED, in *Heraldry*, is a term used to denote the hair on the neck and back of a boar, which is usually of a different colour.

BRISTOL, in *Geography*. This second city of England is situated on the southern extremity of Gloucestershire, and the northern of Somersetshire, and once formed part of both counties. It is seated principally on a peninsula, between the rivers Frome and Avon, and lies in $51^{\circ} 30' N.$ lat. $2^{\circ} 46' W.$ long. and is in a bearing west 117 miles from London, and 12 from Bath. Various conjectures have been formed relative to its ancient and present name. Barret, in his large history of this city, says it received the appellation of Caer-Oder at an early period; but is at a loss for the origin of Oder. Caer-Brito, its original designation, was evidently the generic name it obtained while a protected city of the Britons, under the Roman forces, which were stationed at Abone in its immediate vicinity. From this it was changed to Brightflaw, or Brightcliffow, perhaps a translation of Caer-Brito; or it might have taken that name from

Brightick, son of Algar, and great-grandson of Alfred, who was hereditary lord of the place. Its present name, Bristol, appears to have been derived from some early Latin writers, changing it, by way of euphony, into Bristolina, while that of its common pronunciation, Briftow, is evidently an abridged mode of pronouncing Brightflow. It is a tradition, from an account which William of Worcester gives out of a MS. he saw in the house of the Calenderies, that Briftow was founded, or rebuilt by Brennus, son of Malmutius Dunwallo, who reigned a king of the Britons 380 years antecedent to the Christian æra. In allusion to which two statues are placed over St. John's gate in this city, emblematic of Brennus and Belinus, who are said to have reigned conjointly after the decease of their father. It is probable that a situation so eligible must have struck the early Britons, who therefore made it a place of associated habitation, previous to the Roman invasion; however, it is evident that it was a place of importance during that period, for Gildas, as early as A. D. 430, reckons this among the fortified and eminent cities of Britain, under the name of *Caer-Brito*. Nennius also, A. D. 620, mentions it in his enumeration of 28 cities of Britain. On the dereliction of the island by the Romans, the Saxons over-ran the country, and took possession of Bristol. Leland says, it was by them considerably increased; and also remarks, that St. Jordanus, a disciple of St. Augustine, sent by pope Gregory to convert the Saxons to Christianity, preached the gospel at Bristol, where he died and was buried. Thus we find it a place of note at the end of the 6th century. In *Domefday* book, finished by command of the conqueror in 1086, the inhabitants are styled burgessees. It was then exceeded in rate by no city, except London, York, and Winchester.

Early and present extent. The city, as first laid out at the conflux of the Frome and Avon, was, except on the northern part, where afterwards the castle was erected, insulated by these rivers. The ground rose each way to the centre, forming a pleasant hill. It was divided into four transverse streets, and walled round after the course of the river for its better defence. At the end of each street were a fortified gate and a church, and four churches surrounded the croses at the centre of the city. In this state Bristol could not exceed a mile and a half in circumference. The conflux of people drawn hither by its growing trade soon extended it beyond the walls, both on the Gloucestershire and Redcliffe side of the Avon. Other walls and gates therefore would become necessary, and it was thus further defended, before the wooden bridge was built across the Avon. Leland mentions others, which he terms "*Eternavel secunda mœnia urbis*." Indeed, the large and strong castle, with its outworks, when completed, as it joined closely to the old town and the buildings on the southern side of the river, inclosed also by a strong wall, were great additions to the city, and thus made its circumference at least two miles and a half. The accession of the monastery of St. Augustine, with Gaunt's church and hospital to the west, the priory of St. James to the north-west, and the purchase of the castle precincts, and laying it out in streets, added very considerably to the extent of Bristol, towards the close of the 17th century. Since that period most of the buildings have been erected, both in the city and suburbs, which bear a modern appearance, and these have been numerous; so that it may be truly said, that Bristol has increased, within the last forty years, full a fourth. This city once formed part of the Saxon kingdoms of Wessex and Mercia; and after the whole of England was subjected to one monarch, and divided into counties or shires, constituted part of the counties of Gloucester and Somerset, though it was generally considered as belonging to the latter county. It was by royal

charter, temp. Edw. III. made a county of itself; and by other different charters, its boundaries have been extended from time to time, till they now form a line on the Gloucestershire side, of $4\frac{1}{2}$ miles and 37 perches, and on the Somersetshire side $2\frac{1}{2}$ miles and 18 perches: the whole city is therefore 7 miles and 55 perches in circumference, and, taking in the suburbs from Lawrence-hill in the east to the Hotwells in the west, is more than 3 miles in length. Its breadth, from Stokes Croft turnpike on the north, to Ashton turnpike on the south, is upwards of $2\frac{1}{2}$ miles. The number of houses and inhabitants it is difficult to ascertain. In the late survey by order of government, the return from Bristol must have been very inaccurate, and is stated at 10,896 houses, and 63,645 inhabitants. Anderson, in 1758, puts the latter down at 100,000, but gives no documents for this enumeration. The houses may be stated on an average estimate at 17,000; and if the environs of Temple-street, Lewin's-mead, College-place, Lime-kiln-lane, &c. be attended to, the rate of 7 to a house will not appear too high. This calculation, including those in hospitals, alms-houses, &c. will bring it to about 128,000 persons, which will not far exceed the truth.

Public Buildings, &c. The buildings in the old part of the city are awkward, and the various alterations that have taken place at different periods have destroyed all uniformity. The city stands on very uneven ground, and very high walls are raised round most of the houses; but the enormous height to which they are often built, appears highly unreasonable, especially when it is considered that an inclosing wall has been known to cost the value of the house itself. This fashion is declining, and Bristol can now boast some good and handsome houses, in the open streets, squares, &c. Among the principal buildings are the Cathedral, Redcliffe Church, the Exchange, Infirmary, Public Library, Theatre, Assembly-rooms, &c.

The Cathedral is only part of the original building, which was the church belonging to the abbey of St. Augustine, founded by Robert Fitzharding, younger son of the king of Denmark, whose monument is still preserved within it. At the dissolution of the monastery, this noble building, then 350 feet in length, was partly demolished; but when the king determined to erect six new bishoprics, of which Bristol was one, and was informed there was enough of the fabric left for a cathedral, he put a stop to its further demolition; the western part being removed, it was left in that mutilated state in which it remains; the present fabric consists of the transept, the eastern part of the nave, and the choir. At the west end is a large square tower, highly ornamented and crowned with battlements and four pinnacles. The present church, from east to west, is 175 feet; its breadth of transept, from north to south, 128 feet; the breadth of nave and aisles 73 feet, and height of the tower 140 feet. The establishment is a dean, six prebendaries, four minor canons, sacrist, &c.; and service is performed twice every day.

The Church of St. Mary Redcliffe, says Camden, "is like a cathedral, and on all accounts the first parish church in England." It was founded in 1292 by Simon de Burton, who was six times mayor of Bristol. According to the mayor's calendar, this church was finished A. D. 1376, and was then celebrated for its architecture all over England. The tower and spire were 250 feet high; but in 1445 a terrible storm of thunder and lightning destroyed part of the spire, and the church was much damaged. The latter was repaired by the munificence of Mr. William Cannynge, merchant, but the spire was never rebuilt. The church stands on an eminence, called Redcliffe-hill, and is built in the form of a cross. The nave rises above the aisles, is lighted by a series of lofty windows on each side, and is supported by flying buttresses. The tower is large, and with the remain-

BRISTOL.

ing part of the spire, richly ornamented with carved work, and also a variety of niches and statues. Though a lofty and massy building, yet, from the peculiar beauty of its masonry, it has a light and airy appearance both without and within. The roof, nearly 60 feet in height, is arched with stone, and ornamented with various devices. The church, including our lady's chapel, is in length 230 feet, and the transept, from north to south, 117 feet. The breadth of the nave and aisles is 59 feet, and at the cross, nave and aisles, 114 feet. The height of the aisles both direct and transepts is 25 feet. The height of the nave is 54 feet. St. Mary's chapel has been separated from the church, and is used as a grammar-school. A peculiarity observable in Redcliffe-church is that the transept consists of three divisions, or aisles, similar to the body of the church, which has a fine effect when the spectator places himself in the centre of the building, and looks around him. Besides the above, there are 15 other parish churches in Bristol, some of which are modern structures. Temple church is rather curious, and its tower is out of the perpendicular. There are also 22 chapels, or places of worship for dissenters of different denominations, and 5 chapels of the established religion.

The *Exchange*, finished and opened in 1743, was built by Wood, the architect of Bath, at an expence of 50,000*l*. It is a handsome building, in the Grecian style, 110 feet in front, and 148 feet in depth. The principal front is upon a bold rusticated basement, the central part of which makes a tetrastyle of almost whole columns, with Corinthian capitals, supporting a pediment, in the tympan of which are the arms of England carved in stone. The place intended for the merchants is a peristyle of the Corinthian order, 90 feet by 80, and capable of containing 1440 persons.

The *General Hospital*, for the reception of all cases, and all persons of whatever nation, is a handsome edifice, though it has unfortunately never been yet completed.

The *Theatre-royal*, King-street, is a peculiarly neat and convenient structure: indeed, Mr. Garrick pronounced it to be the completest in Europe of its dimensions; and he wrote a prologue and epilogue, which were delivered at the opening, May 30th, 1766.

The *Bristol City Library*, is so called, because part of its collection belongs to the corporation, and the greatest part to a society of gentlemen. It contains an excellent assemblage of ancient and modern books, which, by donations and annual subscriptions, are rapidly increasing. They are contained in a large freestone building erected for the purpose, with a convenient house for the head librarian, who has also an assistant librarian.

The *Assembly-room*, in Prince's-street, has a beautiful front of freestone, consisting of a rustic basement, with a central projection supporting four Corinthian columns, coupled and crowned with an open pediment. On the frieze, in relief, is the following motto: "*Curas cithara tollit*," Music dispels care.

To these may be added, the *Guildhall*, where the assises, sessions, and other public business are transacted.

Government, civil Officers, &c.—The original government of Bristol seems to have been mixed, military and civil; the chief authority residing in the lord constable of the castle, who deputed another officer for the execution of justice, called "*prepositus villæ*," or provost of the town. The earliest account of this officer occurs in Domesday-book. In the reign of King John, Bristol obtained a charter to be governed, like London, by a mayor, &c. From the Annals, it appears, that the civil government, at different periods, has been variously modelled, as appears from the following list:

1. Till A. D. 1205. A prepositus under the custos of the castle.
2. 1266. A mayor and two prepositors.
3. 1313. A mayor and two seneschals.
4. 1372. A mayor and two bailiffs.
5. 1500. A mayor, sheriff, and two bailiffs.
6. To this day, A mayor and two sheriffs chosen annually.

The government of the city is now administered by a mayor, a recorder, twelve aldermen, who are all justices of the peace, two sheriffs, an under-sheriff, twenty-eight common-council-men, town-clerk, deputy town-clerk, chamberlain, vice-chamberlain, steward of the sheriffs' court, clerk of the arraigns, registrar of the court of conscience, and also a high steward. There are other officers pertaining to the corporation, as sword-bearers, two coroners, water-bailiff, quay-masters, school-masters, clerk of the markets, keepers of the prisons, inspectors of nuisances, eight sergeants at mace, criers of the court, common-crier, exchange-keeper, sheriffs' officers, club-men, city marshal, and a band of musicians in constant pay. Great form is observed on the 15th of September, in the election of mayor, when the whole body corporate is convened. He is allowed 1000*l*. for the year of his mayoralty, and the sheriffs 500*l*. each for the year of their shrievalty. The mayor has the highest marks of honour granted to magistracy, scarlet ermine gowns, sword, mace, cap of maintenance, &c. He holds a daily sessions in the council-house to hear complaints, and accommodate differences, courts of conscience, and pie-powder, quarterly sessions, and a general jail delivery twice a year: one for the decision of civil, and the other of criminal causes, wherein the court has the power of life and death. The mayor, aldermen, and common council have the custody of the city seal, which is impressed with the city arms. These are gules, a castle on a hill by the sea-side, and the helm of a ship passing by, all proper; to which were afterwards added two unicorns as supporters. The motto is, "*Virtute et Industria*."

From the time Bristol was made a county of itself, it has, by various charters, and grants, been endowed with additional privileges and immunities, all of which were confirmed by a new charter from queen Anne. By another of king Edward IV. 1461, Bristol was exempted from the authority of the high admiral of England by land and water; and the right of determining differences, belonging to the court of admiralty, was referred to the mayor and corporation. The jurisdiction by water extended up the river only to lower Harnate, till an act of William carried it to Hanham; thence it reaches to Kingroad and down the channel to the Flat-holmes. To this place, Gildas, the ancient British saint and historian, retired, and here he died. The opulent corporation of Bristol is possessed of large estates, both in the city and in the country; and they are the patrons of several church livings, so that they not only possess great influence, but have it in their power to encourage genius, and reward industry and merit. The city is divided into twelve wards, each of which has an alderman to preside over it. The recorder is always one of the aldermen, and, by virtue of his office, the principal. The senior alderman, as in London, is called the father of the city. Every ward has one chief constable, and twelve others, a night constable, and a proper number of watchmen under him.

Bristol contains three prisons: Newgate, at the end of Wine-street, which is a gaol for malefactors and debtors; Bridewell, or the city prison, for the confinement and correction of less offenders; and at the end of Gloucester-street is a prison, on Howard's plan, for that part of the suburbs

which stands in the county of Gloucester, and a Bridewell on the Somerset side. The act for lighting Bristol with lamps was procured in the reign of William III. This obliged the citizens to hang out their own lamps; but they are now provided, and the lighting contracted for, by the different parishes. Most of the streets are well paved on the sides with flag stones; but the pitching with pebbles in the carriage-way is at present extremely uneven and bad, and requires amendment. The poor rates are separately assessed, and collected on the respective parishes; but the poor are taken care of conjointly, and have a house called St. Peter's hospital. There are fourteen stands of hackney coaches in various parts of the city, and one at Dowry square. Each coach is numbered, and marked C. B. There has lately been instituted at Bristol a society for the suppression of vice.

Bristol appears to have been a *borough* at the Conquest, and at a very early period, by ancient prescription, sent two burgesses to parliament. A list of its representatives is still extant from the 23d of Edward I. 1295. None can vote for members but such as are free of the city, which freedom is attained by servitude, by hereditary right, by marrying a freeman's daughter, or by purchase. The number of freemen, at present, is about 8000. The city gives title to an earl, and the earldom was formerly in the noble family of Digby, but is now in that of Hervey.

Commerce, Trade, Shipping, &c.—That a port so situated as Bristol should have early participated in the commerce of the country, can be no matter of surprise. William of Malmesbury, in 1139, says, it was a place much addicted to trade, and was then full of ships from Ireland, Norway, and every part of Europe, which brought hither much commerce, and great foreign wealth. From the charter of king John something may be learnt of the commerce of the place in his reign, but more will be furnished by that of Edward III. Bristol was grown so opulent in 1327, that the mayor and commonalty lent the king (Richard II.) 500 marks, which is the first instance (except London) in the Fœdera of a lay community lending money to the crown; and, in future loans, we find Bristol follow London. In 1487, a petition was presented to the king, to empower the citizens of Bristol to remove all obstructions in the river Avon that impeded its navigation between Bristol and Bath; for before the time of Richard I, the Avon was navigable to Bath. In 1711, an act of parliament was obtained, at an expence of 15,000l. to amend this navigation by placing weirs, locks, and other obstructions. In the roll of the fleet of Edward III. which was at the siege of Calais, in 1347, we find the proportion of ships and men furnished, on that occasion, by London and Bristol: the former supplied 25 ships, and 664 men, and the latter quota was 22 ships, and 608 men. William Cannynge is distinguished as a great merchant here in 1449, and he appears to have traded with peculiar privileges, to Prussia, the Hanseatic towns, and Denmark. William of Worcester says, that Cannynge employed for eight years, in his own shipping concerns, 800 men, and he specifies the ships and tonnage employed by him. The same Cannynge paid king Edward IV. 4000 marks for his peace, *i. e.* for leave to trade to prohibited places, and to be free of imposts and duty.

The commercial character of the Bristol merchants will best appear from the letters patent which were granted to John Cabot, a Genoese by birth, but a resident merchant in this city, and to his three sons, who fitted out vessels for the purpose of discovery. In 1527, Robert Thorn obtained leave to go on a voyage of discovery, to find out a north-west

passage. In 1583, sir Humphrey Gilbert performed a voyage for the colonization of America, an account of which is given in Hackluyt. Many other voyages were afterwards made from Bristol, with the like public-spirited views, though not with equal success. The merchants had, previous to 1526, traded to St. Lucar in Spain, and thence to the Canaries, sending out cloth, soap, &c. and bringing in return sugar, drugs, dye-stuff, &c.; and De Wit, in his interest of Holland, says, this city very early engaged in the cod-fishery on the coast of Newfoundland, and also entered into the West-India trade soon after the discoveries were made. In 1556, the merchants were incorporated into the society called Merchant Venturers: and various grants, immunities, and franchises, were annexed to their society. Sebastian Cabot was constituted the first governor. In 1588, four ships were fitted out from Bristol to join the Queen's fleet at Plymouth. With regard to the present state of trade, it is very considerable to Florida, Carolina, Virginia, New York, Newfoundland, Quebec, Spain, Portugal, West Indies, Denmark, Sweden, Russia, Prussia, &c. The ardour for the African trade seems much to be abated; and the Bristolians now yield the palm of traffic in human beings to the rival port of Liverpool. The merchants in Bristol trade with a more entire independence on London than any other port in Britain. Whatever exportations they make to any part of the world, they can import the full returns, and find a market, without consigning their ships or cargoes to London. They have buyers at home for their largest importations, consequently the shopkeepers of Bristol, most of whom are wholesale dealers, keep up a great inland trade, having riders and carriers, like the London merchants.

The quay of Bristol, which was commenced where the bed of the Frome was altered, reaches round from the stone bridge on the Frome, to the new handsome bridge over the Avon; in extent one mile, being one uninterrupted wharf of hewn stone, with sufficient depth of water, at flood tides, for the largest ships to ride close to the walls, and discharge their cargoes. These, as the tide ebbs, ride safe at their moorings on a soft oozy bed of mud; but foreign and sharp keeled ships are often strained, and obliged to go into dock after lying here. This occasioned a new floating-dock to be made, at the expence of 20,000l. It is situated near the Hot-well-road; its gates will admit a 64 gun vessel, and it will contain 40 sail of shipping. Here also are dry and wet docks, for repairing and building ships. A scheme has long been in contemplation to dam up the water, and keep the vessels in the harbour constantly afloat. In 1803, an act of Parliament was obtained for the purpose, a plan was adopted, and this great work is now executing with all possible expedition. When completed, the port will be capable of holding 1000 sail of shipping, which convenience must, eventually, be of great advantage to the city. The plan is to dam up to a certain height the whole of the present bed of the Avon and Frome, and to make a new channel for the river through Redcliffe meads. Three hundred thousand pounds are already subscribed, and three years given to accomplish the design. From what has already been done, it is conjectured that the expenditure will not exceed the estimate; and if workmen can be obtained, it is presumed that it will be finished within the assigned period. By this plan, ships will not only be kept afloat at the quays, but may enter the locks, and go to sea at neap tides, which will be a wonderful saving in time and expence; and a navigation will be opened up the Avon, as high as the town of Keynsham, in one level: the money to be raised by duties and taxes, bearing an interest of 4 per cent. and not exceeding 8 per cent. The interest is to be raised by a tax on houses in the city, of

BRISTOL.

one shilling per pound rent, and a port-duty on all goods and merchandize imported. The tax on houses is considered too partial to be just; and the duties on articles imported may probably act as a considerable prohibition on foreign vessels frequenting the port. Time alone, however, must discover the policy or impolicy of thus raising the sum necessary for its accomplishment. The trade of this port has been ever fluctuating from the time of Henry II. 1137, (when William of Malmesbury makes such honourable mention of it) to the present time. Every vessel of above 60 tons burthen pays a certain wharfage; and from the water-bailiffs' returns it appears, that in 1745, it amounted to 918l. 18s. 7½d; in 1775, to upwards of 2000l. In 1742, the privateers fitted out from Bristol, according to Barret, exceeded in tonnage, number of guns and men, the whole royal navy of Great Britain. In 1769, there were entered inward at the custom-house 427 foreign ships, exclusive of Londoners, Coasters, &c.

In 1787 the entry at the custom house was as follows:

Ships. Tons.			Ships. Tons.		
Entered inwards—Brit.			416	48,125	Foreign, 69 11,112
Entered outwards—Brit.			382	46,729	Foreign, 66 10,445

The following is a list of ships and vessels belonging to this port in 1787:

Foreign Trade.			Coasters.			Fishing Vessels, &c.		
Ships.	Tons.	Men.	Ships.	Tons.	Men.	Ships.	Tons.	Men.
318	134,491	13,971	30	3,078	142	7	340	30

After this period the trade increased considerably; and another computation states, that in 1788, 34 ships were employed to Jamaica, 38 to the Leeward islands, 37 to Africa, 33 to Newfoundland, 50 to North America, and 200 between Bristol, Ireland, France, Spain, London, &c. amounting 1392; besides 103 trows from 50 to 130 tons burthen, employed in the Severn and Wye trade. But the commerce of Bristol received a severe check during the last war; and the present paralyzes the spirit of adventure, and the hand of industry. Should peace quickly return, and the port be finished, there can be little doubt but this place will become more flourishing than ever.

Besides the foreign trade, Bristol has many very considerable manufactures; and the cheapness of fuel, with the ready conveyance to a market, renders this an advantageous place for carrying on various trades. The brass solieri business was begun here about 1704. The manufactory of zinc out of calamine stone, and the ore of zinc called black Jack, was established at Bristol in 1743, for which Mr. Champion obtained a patent. Mr. Emerson at Hanham established works for making brass, by exposing copper to the fumes of calamine, and obtained the finest brass in the world. Vide Watson's Chemistry.

The glass houses of Bristol are not only numerous, but great quantities of different glass articles, and bottles, are annually made here. This trade is increasing, and it is said that more glass is manufactured at Bristol than at any other place in England. Many large iron foundries are also established here, and a steam-engine factory is erected for boring cannon; smelting lead, and making of white and red lead, are among the manufactories of this city.

There are 20 sugar-houses for the refining and manufacture of sugars; several large distilleries, which help to supply London; and the exportation to foreign parts is very considerable. The manufacture of soap has long been an article of great trade here; for, in 1523, it supplied London with the best gray speckled soap at 1d. per pound; but it is now 1s. Large quantities are still sent to London,

to most parts of the kingdom and to America. This place was, at an early period, noted for its woollen trade. In 1339, we find from Rymer, that the cloth manufacture was removed from Flanders, when Bristol was appointed a principal staple of wool, and many looms were set-up for weaving woollen cloths. In Henry VIIIth's reign, it was full of clothiers, weavers, and tuckers; and the magistrates gave great encouragement to set up the Colchester rug manufactory, and many sums have at times been left to the corporation in trust for the use of young clothiers. This trade is not entirely taken away, as some woollen stuffs, serges, &c. are still made. The manufacture of silk fringes, sail cloth, cottons, morocco-leather, &c. must not be omitted. Several potteries also now rival those of Staffordshire.

Military History, Castle, &c.—It is highly probable, that so conspicuous and important a place early partook of the disasters arising from the internal commotions of this kingdom, and the evils arising from foreign invasion. But history is silent, the records being lost till 915, when Stow says, a great navy of Danes sailed up channel and infested the western coasts, landed in divers places, and took great plunder; at which time Bristol suffered from the marauding enemy. King Edward son of Alfred, 911, according to the Saxon annals, sent his army out of Mercia, and met them in Wessex, where he fought and routed them. The battle was decisive, and the Danes were then subject to the Saxon monarch. Edward went on to build towns and castles; and amongst others he built that of Bristol, on the Mercian side of the river Avon. Camden, therefore, was evidently mistaken when he asserts that Robert Rufus, natural son of Henry I. was the founder of the castle of Bristol. Turgot mentions it as the work of Edward in 915, and says, it was the "goodliet of five built on the banks of Avon;" and in 1088, it is mentioned by Roger Hoveden as "Castrum fortissimum;" and if it were so strong 20 years after the conquest, there cannot be a doubt, but it previously existed as a fortress for the defence of the city. Another decisive proof of Camden's error is, that the castle was held by Godfrey bishop of Constance, and Robert de Mowbray earl of Northumberland, in a rebellion against king William Rufus in 1088; before king Henry I. earl Robert's father, was at man's estate. This earl, though not the founder, certainly rebuilt some parts, repaired others, and erected a palace and other offices. He also built a magnificent tower, scarcely equalled at that time in England, and encompassed the whole with strong walls. Leland informs us that Robert built part of it, and that "the dungeon tower was made of stone brought out of Normandy by the redde earl of Gloucester." It was not till 1130, that earl Robert began to rebuild and improve the castle; which, excluding the out-works, was 450 feet from east to west, and 300 feet from north to south. There were in it two great courts, many towers, a church, and a magnificent chapel. The king had also a palace within the walls. The principal buildings stood upon an area, covering 3½ acres of ground, exclusive of courts, yards, and other accommodations for the officers and the garrison. Leland informs us, that the great tower stood in the north-west part of the castle; and in his time, about 26th of Henry VIII., the whole was in a decayed state, and tending fast to ruin. In the reign of John, the castle was annexed to the crown; and here that monarch cruelly confined the princess Eleanor, (called the damsel of Brittany,) who, after forty years' miserable confinement, died here in 1241. In the barons' wars during the reign of Henry III., prince Edward his son supplied the castle with provisions, and fined the townsmen

BRISTOL.

townsmen recoiled for not assisting him with supplies. The latter besieged him in the castle, and the prince fled to Windsor, where he was soon forced to accept terms at the hands of the barons. When the duke of Lancaster opposed Richard II. the inhabitants of Bristol threw open their gates to the duke's forces, who stormed and took the castle, in which many of the king's friends had taken refuge. The inhabitants of Bristol sided with the earl of Richmond, afterwards Henry VII. at which time Giles lord d'Aubeny held the castle. During the reformation, tumults broke out in the west; and at Bristol, the castle walls, and gates of the city were repaired and mounted with cannon; but by the prudent conduct of Mr. William Chester, the discontents were soon appeased, and a general pardon was procured for the delinquents. In the years 1545 and 1553, a mint was established in the castle; and the church plate, seized by the commissioners, was here coined. By a petition to king Charles I., 1629, the king granted the castle and its appurtenances to the mayor and corporation of Bristol, and made it a part of that county and city; and in 1631, it was sold to the mayor and burgesses for 959l. In the commencement of the war, between the king and his parliament, the castle was repaired and garrisoned by the parliament-army under the government of Col. Nath. Fiennes. This was considered a place of the greatest consequence, and served to awe all the western counties, having accommodations for a large army. The king, therefore, was very desirous of obtaining possession; a plot was formed by Yeamans and Bouchier, to deliver it up to the king's forces; but this being discovered, prince Rupert, at the head of a considerable army, besieged it; but fearing the length of a blockade, he determined to take it by storm, which he quickly effected. But the place was thus dearly bought, for the king lost most of his valuable officers, and more than 500 of his best troops. It was thought of so much consequence, that a public thanksgiving was ordered for the success of his majesty's arms. The citizens subscribed 1400l. to prevent the plunder of the soldiery; and orders were consequently given for death to be the penalty of plunder. Bristol was ordered to pay 50,000l. in money, and clothe and equip 1500 of the king's soldiers. At the battle of Naseby, prince Rupert repaired to Bristol, which he found supplied with men, provisions, and ammunition, so that he wrote to the king, assuring him he was able to sustain a four months' siege. This revived the hopes of the king's party; and it was thought that the prince would make a vigorous and desperate defence; but, to the surprise of all, he made but a very feeble and short resistance.

This unexpected and disastrous event damped the royal cause, which from that day rapidly declined; and certainly the capitulation of this grand station hastened the fatal catastrophe of the king's submission, and subsequent decapitation. After Oliver Cromwell was proclaimed protector, he issued orders for the demolition of the castle of Bristol. The dismantling was begun in 1665, and the whole was razed to the ground. Scarcely any vestiges are now remaining. Thus this fortress, deemed impregnable in former ages, and which has made such a distinguished figure on the page of history, the subject of so much negotiation, and so much contention, was destroyed after having weathered the storms of seven centuries. The inhabitants, previous to this period, appear to have always been in opposition to the reigning princes, but subsequently, however, the reverse appears the case. In the duke of Monmouth's rebellion, they espoused the cause of king James. During the rebellion, in the reign of George I., and especially in 1745, they were decidedly for the house of Hanover; and

in the present day their exertions in defence of the nation are too well known to need a comment.

Such are the most material places, objects and events, connected with the city of Bristol. We may further state that its buildings cover an area of about 1000 acres of ground, and the suburbs above 500 more. With the appendages it contains 600 streets, squares, lanes, courts, &c. in which are erected 47 churches and chapels. Here are 5 hotels, 50 inns and taverns, 7 banking houses, and 4 prisons. It is the chief city, quay, and mart of the western parts of the kingdom, and is classed among the principal cities of Europe.

Bristol is the birth-place of many distinguished literary and public characters, the memoirs of whom will be introduced under their respective heads. We shall therefore only mention the names of the principal: Thomas Chatterton, poet, sir William Draper, William of Worcester, William Cannynge, Edward Colton, Ann Yearley, Mary Robertson. For an account of the Hotwells, Clifton, St. Vincent's rocks, and many places in the vicinity, see CLIFTON. Barret's History of Bristol, 4to. 1789.

BRISTOL, a post-town of America, in Lincoln county, and district of Maine, containing 2062 inhabitants; 204 miles N. E. from Boston.

BRISTOL, a county in the southern part of the state of Massachusetts, situate to the east of a part of Rhode island; its principal town is Taunton. It has 15 townships, 97,360 acres of improved land, 130,767 of that which is unimproved, 33,836 inhabitants, and 17,860 head of cattle.

BRISTOL, a county in the state of Rhode island, bordering on Bristol county in the Massachusetts, north-east; and mount Hope bay, east; and including the townships of Bristol, Warren, and Barrington. The number of inhabitants is 3,801.

BRISTOL, a sea-port town, and capital of the preceding county, lies on the western side of the peninsula, called Bristol-neck, and on the east side of Bristol bay; including Popasquash-neck, and the whole northern and eastern parts of Bristol-neck to Warren, north; and to mount Hope bay, east. Its distance, including the ferry, about half a mile broad, is about 3 miles from Rhode island, 13 miles N. from Newport, 24 S. E. from Providence, and 63 from Boston. Although it has suffered greatly by the ravages of war, it is now in a very flourishing state, having 1678 inhabitants. Its situation is beautiful; its climate healthy; its soil rich; and its harbour safe and commodious. Onions, in considerable quantities, and a variety of provisions and garden stuff, are raised here for exportation. N. lat. 41° 45'. W. long. 71° 20'.

BRISTOL, a township in Hartford county, Connecticut; 16 miles W. of the city of Hartford.

BRISTOL, a town in Bucks county, Pennsylvania; 11 miles S. S. E. from New town, and 20 N. E. from Philadelphia; seated on Delaware river, opposite to Burlington in new Jersey, and containing about 50 or 60 houses. It is noted for its mills of various kinds. N. lat. 40° 17'. W. long. 75° 8'.

BRISTOL, a township in Philadelphia county.—Also, a small town in Charles county, Maryland.—Also, a post town in Addison county, Vermont, east of Vergennes, having 211 inhabitants.—Also, a new town of New York, in Schoharie county, incorporated in 1797.

BRISTOL Bay and River, lie on the north-west coast of North America; the north point of the bay is cape Newnham, and the south point is cape Oenemak, on the peninsula of Alaska. These two points of the bay are in N. lat. 54° 30' and 58° 42', and in W. long. 162° 24' and 163° 30'.
The

The river, which runs into the bay from the east, is about a mile broad at the entrance, and has plenty of salmon. N. lat. $55^{\circ} 27'$. W. long. $158^{\circ} 5'$. The variation on this coast is nearly 20° E.

BRISTOL Bay, a bay on the S.W. coast of Nova Scotia. N. lat. $44^{\circ} 42'$. W. long. 63° .

BRISTOL Cape, lies in Sandwich island, 8 leagues N. from cape Montague, and E. from Freezland peak. S. lat. $59^{\circ} 2'$. W. long. $26^{\circ} 51'$.

BRISTOL Channel, the estuary or wide frith of the Severn, is that part of the Atlantic Ocean, which lies between the south coast of Wales and the counties of Somerset, Devon, and Cornwall, in England.

BRISURE, in *Fortification*, a line of four or five fathoms, which is allowed to the curtain and orillon, to make the hollow tower, or to cover the concealed flank.

BRISURE, in *Heraldry*, is the mark of distinction of houses or families, when borne as such on a bend, fesse, &c.

BRIT, in *Geography*, a river in England, which runs into the sea, 2 miles south of Bridport, in Dorsetshire.

BRITAIN, GREAT, the most considerable island of Europe, comprehending the two kingdoms of England and Scotland, with the principality of Wales, and extending from Lizard point, N. lat. 50° nearly to Dungeness-head in N. lat. $58^{\circ} 30'$ nearly. Accordingly, its length is about 590 miles. Its greatest breadth from the Land's End, in W. long. $5^{\circ} 45'$ to the North Foreland, in E. long. $1^{\circ} 17'$ is about 488 miles. Its form, however, is somewhat triangular; as it has three promontories, projecting in different directions, viz. the Land's End, in Cornwall, towards the west; the North Foreland, in Kent, towards the east; and Dungeness-head, in Caithness, towards the north; and the circuit of its three sides, allowing for the windings of the coast, contains, by a general estimate, about 1800 miles. But if Great Britain were considered as a perfect triangle, the length of its three sides would measure about 1520 British miles. It is bounded on the north by the Northern Ocean, on the west by the Atlantic and the Irish Sea, which separates it from Ireland, on the south by the British Channel, which divides it from France, and on the east, towards Germany, by the North Sea and German Ocean. Some have supposed, that Great Britain was, in times of very remote antiquity, united with the continent. The entire separation of Great Britain from the continent must have happened, according to the conjectures of Mr. Kirwan, (*Irish Tranfact.* vol. vi. p. 321.) long after the deluge, and that of Ireland from Great Britain at a still later period; for wolves and bears were anciently found in both, and these must have passed from the continent into Britain, and hence into Ireland, as their importation cannot be suspected. The divisive force that separated Britain from Germany seems, according to this writer, to have been directed from north to south, but gradually weakened in its progress. Hence that island is sharpened to the northward; but the impression must have been considerably enfeebled by the opposition of the granitic mountains that form the Shetland and Orkney isles. The broken structure of the calcareous or argillaceous and arenaceous materials of the more southern parts presented less resistance, were more easily preyed upon, and gave way to what is now called the German Ocean, while these materials themselves were spread over Westphalia, &c. or formed the subsoil of Flanders, Holland, and the sand-banks on its coast. The rupture of the isthmus that joined Calais and Dover was probably effected by an earthquake at a later

period, and gradually widened by tides and currents. Ireland was protected by Scotland from the violence of the northern shock; and hence its separation from Scotland appears to have been late and gradual. That from England was probably diluvial, and effected by a southern shock. These changes, says this writer, happened at least 3000 years ago. But to return from this digression.

The fertility and pleasantness of Great Britain gave occasion to imagine that these were the fortunate islands, described by the poets, where the face of nature exhibited a perpetual spring. In former times this was the granary of the western empire: from hence was transported every year an immense quantity of corn for the supply of the army on the frontiers of Germany. As to the history of its more early state, its population, fertility, and a variety of other circumstances relating to it, we refer to the next article.

The climate of Great Britain is, perhaps, more variable than that of any other country on the globe; and this circumstance has been ascribed to the opposition between the vapours of the Atlantic Ocean, and the drying winds from the eastern continent. The western coasts are subject to frequent rains; and the eastern part of Scotland has a clearer and drier temperature than that of England. The humidity of the climate, whilst it invests the delicious vales and meadows with a verdure unknown to any other region, injures the health of the inhabitants, by occasioning colds and catarrhs, which too frequently terminate in consumptions, that are fatal to many in the prime of youth. Besides, the moist and foggy climate conspires, with the excessive use of gross animal food, to produce that melancholy, which foreign reigns have considered as a national characteristic of the country. To the mutability of the climate we may reasonably ascribe the precariousness of the seasons. To this purpose it has been observed by some judicious persons, that since the year 1775, a considerable change has taken place, with regard to the temperature of the year, both in Great Britain and Ireland. The winters have been, in general, more moist and mild, and the summers have been more humid and more cold, than the average of preceding years. With us the year might not improperly be divided into eight months of winter and four of summer. The spring dawns in April, which is commonly a mild month, but eastern winds prevail in May, and check the efforts of reviving nature, and disappoint the promise of the year. June, July, August, and September, are usually warm summer months, with occasional frosty nights even in August, and cold east wind; and some summers have of late years been chilled by constant rain. Our winter commences with the beginning of October, which, however, is often a mild and pleasant month; severe frost does not commonly occur till Christmas. November is the most gloomy month of the year; and allowed, generally, to be the most unsettled month, interspersed with dry frost, cold rains, and strong winds, with storms of hail and sleet. But all observations of this kind must be considered as general in their nature; and counteracted by different situations with regard to latitude, and by a variety of local circumstances.

The population of Great Britain has been variously estimated; some reckoning it at 7,000,000, and others at more than 12,000,000. But in the year 1800 an act was passed, (41-Geo. III.) "for taking an account of the population of Great Britain, and of the increase or diminution thereof." From an abstract of the returns made to parliament, in consequence of this act, the following result was deduced:

SUM-

BRITAIN.

SUMMARY of ENUMERATION.

	HOUSES.			PERSONS.		
	Inhabited.	By how many families occupied.	Uninhabited.	Males.	Females.	Total.
England - - - -	1,472,572	1,737,520	53,963	3,987,933	4,333,499	8,321,434
Wales - - - -	108,053	118,303	3,511	257,178	284,368	541,546
Scotland - - - -	294,557	364,071	9,517	734,581	821,427	1,556,008
Army, including militia - - - -	- - -	- - -	- - -	198,351	- - -	198,351
Navy, including marines - - - -	- - -	- - -	- - -	126,276	- - -	126,279
Seamen, in registered shipping - - - -	- - -	- - -	- - -	144,558	- - -	144,558
Convicts, on board the hulks - - - -	- - -	- - -	- - -	1,410	- - -	1,410
Totals - - - -	1,875,476	2,269,922	67,012	5,450,292	5,492,354	10,942,646

On this enumeration it is observed, that the total population of Great Britain probably exceeds the number of persons specified in the above summary, in as much as from some parishes no returns were received. From the number of houses in Ireland, nearly ascertained by the collection of a hearth-money tax, it has been computed, that the population of that part of the united kingdom somewhat exceeds four millions of persons. It should also be observed, that the islands of Guernsey, Jersey, Alderney, and Sark, the Scilly islands, and the Isle of Man, were not comprised in this enumeration; and that the total population of these islands has been usually estimated at about 80,000 persons. On these considerations, with a very moderate allowance for omissions in the returns, the total population of the united kingdom of Great Britain and Ireland amounts to *fifteen millions one hundred thousand* persons; and besides these, its eastern and western possessions and colonies contain many natives of the British isles. On a more enlarged survey of these colonies and settlements, we may consider their inhabitants either as subjects of Great Britain, or as augmenting its importance by their intimate connection with it. The most important of these are now in Asia; and in Hindoostan, the nations subject to Great Britain cannot be now calculated at less than 40 millions. The acquisition of the Dutch settlements, the colony of New Holland, and more minute stations, must also be taken into the account. In America, and what is called the West Indies, Canada, Nova Scotia, Newfoundland, and the more northern settlements, with Jamaica, and the other islands, may, perhaps, contain a million. In Africa, the settlements at the Cape of Good Hope, the islands of St. Helena and at Sierra Leone, present an insignificant number; and Gibraltar is to be regarded merely as a military station. However, if we compute the North American states, detached from the mother country, at a population of five millions, the united kingdom of Great Britain and Ireland at 15 millions, and our colonies and settlements at only two millions, we shall find in the various countries of the globe an increasing population of 22 millions, diffusing the English language and manners to a vast extent, and contributing in one way or other to the wealth, power, greatness, and prosperity of Great Britain.

From the above table it appears, that the enumeration of 1801 amounts to 8,872,980 persons for England and Wales; and to this number an appropriate share of soldiers and mariners is to be added. These appear to have been 469,188;

and if, exclusive of them, the total population of the British isles is 14,630,812, (15,100,000—469,188) about a thirtieth part may be added to the inhabitants in order to ascertain the population of any distinct part. Accordingly, in the following table, the existing population of England and Wales is taken at 9,168,000; and the population attributed to the other years, is obtained by the rule of proportion, thus: if 255,426 baptisms (the average medium of the last five years, deduced from the returns of parish registers,) were produced from a population of 9,168,000, from what population were 152,540 (the baptisms of 1700, given in the same returns) produced?

TABLE of Population throughout the last Century.

ENGLAND and WALES.	
In the Year.	Population.
1700 - - -	5,475,000
1710 - - -	5,240,000
1720 - - -	5,565,000
1730 - - -	5,706,000
1740 - - -	6,064,000
1750 - - -	6,467,000
1760 - - -	6,736,000
1770 - - -	7,428,000
1780 - - -	7,953,000
1785 - - -	8,016,000
1790 - - -	8,675,000
1795 - - -	9,055,000
1801 - - -	9,168,000

Upon a view of this table it may be observed, that although the beginning of the century exhibits a decreasing population, the lost number had been regained in 1720; and since that time a continual, though irregular, increase is manifest. It also appears, that the population of England and Wales, in 1801, compared with that of the beginning of the last century, is as 1000 to 597, or nearly as ten to six.

The following table for Scotland is formed in the same manner; but being founded on a collection of no more than 99 parish registers, from different parts of the country, it is of much less authority. These parishes contain less than a seventh of the whole population. In Scotland there are in all about 900 parishes.

BRITAIN.

TABLE of Population throughout the last Century.

SCOTLAND.	
In the Year	Population.
1700 - - -	1,048,000
1710 - - -	1,270,000
1720 - - -	1,390,000
1730 - - -	1,309,000
1740 - - -	1,222,000
1750 - - -	1,403,000
1760 - - -	1,363,000
1770 - - -	1,434,000
1780 - - -	1,458,000
1785 - - -	1,475,000
1790 - - -	1,567,000
1795 - - -	1,669,000
1801 - - -	1,652,370

The population of Scotland, in 1801, compared with that of the beginning of the last century, appears to be as 1000 to 634, or nearly as 10 to 6½, which as the 99 parish registers were received from the manufacturing parts of Scotland, gives too high a statement of the increase of population.

In the year 1695 a poll-tax was levied in Ireland; and on this occasion it was calculated, that the number of inhabitants was 1,034,000; but the usual evasion of taxation may be supposed to have considerably lessened the real number. About the year 1795, Ireland contained, at least, 4,000,000, and since that time the number has not increased. However, it may not be very erroneous to estimate the population of Ireland at 1,500,000 in the year 1700, and at 4,000,000 in the year 1801. If this be granted, the population belonging to all the British isles has increased during the last century from 8,100,000 to 15,100,000.

Of the population of Great Britain, the army has, of late years, engrossed a considerable share. It consists of regulars, in cavalry, and infantry, and the militia, exclusive of artillery and engineers. The volunteer corps in Great Britain and Ireland amounted in December, 1803, to 430,000; and on the 1st of January, 1805, the secretary of war made the following return of the state of the British forces at home, and on foreign stations, viz. 21,223 of cavalry, including 1,083 horse artillery; 8,559 of artillery; 124,873 of infantry, including 20,747 men for limited service, and 21,208 men belonging to foreign and provincial corps in British pay; and 59,809 of militia: so that the whole British force, in regulars, militia, and volunteers, amounts to 674,469 men. To these we may add the royal regiment of artillery, the horse brigade, the brigade of gunners and drivers, and companies of foreign artillery, amounting on the 1st of January, 1805, to 16,670; and the corps of royal artillery, artificers and labourers, including, at the same period, 704 men.

But the great rampart and supreme glory of Great Britain consist in her navy, in size, strength, and number of ships, far exceeding any example on record. In 1805, the total of ships in commission amounted to 684, consisting of 111 of the line, 19 frigates to forty-fours, 150 frigates, and 404 ships of various kinds; besides several repairing, in ordinary, and building: amounting in the whole to 895. For this immense fleet, the number of seamen, annually voted, amounts from a hundred to a hundred and twenty thousand; a number which no other country ancient or modern could have supplied. To support the expenditure occasioned by the army and navy of Great Britain, to defray the other charges of government, and also to discharge the interest of the national debt, a very large

sum is raised by a variety of taxes, in aid of the revenue, arising from the excise and customs. The ability of the country for bearing the burden which its exigencies impose upon it, consists in the produce of its land and manufactures, and in the circulation of property, occasioned by its domestic trade and foreign commerce. These sources of national wealth have been improved to an astonishing degree in the course of the last century and a half. Availing ourselves of the estimate of the national wealth of Great Britain, furnished by Mr. Grellier, an ingenious writer, in one of our periodical publications (Monthly Magazine, vol. x.) we shall subjoin the following statement of its vast increase during the period above mentioned. In 1664, sir William Petty estimated the wealth of England at the sum of two hundred and fifty millions. His computation is subjoined.

Value of the land; being 24 millions of acres, yielding 3 millions per annum rent, worth at 18 years purchase	£ 144,000,000
Houses; reckoning those within the bills of mortality, equal in value to one-third of the whole	30,000,000
Shipping; 500,000 tons at 6l. per ton, including rigging, ordnance, &c.	3,000,000
Stock of cattle on the 24 millions of acres and the waste belonging to them, including parks, fisheries, warrens, &c.	30,000,000
Gold and silver coin, scarce	6,000,000
Wares, merchandize, plate, furniture	31,000,000
	<hr/> £ 250,000,000

But since the time when this computation was made, a great difference in the value of money has taken place, which difference appears from the table of sir George Shuckburgh Evelyn, in the Philos. Transf. for 1798, part 1, page 177, to be in the proportion of about 5 to 14; and, therefore, the total wealth of England and Wales, in 1664, would have amounted to 700,000,000l. according to the present value of money.

The value of land has progressively increased, in consequence of improvements in cultivation, and the increased consumption of its produce, from 18 years' purchase, at which sir William Petty states it, to from 28 to 30 years' purchase. The whole landed rental of England and Wales, and the Low-lands of Scotland, was stated by this writer at about 9 millions; and if he had included the High-lands of Scotland, it is reasonable to suppose that he would not have made the whole rental of the island more than 9,500,000l. G. King and Dr. Davenant, in the reign of queen Anne, stated the rental of England and Wales at 14,000,000l.; about 25 years ago, it was generally reckoned at 20,000,000l.; but at present it considerably exceeds that sum. The cultivated land appears, from the statement of Mr. Middleton, in his "View of the Agriculture of the County of Middlesex," to be 39,027,000 acres; and the commons and waste-lands to be 7,899,000 acres; and, therefore, the total of acres in England and Wales amounts to 46,916,000 acres. If, therefore, we consider the commons and waste lands as equal in annual value to only one million of cultivated acres, the whole may be taken at 40 millions: and taking the average rent, which, at 15s. per acre, appears to be a moderate computation, at a tenth less, the rental amounts to 27,000,000l. and the value at 28 years' purchase to 756,000,000l. The number of cultivated acres in Scotland is upwards of 12 millions, and of uncultivated acres upwards of 14 millions, which, being of little use, may be wholly excluded; and the cultivated part, being rated at an average of 10s. per acre, yields the sum of 6,000,000l.

BRITAIN.

per annum: and the total rental of Great Britain will be 33,000,000*l.* and the value of the land, at 30 years' purchase, be 990,000,000*l.* Other writers have endeavoured to prove, (see Beche's "Observations on the Produce of the Income Tax,") that in the whole extent of England and Wales there are no more than 38,500,000 acres of land; and that Scotland, with its adjacent islands, contains about 21 million of acres. It is not so easy to ascertain the value of the houses as it is to determine the value of the land; but the following statement of their rent, founded on the numbers returned as chargeable and excused to the window duties, in England and Wales, in 1781, will not be thought too high:

Rent.	
Number of cottages 284,459, at 20 <i>s.</i> } per annum - - - - - }	£ 284,459
Number of houses under 10 windows, } 497,801, at 5 <i>l.</i> per annum - - - }	2,489,005
Number of houses under 21 windows, } 171,177, at 15 <i>l.</i> per annum - - - }	2,567,655
Number of houses, above 20 windows, } 52,373, at 40 <i>l.</i> per annum - - - }	2,094,920
Total - - - - -	£ 7,436,039

The total rent, at 20 years' purchase, makes 148,720,780*l.* and including Scotland at less than a sixth of England and Wales, the whole will amount to 170,000,000*l.*

In order to form an idea of the value of cattle and farming stock, on the land, we may consider the black cattle and calves, sheep and lambs, swine, pigs, and poultry, annually consumed in London as worth 6,000,000*l.* which cannot be more than a seventh part of the whole consumption, amounting therefore in value to 42,000,000*l.*: but the whole number of cattle existing must be more than double the quantity brought to market; so that, including horses, asses, cows kept for milk, and oxen employed in agriculture, the whole value of the cattle cannot be less than 90,000,000*l.*

Taking the annual consumption of grain of all sorts at 14,000,000 quarters, which is probably below the truth, it may be presumed, that in general there is at least three or four months' supply on hand, which, at only 3*s.* per quarter, will amount to at least 6,125,000*l.* The value of hay and straw, and all kinds of fodder, and of all implements of husbandry, cannot be less than five or six millions, and with the former sum will make about 12,000,000*l.* The total value of cattle and farming stock is therefore 102,000,000*l.*; and if it be estimated as equal in value to only three times the yearly rent, it will amount to nearly this sum.

The value of the shipping belonging to Great Britain may be more accurately ascertained: for it appears that, in 1794, the tonnage of the vessels in the merchants' service was 1,589,162 tons; but taking it at 1,500,000*l.* at 8*l.* per ton, it makes 12,000,000*l.* and this is without doubt below the real value. In the year ending the 5th of January, 1804, the number of British ships entered inwards was 11,396; their tonnage 1,614,365; and the number of foreign ships 4,252, and their tonnage 638,034; the number of British ships cleared outwards, was 3,662, and their tonnage 574,542; and the number of foreign ships 3,662, and their tonnage 574,542. The shipping of the navy may perhaps be estimated at 4,000,000*l.* making, with the former sum, 16,000,000*l.* to which some addition should be made for the value of the small craft employed on our rivers and canals.

The quantity of money in the country has, at different times, been a subject of dispute, and has never been determined with precision. However, by the recoinage in 1773, 1774, and 1776, it was found, that the value of the light gold delivered into the bank amounted to 15,563,593*l.*; and it was generally admitted that somewhat more than two

millions of heavy guineas remained out in circulation, which with the silver and copper coin, made the whole, at that time, about 20 millions, at which sum Mr. Chalmers estimated it in the year 1786. Mr. Grellier estimates it at about 25 millions.

Of the value of the merchandize and manufactures usually in the hands of the merchants, wholesale dealers, shop-keepers, and manufacturers, it is very difficult to form a satisfactory idea. The total amount of the exports in 1797 was 28,917,000*l.* and of imports 21,013,000*l.* according to the custom-house accounts; but these accounts being considerably below the true value, if we take the whole as rated only 60 per cent. under the value in 1800, the annual amount of foreign trade estimated for that period, will be 79,880,000*l.* to which some addition should be made for smuggled goods. Mr. Pitt, in 1799, computed the imports at 25,000,000*l.* and the exports at more than 33,000,000*l.*; and in Feb. 1801, the foreign exports at 17,000,000*l.* and the domestic at 20,000,000*l.*, amounting to a total of 37,000,000*l.* The official value of all imports, on an average of six years, ending the 5th of January, 1804, was 29,490,945*l.*; and the official value of British manufactures exported, on the same average to the same time, was 23,834,340*l.*; and real value 40,100,870*l.*; and the official value of foreign merchandize exported, on the same average, to the same time, was 15,323,500*l.*; and the real value 9,323,257*l.* It was the opinion of a numerous meeting of merchants in March, 1797; that there is always, at the least, two months' supply of export and import merchandize in the custody of the merchants and traders, which, according to the above total of 79,888,000*l.* will amount to 13,314,666*l.* to which some addition should be made for property in the hands of foreign merchants. But the value of goods in the hands of manufacturers and retail traders far exceeds this sum. The official value of British manufactures exported in 1798 was 19,771,510*l.*; but this being at least 71 per cent. below the real value, we may take the actual value, on an average of two years, at 31,356,931*l.*, which, it is presumed, cannot be more than a third of the whole produce of our manufactures; and accordingly, this will amount to 94,070,379*l.* If we deduct 5,000,000*l.* for that small part which is supposed to be in the hands of the merchants, the remainder will be 89,070,379*l.*; and of this it is probable that there is much more than three months' supply in the hands of the manufacturers and retail traders, which estimated in this proportion, amounts to 22,267,594*l.*

As to the value of that part of the property of individuals which consists in household furniture, wearing apparel, provisions, fuel, carriages, &c. &c. we can recur only to conjecture; but it may be thought not to be over-rated at three times the yearly rent of the houses which contain it, or 26,026,000*l.* in the whole of Great Britain.

The following summary will exhibit the results of the above estimates:

Value of the land of Great Britain	£ 990,000,000
Houses - - - - -	170,000,000
Cattle, and all kinds of farming stock -	102,000,000
Shipping, navy, and merchant ships -	16,000,000
Money - - - - -	25,000,000
Goods in hands of merchants and whole- sale dealers - - - - - }	13,314,000
Goods in hands of manufacturers and retail-traders - - - - - }	22,267,000
Furniture, apparel, &c. - - - - -	26,026,000
Total - - - - -	£ 1,364,607,000

From

BRITAIN.

From the above statement it appears that, since the year 1664, there has been an average gain of upwards of four millions per annum, of which a very considerable part has been derived, directly or indirectly, from foreign commerce. The great increase of the annual income affords a further proof that there must have been such an accumulating surplus. Sir W. Petty (Pol. Arith. p. 123.) supposed the income derived from land to be 8,000,000*l.* the profits of personal estates 8,000,000*l.* and the profits of all kinds of labour 26,000,000*l.* making together 42,000,000*l.* Mr. G. King estimated the whole income at 43,500,000*l.* Dr. Davenant, in 1701, states the income derived from land at 10,000,000*l.* the profits of trade at 6,000,000*l.* and those of sciences, arts, labour, industry, manufactures, retailing foreign goods, and buying and selling home commodities, at 33,000,000*l.* making in the whole 49,000,000*l.* These accounts are exclusive of Scotland; but after making a sufficient addition for this country, it will appear that there has been a considerable increase of the general income. Sir John Sinclair, in his "Hints addressed to the Public," in 1783, observed, that the income of the country arising from lands, commerce, and manufactures, was commonly calculated at 100,000,000*l.* which he inclined to think a low valuation; and, without doubt, the profit derived of late years from each of these sources has considerably increased. It is not easy to form a very precise estimate of the national income; but the following statement is presumed to be not very inaccurate:

From rent of lands	33,000,000
—ditto of houses	8,500,000
Profits of farming, or the occupation of the land	6,120,000
Income of labourers in agriculture	15,000,000
Profits of mines, collieries, and inland navigations	2,000,000
Profits of shipping in merchants' service, and small craft	1,000,000
Income of stock-holders	15,500,000
From mortgages, and other money lent on private securities	3,000,000
Profits of foreign trade	11,250,000
Ditto of manufactures	14,100,000
Pay of the army and navy, and seamen in merchants' service	4,500,000
Income of the clergy of all descriptions	2,200,000
Income of the judges, and all subordinate officers of the law	1,800,000
Professors, school-masters, tutors, &c.	600,000
Retail trades, not immediately connected with foreign trade or any manufacture	8,000,000
Various other professions and employments	2,000,000
Male and female servants	2,000,000
Total	£. 130,570,000

If the total expenditure be estimated at 125,800,000*l.*, which has been deduced from a minute, and, perhaps, as accurate a statement of particulars as the subject, admitting of various conjectures and presumptions, allows, the difference between this expenditure and the general income shews the annual gain of the country, or the sum applicable to the extension of commerce, the reservation of a greater quantity of foreign articles, the increase of shipping and buildings, agricultural or mechanical improvements, or other augmentations of the general stock.

On introducing the income-tax, Mr. Pitt, chancellor of the exchequer, gave the following estimate of the annual income of Great Britain:

The land rental, after deducting one-fifth	£. 20,000,000
The tenants' rental of land, deducting two-thirds of the rack-rent	6,000,000
The amount of tithes, deducting one-fifth	4,000,000
The produce of mines, canal navigations, &c. deducting one-fifth	3,000,000
The rental of houses, deducting one-fifth	5,000,000
The profits of professions	2,000,000
The rental of Scotland, taking it at one-eighth of that of England	5,000,000
The income of persons resident in Great Britain, drawn from possessions beyond the seas	5,000,000
The amount of annuities from the public funds, after deducting one-fifth for exemptions and modifications	12,000,000
The profits on the capital, employed in our foreign commerce	12,000,000
The profits on the capital employed in domestic trade, and the profits of skill and industry	28,000,000
Total	£. 102,000,000

As one of the principal sources of the wealth of Great Britain consists in its manufactures, it may not be improper to give a brief statement of them; reserving a more copious detail for other articles in this dictionary, under which they will separately occur. The woollen manufacture deserves to be first mentioned, because it is the most ancient, and, in a variety of respects, the most important staple of the country. In an examination of the principal woollen manufacturers by a committee of the house of commons not long ago, the quantity of wool grown in this country was estimated at 600,000 packs of 240*lbs.* each, which, valued at 1*l.* per pack, amount to 6,000,000*l.*: and though the increase of value of manufactured wool is various, and depends on its quality, yet it was stated, that the total value of the wool manufacture in this country amounts to 19,800,000*l.* But the calculation supposes, that the number of sheep, in 1791, was 28,800,000, which exceeded the truth at that time, and much more since that period; and it was formed upon an unusually high price of wool. But the estimate will be much less objectionable, if it be formed on 500,000 packs at 1*l.* 10*s.* per pack, and thus the value of the wool will be 5,250,000*l.*, and its manufactured value will be 15,750,000*l.* The average value of woollen goods exported for 1797, 1798, and 1799, is 6,104,211*l.* which, as the custom-house values of goods exported are much below their real value, requires an addition of about 25 per cent. and thus it becomes 7,630,263*l.* The value of goods retained for home consumption will be nearly equal to that of such as are exported; and, therefore, the whole value of the manufacture appears to be about 15,260,000*l.* and may be taken, at a medium, between this sum and that before stated, at 15,500,000*l.* Deducting 10 per cent. on the cost of the goods, for the profits of the manufacturer, with interest of his capital, there will remain 14,090,000*l.* for the cost of material and wages of labour: and as the value of the wool is about 5,250,000*l.*; the amount of workmanship, or the wages of all the persons employed in this manufacture, is 8,840,909*l.*; and the whole number of persons employed, averaging their wages at 8*s.* each per week, does not exceed 425,043*l.*

The value of the leather manufacture may be stated at 10,500,000*l.* from which deducting 954,545*l.* for the profits of the capital, and 3,500,000*l.* for the cost of the raw

article, there will remain 6,045,455*l.* for the wages of persons employed in it, which, allowing to each 25*l.* a year at an average, makes the number employed 241,818.

The cotton manufacture was formerly inconsiderable, in comparison with its present state. The total quantity of cotton wool imported into England, on an average of five years, ending with 1705, was 1,170,881*lbs.*; and so late as the year 1781, it amounted to only 5,101,920*lbs.* But this manufacture was so much extended, that before the commencement of the last war the consumption of cotton wool amounted to upwards of 30,000,000*lbs.* per annum. During the years 1796, 1797, 1798, and 1799, the annual import, at an average, was 30,434,000*lbs.*; the value of which, when manufactured, cannot be less than 9,500,000*l.*; and if we deduct from this sum 863,636*l.* for profits of capital, at 10 per cent. and 3,804,250*l.* for cost of the raw material at 2*s.* 6*d.* per pound, there will remain 4,832,114*l.* for wages, which, divided at the rate of 15*l.* per annum for each person, on account of the number of women and children employed, makes the whole number 322,140 persons.

The silk manufacture has of late years experienced little fluctuation; the average of raw and thrown silk imported for three years preceding the 5th of January, 1797, was 883,438*lbs.*; and the usual quantity cannot be stated at less than 500,000*lbs.* the value of which, when manufactured, is about 2,700,000*l.* The cost of the silk, averaging that of the raw and thrown at 28*s.* per pound, amounts to 1,260,000*l.*, and the profits of the manufacturer to 245,454*l.* at the rate of 10 per cent. on the cost when manufactured. The number of persons employed in this manufacture has been stated at 200,000 and upwards; but there is reason, says Mr. Grellier, to believe that it does not exceed 60,000 of all descriptions.

The linen manufacture of Great Britain is chiefly confined to Scotland, though some branches of it are carried on in Manchester and other parts of England. The total quantity of British linen exported during the years 1797, 1798, 1799, was 56,481,000 yards; and if the quantity retained for home consumption is not greater than the export, the value of the whole must be at least 1,600,000*l.*; and that this does not exceed the truth is probable, if the yearly value of the whole manufacture in Great Britain, with the thread and other branches of the flax trade, is stated at 2,000,000*l.*, and the number of persons employed at 60,000.

The hemp manufacture at present exceeds 1,500,000*l.*, but it is less in time of peace; and the number of persons employed is probably not less than 35,000.

The paper manufacture has of late greatly advanced. About 100 years ago, the paper made in this country was almost wholly the coarse wrapping paper, and for a long time the superior kinds were for the most part imported; but the export is now considerable. The annual value of the manufacture, at the present high prices of the article, cannot be less than 900,000*l.*; and the number of persons employed is 30,000.

The glass manufacture has of late very much improved and increased; so that it may now amount to 1,500,000*l.* and the persons employed in it are about 36,000.

The potteries and manufactures of earthen ware and porcelain have rapidly advanced during the present century, in consequence of the improvement they have received, and the introduction of many new and beautiful wares both for our own use and foreign markets. We are particularly indebted to Mr. Wedgwood, "for converting clay into gold." The annual value will probably not be over-rated at 2,000,000*l.*, and the number of persons employed at 45,000.

The iron manufacture is supplied partly by the produce of our own mines, and partly by those of other countries.

With respect to the first it is said, the total produce of pig-iron in Britain does not at present exceed 100,000 tons, and reckoning on an average, that 33 cwt. of crude iron produces one ton of bars, and that the manufacture of malleable iron amounts to 35,000 tons per annum, this branch will require 57,750 tons of crude iron; and the value in bars at 20*l.* a ton is 700,000*l.*; the remaining 42,250 tons, cast into cannon, cylinders, machinery, &c. at 14*l.* a ton, is worth 591,500*l.* The supply of foreign bar-iron is chiefly obtained from Russia and Sweden; and the quantity imported, on an average of 12 years, has been 44,135 tons, worth, at 22*l.* per ton, 970,970*l.*, which, together with the former sums, amounts to 2,262,470*l.* Some years ago, the value of the iron manufacture was estimated at 8,700,000*l.*; but if this sum should appear too high, we may include tin and lead, and the value of the whole will probably amount to 10,000,000*l.*, and the number of persons employed to 200,000.

The copper and brass manufactures are now established in this country. Till about the years 1720 or 1730, most of the copper and brass utensils used for culinary and other purposes in this country were imported from Hamburg and Holland, being procured from the manufactories of Germany: and even so late as the years 1745 and 1750, copper tea-kettles, saucepans, and pots of all sizes, were imported in large quantities. But by the persevering industry, capitals, and enterprising spirit of our miners and manufacturers, these imports have become totally unnecessary; so that the articles are now all made here, and far better than any other country can produce. The discovery of new copper-mines in Derbyshire and Wales, about the year 1773, contributed to the extension of the manufacture in this country; and it appears to be still increasing, notwithstanding the late great advance in the price of copper. The value of wrought copper and brass, exported during the year 1799, was 1,222,187*l.*; and there is reason to believe that the whole value of these manufactures at present is at least 3,500,000*l.*, and the number of persons employed 60,000.

The steel, plating, and hard-ware manufactures, including the toy-trade, have been of late much extended, and may probably amount in value to 4,000,000*l.*, and the persons employed to at least 70,000.

It is acknowledged, that many of these estimates must be essentially defective, from the want of public documents respecting many important branches of trade. However, they serve to shew, in a general view, the relative extent of our principal manufactures, as in the following summary:

	Annual Value.	Persons employed.
Woollen - - -	£. 15,500,000	425,043
Leather - - -	10,500,000	241,818
Cotton - - -	9,500,000	322,140
Silk - - -	2,700,000	60,000
Linen and flax - -	2,000,000	60,000
Hemp - - -	1,500,000	35,000
Paper - - -	900,000	30,000
Glass - - -	1,500,000	36,000
Potteries - - -	2,000,000	45,000
Iron, tin, and lead	10,000,000	200,000
Copper and brass -	3,500,000	60,000
Steel, plating, &c. -	4,000,000	70,000
	£. 63,600,000	1,585,000

To the above enumerated manufactures of greater importance, we might have added those of hats, horn, straw, &c. which taken together are of very considerable amount, and employ a great number of hands. There are also some, which, though not generally included among the manufactures,

BRITAIN.

factures, partake of the nature of these, and might not improperly be classed with them. To this head we might refer the elegant branch of exportation, or that of beautiful prints, for which this country is in an eminent degree indebted to the late alderman Boydell. Grelrier, Month. Mag. Jan. 1801.

The commerce of Great Britain extends through the eastern and western hemispheres of the globe, by means of the capital and credit of the country, the skill and industry of its artizans and manufacturers, the number of its ships and the character of its seamen, and the enterprising spirit as

well as established reputation of its merchants. The number of registered vessels belonging to the British dominions, and employed in trade in 1801, was 20,568, their tonnage 2,128,055, and the number of seamen navigating the same, 154,530. In 1803. the number of vessels was 21,445; their tonnage 2,238,249; and the number of men 155,445; being an increase of 877 ships, of 110,194 tons, and of 915 men.

The following table will exhibit a complete view of British commerce solely from the port of London, for one year ending Jan. 5, 1795, since which the commerce has increased.

Names of the Countries.	Value of Import into London.			Value of Exports from the Port of London, to Foreign Parts.					
	£.	s.	d.	British Manufactures			Foreign Merchandise.		
Ireland	2,209,501	3	4	168,687	18	3	914,352	4	4
British West Indies	6,072,117	5	0	2,249,043	13	11	579,453	6	0
Conquered Islands	1,226,064	13	8	260,976	0	11	110,817	18	0
British American Colonies	307,412	13	0	654,842	19	4	251,551	6	2
Guernsey and Jersey	91,936	1	2	12,001	13	10	21,616	16	8
Gibraltar	12,947	16	8	83,473	14	11	69,315	2	8
Honduras Bay	14,696	4	2	2,029	18	11	2,550	16	2
South Fishery	197,680	8	6	21	6	8	—	—	—
Asia, including East Indies	8,916,950	2	10	3,398,680	1	4	185,190	16	0
Africa	66,013	8	4	90,593	12	9	188,743	16	6
Turkey	641,860	19	2	32,065	12	0	123,776	7	2
Streights	8,399	14	0	—	—	—	—	—	—
Venice	82,107	16	0	6,203	17	11	16,305	7	2
Italy	1,215,012	15	0	80,980	18	9	340,786	0	8
Spain	1,070,697	18	0	205,096	4	4	265,169	3	4
Portugal	644,600	3	8	182,780	6	2	119,813	12	6
Madeira	7,479	16	8	27,998	6	10	6,886	18	2
Canaries	6,763	19	10	20,116	18	4	377	5	2
France	130	6	8	3,216	5	3	63,625	10	6
Austrian Flanders	137,249	5	0	129,413	9	7	887,642	18	10
Holland	1,203,515	3	6	114,458	3	7	1,968,687	3	4
Germany	1,089,307	19	4	1,044,634	18	0	6,176,100	14	8
Prussia	190,657	3	2	54,380	14	0	272,719	17	4
Poland	104,978	10	4	7,022	11	10	57,067	2	4
Sweden	262,727	3	4	33,845	5	6	111,457	14	4
Russia	1,269,688	9	6	95,519	8	8	491,244	9	2
Denmark and Norway	166,366	1	0	147,340	0	11	545,509	19	8
Greenland	26,753	11	2	—	—	—	—	—	—
United States of America	811,511	18	8	2,251,280	12	1	429,248	7	8
Florida	16,239	16	0	38,067	0	3	8,855	0	0
Foreign West Indies	56,240	2	0	1,767	13	10	60	0	0
Prize Goods	1,572,868	8	8	—	—	—	—	—	—
	29,706,476	17	4	11,396,539	13	8	14,208,925	14	6

Included in the account of each country.

RECAPITULATION.

The aggregate value of goods imported into London in one year	29,706,476	17	4
British manufactures exported	£. 11,396,539	13	8
Foreign merchandize, do.	14,208,925	14	6
Value of goods imported in upwards of 9000 coasting vessels, averaged at 500l. each.	4,500,000	0	0
Value of goods exported coastways, in about 7000 vessels, at 1000l. each.	7,000,000	0	0
	11,500,000	0	0
Total amount of property shipped and unshipped in the river Thames, in the course of a year, estimated at	66,811,942	5	6

If we add to this estimate, the accounts belonging to the other ports of Bristol, Liverpool, &c. the account must be enormous.

From the states of North America are chiefly imported tobacco, rice, indigo, timber, hemp, flax, iron, pitch, tar, and lumber; from the West Indies, sugar, rum, cotton, coffee, ginger, pepper, guaiacum, sarsaparilla, manchineal, mahogany, gums, &c.; from Africa, gold dust, ivory, gums, &c.; from the East Indies and China, tea, rice, spices, drugs, colours, silk, cotton, saltpetre, shawls, and other products of the loom; from our remaining settlements in North America, furs, timber, pot-ash, iron; and from the various states of Europe, numerous articles of utility and of luxury. Pinkerton's Geog. vol. i. p. 100.

For other particulars relating to Great Britain, see CONSTITUTION, DEBT, FUND, PARLIAMENT, REVENUE, &c. &c. See also ENGLAND, SCOTLAND, and WALES.

BRITAIN, in *History*. It will be most suitable to the plan of this work, to divide the history of England into several branches, each of which may be consulted under the proper heads. These divisions will be,—the history of the island anterior to the Saxon invasion, which will be the subject of the present article;—the history of the Saxon octarchy from the invasion of the Saxon tribes to the period of the Norman conquest, which will be introduced under the word SAXONS;—the history of England from the Norman conquest to the accession of James I., for which see the article ENGLAND;—and the history from that period to the present times, which will be inserted under the same head. SCOTLAND, IRELAND, and WALES, will be separate subjects of history; and their transactions, so long as they continued independent nations, may be sought for under their respective names. So much as is necessary to be known of the history of the other British isles, will be found under the articles of *HEBRIDES*, *Isle of Man*, *ORKNEYS*, and *SHETLAND*. These different topics will comprise all that is material in the history of the British isles.

It would give us very little trouble to state the history of Britain anterior to the Saxon invasion, if we could adopt the account so popular among our ancestors, and give the fictions of Jeffery of Monmouth a place in our authentic annals. But Jeffery's history, though supported by the belief of most of the men of learning in the sixteenth century, by many in the seventeenth, and by some in the last, cannot for a moment be suffered to rank in our estimation as true history. We need not combat the tale by a profound disquisition: it has the merit of discrediting itself by its absurdities and improbabilities; and we might dismiss it into oblivion without another sentence, but that the public may be curious to know what sort of fiction it was, which was capable of interesting our ancestors so much, and of seducing so many learned men to patronize and defend it.

After settling Æneas in Italy, marrying him to Lavinia, and killing Turnus, in exact conformity to Virgil, Jeffery gives him one Sylvius for a grandson, whose friends, the magi of the day, oblige with a prophecy, that his wife was pregnant with a son, who would destroy both his father and mother, and after travelling over many countries in banishment, would at last arrive at the highest pitch of glory.

This luckless lad was Brute, who killed his mother in his birth, and, at 15 years of age, completed the prediction by destroying his father. Being expelled Italy by his kinsmen for the parricide, he went to Greece, and found the Trojans kept in slavery by one Pandrusus, whom the author compliments with the title of king of the Grecians, but whom no Greek historian has ever acknowledged. Brute assembled the Trojans from all parts, and sent a letter to this Pandrusus, assuring him that the Trojans would rather live after the

manner of wild beasts on flesh and herbs with liberty, than enjoy the greatest luxury under his slavery.

Pandrusus was surprised at this message; but he was ignorant that he had to do with a hero whom his historian had determined to make an infallible conqueror. It was, therefore, in vain he besieged a town called Sparatium, the situation of which only Jeffery knew, but with which he has forgotten to acquaint us; for though he outnumbered the Trojans so much that their brave commander dreaded a pitched battle, yet Brute contrives a stratagem to enter their camp at night, deceive the watch, and kill them all in their sleep. He accomplishes all this as easily as he conceived it.

Pandrusus is taken prisoner; his army annihilated. A consultation is held to consider what is to be done with the captive; and as it is a rule with Jeffery to detail the very words of every conversation, the speeches are again recited at full length; and Pandrusus is liberated on condition of giving Brute his daughter Ignoge for wife, with plenty of gold, silver, ships, corn, wine, and oil, and also permission to remove to some other country.

With his new wife and 324 ships, and after many swoons on the part of Ignoge, and many kisses on the part of Brute, "which he ceased not till she grew weary of crying, and fell asleep," he set sail, and two days afterwards came to an uninhabited island, in which was a convenient temple of Diana, and a statue of the goddess, that kindly gave answers to all who consulted her. In six very pretty lines, which Milton thinks too good for the age of the translator, he asks her whither they were to go, though a reasonable man would have formed some notion of that before he had set out, and not have trusted to the vague chance of a deserted island and a priestless oracle.

After repeating the words exactly nine times, and walking four times round the altar, and laying himself before it upon the skin of a white hart, he fell asleep. About the third hour of the night (for Jeffery is very particular in circumstance, though the incident is placed about 2000 years before him), about the third hour of the night, "the usual hour for deep sleeps," apparitions, and visions, the goddess in person appeared to the Trojan, and in eight lines as harmonious as his own, informs him that beyond Gaul there was an island in the West, formerly occupied by giants, but then deserted, where he should found another Troy, and a race of kings by whom all the world should be subdued.

With this answer, but without being made much wiser by it, for Brute knew as much about Paradise as about Gaul, they put to sea again in a westward course, and in 30 days came to Africa, being ignorant as yet whither to steer. At last they reached the straits of Gibraltar, after great danger from pirates where their ship had nearly been overturned by those sea-monsters called Syrens. However, they made a shift to escape, and contrive by advancing still to the west, for no retrograde course is mentioned, to get into the Tyrrhenian sea, though, unfortunately for accurate geography, this sea, instead of being near Spain, or beyond it, is in the direct contrary course, because it washes the lower part of Italy. But be this as it may, here they pick up some Trojans, whose general was Corineus. This was a very modest man, but withal so courageous, "that if he encountered with any giant, he would immediately overthrow him, as if he had been a child."

From this Tyrrhenian sea they reached the Loire, as suddenly as if Jeffery had supposed they were close together. In vain all the kings and princes of Gaul united against the invaders; for they, whom some pirates had greatly endangered, and some Syrens had nearly drowned, now defeat all the confederated Gauls, burn their cities, lay waste their fields, and make "dismal slaughter among the people, being unwilling

unwilling to leave so much as one alive of all that wretched nation." After these humane exertions, "they build towns, as Homer tells us," in some work to Homer and to us equally unknown; and then doubting if it were prudent to fight there any more, they sail to Britain, the promised land, and arrive at Totnefs.

A new train of miracles begins; and, indeed, a little impiety is exhibited by Jeffery, for the goddess told Brute, that this island had formerly been inhabited by giants, but was now deserted; yet, in contradiction to the divine assertion, the daring monk, in his sixteenth chapter, peoples it, though thinly, with giants still.

However, at their coming, away fly the giants to their caves, to the great discontent of Corineus, "to whom it was the greatest possible diversion to encounter them." To indulge his favourite inclination, he begs "the county of Cornwall for his share, because the giants were in greater number there, than in all the other provinces." Brute obliges him: and an opportunity soon arrives to make Corineus very happy.

"Among the rest there was one detestable monster, named Goemagot, in stature 12 cubits (or about 18 feet high); and of such prodigious strength, that at one shake he would pull up an oak, as if it had been an hazel wand. One day, when Brute was at Totnefs, this fellow, and 20 more of his companions, fell upon the new-comers, among whom they made a dreadful slaughter." This was precisely what Corineus wanted; for as the other twenty were soon dispatched, Brute ordered "Goemagot to be preserved alive, out of a desire to see a combat between him and Corineus, who took vast pleasure in such encounters."

"Overjoyed at this, Corineus threw aside his arms, and challenged the giant to a wrestling match;" but a Cornish hug from the Goliath of Cornwall soon broke three of Corineus's ribs, which, we are very circumstantially told, were two on his right side, and one upon his left. But this accident, instead of disabling, "enraged Corineus to such a degree," that though never mentioned but as a mortal man, and of mortal size, he seized hold of this tremendous giant, "threw him over his shoulders as if he had been a hare, ran with him as fast as he was able for the weight to the next shore, nay, got even up to the top of a very high rock, and there hurled down the savage monster into the sea." "The place where he fell," adds Jeffery, "is called Goemagot's leap to this day."

The above circumstances present a faithful abridgment of the first sixteen chapters of this ancient history. The first patrons of "The British History," defended all its story. The later advocates allow it to contain a few hyperboles, but warmly maintain that it ought not to be wholly rejected on this account. But, unfortunately, the whole history is in this strain; of this only a few more brief specimens need be given.

Urenus, who besieged Rome at the head of the Gauls, when Camillus and the geese saved the capitol, was, according to this history, a Briton; and his brother Belinus, then king of Britain, was with him. Conan, king of Armorica, wanting wives for his soldiers, asks the king of Cornwall for some, who sends him 11,000 daughters of his nobility, and 60,000 of a meaner sort. The greater part of these are drowned; the rest are murdered. The magi commanded Vortigern to find a youth who had never had a father, and Merlin is accordingly brought, whose mother had a miraculous conception from a demon. The king cannot build a tower, because it is swallowed up as fast as it is raised. Merlin foretells, that there is a pond deep under the ground, which occasions it, and that at the bottom of it are two hollow stones, in which two dragons are asleep. Uther Pen-

dragon, to gratify his passion for Igera, is transformed by Merlin into the figure of her husband. To crown the whole, Cadwallo being tossed on a certain island, and longing for venison, his servant Brian goes in search of some, but finding none, he cuts out a piece of his own thigh, which he roasts upon a spit, and carries to his master as venison!!! Whatever may have been the prejudices of former times in favour of the book, every reader will now treat it with derision, though he may not chuse to adopt the quaint phraseology of the Dutchman, who called it a "groote, grove, lange, dicke, tassellicke, ende onbeschaemte logen," which in plain English is, a great, heavy, long, thick, palpable, and shameless lie.

The account of Brutus and his Trojans having colonized Britain was in existence before Jeffery. It appears in Nennius, who lived about, or before, the ninth century: his preface is a triumph to the advocates of the Trojan, because it announces that he had taken his history not only from the Roman annals, the chronicles of the holy fathers, and the histories of the Scots and Saxons, but also from the traditions of his ancestors, and from the monuments of the ancient inhabitants of Britain. On inspecting his history, it is curious to remark to what sources he refers his several incidents. The tale of Brutus is from the annals of the Romans; and his genealogy up to Æneas, thence to Noah, and thence to Adam, was furnished to the chronographer by the traditions and writings of those who first inhabited Britain. Unfortunately for the tale, no Roman annals that we know of have sanctioned the history of Brute; and we may be allowed to deny that the Druids had any acquaintance with the Jewish scriptures.

Of other romances on this remote part of our history; the dishonest forgery of Annian of Viterbo, who made certain annals of Berosus, and others, in which Samoth, the son of Japhet, is said to have led a Celtic colony into Britain; of Albion, a giant, who was sent after Samoth to give it a name; of the visits of Hercules and Ulysses; of Albina, the princess of Syria, and her thirty sisters, committed to the mercy of the sea for murdering their husbands, who were thrown providentially on England; of Celto, the daughter of Britannus; of Britannus, the grandson of Nemeth, who brought a colony here out of Ireland, and of such like wild and absurd inventions, we need only say that they are fit to class with the history of Jeffery, and may be permitted to repose in oblivion, as proper companions to his Brute and Corineus. To the same grave may be consigned all those writers who have wasted their time in deriving the Britons from Japhet, from Gomer, from Javan, from Thiras, from Askenaz, or from Shem. Such derivations are as unreasonable as the speculation of the man who affirmed that the earth was divided between the three sons of one father as a typical representative of the divine Trinity.

The only accounts that can be fully relied on for the early history of the European nations, are those which the Roman and Grecian writers have transmitted to us. Even their statements frequently demand our criticism, but we must dig for truth in their mines.

From the extent of geographical knowledge which Homer displays, we might not unreasonably expect to find some allusion to the British islands in his works; but although he mentions with familiarity Italy, Sicily, Greece, Thessaly, Epius, with some adjacent countries, and by Strabo and later authors, has been thought to allude to Spain, no other part of Europe is explicitly commemorated in his Epopeas.

One of the oldest Greek books which contains any allusion to the British islands, is the Argonautica ascribed to Orpheus. The celebrated person of this name lived anterior

rior to Homer; but the poems that pass under his name, are by Suidas and Stobæus attributed to a man whom they call Orpheus the younger, and whom others name Onomacritus. He has been referred to the times of Pisistratus, or about 560 years before Christ.

This poem is curious as a specimen of the geographical opinions which the author and his contemporaries entertained of the western part of Europe. It was a voyage from Thes-saly to Colchis on the eastern part of the Euxine. But the part most interesting to us, is the manner in which these adventurers are stated to have returned home; for, instead of tracing back their course to Colchis, the difference of which was comparatively small, they sail to the Palus Mæotis, or Sea of Asoph, thence up the lands to the northern ocean, and after circumnavigating Europe, arrived at last at their destined port. So little was Europe known at this early period, that it was fancied to have been possible to have sailed from the Euxine sea into the Hyperborean ocean.

Whoever reads this composition, from verse 105; to 1295, though he may be entertained with the romantic fable of the Macrobian, who are seated in the icy ocean, and who, after living 1000 years in the most active exertions of wildom and justice, void of labour and law, sink from uninterrupted felicity, into a gentle, but perpetual sleep; yet he will need no further evidence to convince him, that the author was wholly ignorant of the continent of Europe. It is indeed singular, that he mentions the island Iernida, which is presumed to be Ireland, and which the Argonauts pass with apprehension in their voyage from the North sea. But this is not mentioned with the accuracy of a man who knew what he was writing about, or else Britain, and not Ireland, would have been commemorated; for though Camden thinks that the island next mentioned under the name of Πικησσαν, or Piceis Obisam, was Britain, this cannot be the fact, because, after they had left Iernida, they were tossed by a furious tempest for twelve days before Lynceus discerned the island Πικησσαν. It is remarkable, that in opposition to all the mythologists, the author makes this island in the Atlantic to have been the residence of Ceres, and the place from which Proserpine was carried off by Pluto. With equal peculiarity he makes another island in the same sea, which he calls Λυκαίου χερσον; and which Camden, by a strange error, thought to be the same as the former, though three days sail from the habitation of Circe. The geographical mistakes of this author are worthy of notice, because the man who aspired to write in the celebrated name of Orpheus, is not likely to have been the most ignorant of his contemporaries.

About 450 years before Christ, Herodotus, the father of history, flourished. Greece was then so destitute of knowledge, that, like many of his countrymen who possessed activity and energy of intellect, he travelled to Tyre, Egypt, and Assyria, in search of the information which these countries in his days almost exclusively possessed. His composition seems to indicate that he made geographical subjects a principal object of inquiry; and he sought for it at those places where it was most likely to be obtained. The situation of Greece, which on its eastern side lies parallel with Asia Minor, and had frequent intercourse with Egypt, Phœnicia, Sicily, and that part of the Italian peninsula which now composes the kingdom of Naples, introduced him to an acquaintance with the three continents. It is therefore, if any where, in his works, that we may reasonably expect to find the most accurate collection of the facts which were then known concerning the population of Europe, and of the British islands.

But when we take up the history of Herodotus, which gained the Olympic laurel, we perceive that no regions were

at that time known, (with only one exception, which we shall hereafter notice,) except those which military horrors had explored. He is accurate about the tribes or nations that swarmed round the western shores of the Euxine from the modern Constantinople to the sea of Asoph, because Darius had prosecuted a wild expedition against the Scythians who dwelt there. But the historian fails where the Persian despot was checked; or, if he indulges some hasty excursions beyond, it is only to repeat tales so absurd, that the credit of his whole history has been impeached from his Scythic reveries. In other parts of the world, wherever the nations warred whose transactions he records, he seems anxious to be minute and faithful; but every other country which the glitter of arms had not revealed, he did not condescend, because he was unable, to describe.

It is, perhaps, from this circumstance, that when we turn from Greece, and the adjacent kingdoms, and extend with national partiality our view westward over the regions, now divided into Spain, France, Germany, the Northern empire, and the British islands, we find the historian lamenting, but ingenuously confessing, the penury of his information.

"I have nothing certain to relate concerning the western boundaries of Europe. I know as little of the islands called Cassiterides, from the tin which is thence imported among us; and though I have diligently inquired, yet have I never seen any man who by his own experience could inform me of the nature of that sea which bounds the extremities of Europe; however, it is certain that amber and tin come from its remotest parts."

The ignorance of Herodotus must have been the ignorance of his age; for it seems to have by no means proceeded from his neglect of inquiry. "Europe has not been fully discovered by any man; and we have no account whether it be bounded on the north and east side by the sea."

About 120 years after Herodotus, the preceptor of Alexander flourished, who reigned for so many ages in Europe the monarch of metaphysics. A treatise has been preserved to us, which is usually attributed to him; but to which his right has been disputed by men whose erudition is formidable enough to leave the question undecided, even by those whom their arguments may not convince. If the circumstance that asserts the claim of Aristotle appeared unsatisfactory to the two Scaligers, to Casaubon, Salmatius, Menage, Vossius, and others, we cannot but be, at least, doubtful on the subject. By these gentlemen it has been given to Theophrastus, or to Anaximenes of Lampachus, or to the stoic Posidonius. But whether the book "De Mundo" be the composition of Aristotle, or of some of his contemporaries, or of his immediate successors, or even of later writers, it is, under every opinion, a proper subject for our present consideration. It seems to be a physiological account of the universe; but it also contains a very rapid and concise survey of the geography of the world. If it was written in the age of Aristotle, it will shew how little the geographers of those times knew. If it be of later date, it will prove that lapse of time gave no increase of knowledge.

After a singular conjecture, which Columbus has since happily demonstrated to be just, that beyond the Atlantic there were other continents, some larger, some smaller than our own, he describes the coasts which the ocean, as he thought, washed; and after conducting the sea from the westward through the freights of Gibraltar to the Propontis, he states its progress from the eastern regions. He tells us, that it comes towards the Gallic gulph, and thence to the columns of Hercules.

"In this sea are two islands, called *Βρετανναι, αλγειν και Ιέρου*, larger than those we named above. They are directly above the Celts."

These

BRITAIN.

These curious passages deserve a moment's consideration. Of Europe this geographer knew that the northern parts were inhabited by the Scythians, and the western by the Celts; and that beyond the Celts were two islands called *Bretanikai*, whose names were Albion and Hierna.

This is the earliest author in which the British islands are explicitly named.

That the British islands were known to the ancient world long before the time of Cæsar, may be inferred from the passage in Polybius, which mentions them. This author lived about 200 years before the Christian era. He enjoyed the confidence of Scipio and Lælius; and when he determined to write history, he made many journeys to the parts which he intended to describe.

In the latter part of his third book, he promised to write concerning the *Βρετανικαί νῆσοι*, the British islands, and the making of tin. Unfortunately for our curiosity, this treatise has not reached us. It is certain that he composed it, because Strabo mentions his discussions concerning Britain. Three other Grecians also wrote concerning Britain. These were Pytheas, Dicæarchus, and the celebrated Eratosthenes, who all lived anterior to Polybius, and whose opinions about our island Polybius compared and disputed.

Thus we find that Britain was an island which had obtained much notice among the Grecians. We may also perceive, from some intimations of the classical writers, that the British islands had been discovered and visited by the Phœnicians and Carthaginians.

There seems to be no reason to doubt that the Cassiterides were another name for the British islands. Pliny says, that Midacritus first brought tin from these islands; and Strabo acquaints us that the Phœnicians had been long accustomed to visit the Cassiterides from Spain for the sake of traffic; but concealing their course from others. He gives a striking instance of their effort to conceal the navigation to our islands. When the Romans followed a Phœnician ship bound thither, for the express purpose of discovering the market, the master ran his ship ashore, and destroyed it, rather than let them trace his course; and he was indemnified by his countrymen for the loss out of the public treasury. But the Romans, by frequent attempts, at last obtained the knowledge which they sought.

Bochart derives *Bretanike*, the Greek name for Britain, from the Phœnician or Hebrew words *ברת-אנך*. *Baratanac*, the land of tin. Cassiteros, the Greek for tin, from which the islands were called Cassiterides, he also compares, with much ingenuity, with the Chaldee *Kiltar* and *Kiltira*, by which the Targums of Jonathan and Jerusalem render the Greek word *κασσιτερος*.

It was the invasion of Cæsar, about 54 years before Christ, which brought the Romans first acquainted with the natives of Britain. Cæsar, ambitious of attaining the highest distinction in the Roman state, applied himself to warfare, as the surest means of rising an exalted reputation, and of creating a solid power. With this view he attacked, and conquered the Gauls; and in prosecution of the same purpose he invaded Britain.

Not being well acquainted with the harbours of the island, he sent C. Volusenus in a vessel to explore them. The natives, at first alarmed at his preparations and threats, sent overtures of peace, Cæsar received them civilly, but persisted in his invasion. After five days absence, Volusenus arrived at Cæsar's station, and reported his observations. Cæsar embarked two legions of foot in about eighty transports; and with these, and eighteen more for the rest of his army, he sailed towards Britain.

He arrived at a part inconvenient for landing from its mountainous aspect, and beheld the rocks covered with the armed inhabitants. He remained five hours at anchor, wait-

ing for the arrival of his whole force; and when the wind and tide served, he sailed out about eight miles farther to a plain and open shore.

The Britons sent their horse and chariots to oppose his landing, and all their forces followed. A severe contest ensued. The Roman vessels were too large for the shallow sea, and their soldiers were obliged to leap into the waves in unknown places, and with heavy armour, and to conflict with the active natives, who were well acquainted with the coast, and zealous in their opposition. At last the Roman galleys brought their engines to bear against the Britons. Their appearance and effect checked the brave savages, and the standard-bearer of the tenth legion, at that critical moment, rushing with his eagle towards the enemy, the Romans followed with new courage, and, after a desperate struggle, compelled the Britons to retire.

This defeat occasioned new proposals of pacification, which were broken, and the struggle recommenced. The Britons were repulsed again, but Cæsar chose to abandon all further efforts to conquer the island, and returned to the continent.

In the following year he invaded the island again. The natives vigorously opposed him under the command of Cassivellaun. They experienced defeats, but their resistance was too fierce for the Romans to support, and Cæsar again withdrew from the island, having shewn the island to the Romans, (says Tacitus,) but not having conquered it.

The Britons remained unmolested by any attacks from the Romans till the reign of Claudius, at which period, unfortunately for their independence, but perhaps happily for their civilization, they were invaded by Aulus Plautius. Divided by civil feuds, and no longer opposing to the Romans that union of will and power by which they had baffled the genius of Cæsar; the separate exertions of their various tribes were generally disastrous, and the struggle ended in the complete conquest of the island. The events of this conflict are chiefly recorded at great length by Tacitus, and are too familiarly known to us to be recited here. In the third and fourth centuries Britain gave some disturbance to the Roman empire, by the turbulence of that part of the Roman army which was stationed within it. At various intervals they made some of their favourite officers emperors, who contended for the purple with the other competitors. In these centuries Britain was much distressed by the incursions of the Picts and Scots on the north and west, and by the Franks and Saxons from the sea. At last the barbarians pressed so vigorously on the Roman empire, that the Roman forces were compelled to abandon Britain in 409, and the island for a short time recovered its independence, to lose it again on the triumphant invasions of the Saxons. See SAXONS.

BRITAIN, New, in *Geography*, an appellation which has been appropriated, by some geographers, to the most northern regions towards Hudson's bay, and the coast of Labrador, and comprehending the whole tract of country that lies north of Canada, commonly called the Esquimaux country, including Labrador, New North and South Wales; said to be 850 miles long and 750 broad. This is in general a mountainous, frozen, and barren country; abounding with lakes, rivers, and bays, that furnish plenty of fish. The fishery and the fur-trade are the only products of this country that render it valuable. It is very thinly inhabited by a people resembling the Laplanders, and the other nations in the north-western parts of Europe, from whence their ancestors probably migrated. But the name of New Britain is not admitted in French or English maps. See HUDSON'S Bay, and LABRADOR.

BRITAIN, New, an island, or rather a group of islands, in the Pacific ocean, being a part of that extensive tract denominated

minated AUSTRALASIA. It was first explored and named by Dampier, who passed a strait called after his name, between this territory and Papua, or New Guinea. In 1767 capt. Carteret navigated a channel that lies between New Britain and New Ireland; and he called its north point Cape Stephens, its east point Cape Orford, and a bay about the middle of its eastern coast Port Montague. This land was seen by Roggewein's Squadron in 1722; and by M. de Bougainville in 1768. Dampier, who visited the bay since called Port Montague in 1700, found the land mountainous and woody, but interspersed with fertile vales and beautiful streams. The country seemed very populous, the natives resembling those of Papua, and navigating their canoes with great skill. The chief product seemed to be cocoa nuts, but there were yams, and other roots, particularly ginger; and the sea and rivers swarmed with fish. In the main land, and adjacent isles, there are several volcanoes. A Spanish frigate, called the *Princesa*, sailed from Manilla, towards the close of the year 1780, for San Blas in California; and having, in her way thither, fallen in with some of the islands which form the northern part of the group called New Britain, she discovered, on the 20th of January 1781, nine small islands, covered with palm trees, surrounded by a sand bank, and forming within themselves a lagoon, or pond of still water, and agreeing, in every other respect, with the description which is given by Valentin of Ontong Java, discovered by Le Maire and Schouten in 1616. The latitude of the southern part of this cluster of islands was observed to be $4^{\circ} 53' S.$ New Britain lies between 4° and $6^{\circ} 50' S.$ lat. and $148^{\circ} 20'$ and $151^{\circ} 20' E.$ long.

BRITANNIC PLAGUE, in *Medicine*. See SWEATING-SICKNESS.

BRITANNICA, in *Botany*. See RUMEX *Aquaticus*, or HYDROLAPATHUM.

BRITANNICO, JOHN, in *Biography*, an eminent Italian scholar of the 15th century, was born in the Brescian territory, of a family originally from Great Britain; and having studied at Padua about the year 1470, kept school at Brescia, and distinguished himself by several learned annotations on various classic authors, particularly Juvenal, Horace, Persius, and Statius in his *Achilleid*. He also wrote grammatical and other tracts, and an eulogy on Bartholomew Cajetano. He is supposed not to have long survived the year 1518, and did not live to publish his notes upon Piny's Natural History.

BRITANNICUS *Codex Erasmi*, in *Biblical History*, a MS. copy of the New Testament, which is one of the two MSS. (the *Codex Ravianus* being the other) that contain the disputed passage of the three that bear record in heaven, 1 John, v. 7. This MS. is probably the same with that denominated Montfortianus and Dublinensis, noted 61 in the first part of Wettstein's N. T. in the second 40, and in the third 34. It is of the 12mo size, contains the whole N. T. is written on a thick glazed paper, and not on vellum, in a modern hand, and is probably of the 16th century. Mill relates, that it belonged originally to one Froy, a Franciscan friar, who possessed it either about or before the middle of the 16th century; a few years previous to which period, that is, between 1519 and 1522, it was known to Erasmus by the name of "*Codex Britannicus*." From Froy it came into the possession of Thomas Clement, probably a doctor of philosophy and medicine in England; from him it came into the hands of William Chare, a learned Greek scholar; after Chare, it was possessed by Dr. Thomas Montfort, and from him took its name, because it belonged to him when it was collated for the London Polyglot; and since the time of Usher, who had it after Montfort, it has been preserved in the library of Trinity-college in Dublin, where it is noted G. 97; and hence it is sometimes called Dublinensis. As Erasmus, in the two first editions of his Greek Testament,

omitted 1 John, v. 7. but in the later editions inserted it, because he had found it, as he relates, in a *Codex Britannicus*, it has been concluded, with a very great degree of probability, that the Montfortianus is the same as the *Britannicus* of Erasmus; because, though every MS. in Great Britain has been carefully searched, this is the only one which contains the passage in question. In proof of this it is strongly urged, that the text of the third edition of Erasmus, in 1522, differs in this interpolated passage from all other editions, except those which were immediately copied from it, and at the same time agrees word for word with the *Codex Montfortianus*. Although no critic would ascribe a high antiquity to the *Cod. Montf.* we have no reason to suspect that it is a mere transcript from the Complutensian Polyglot, which is said to be the case with respect to the *Codex Ravianus*. For the difference is strongly marked in numerous passages, and even the text in question, for which this MS. is famous, is not the same as in that Polyglot. Erasmus describes the *Codex Britannicus* as a Latinizing MS.; and Wettstein entertains the same opinion with regard to the Montfortianus, of which the passage in question, 1 John, v. 7. affords the strongest proof; for in the *Cod. Montf.* it not only differs from the usual text, but is written in such Greek as manifestly betrays a translation from the Latin. For the satisfaction of those who may not have access to other means of information, we shall give it below, with all the abbreviations, as it is given by Travis, in his letters to Gibbon, p. 153.

Ὅτι τρεῖς εἰσὶν οἱ μαρτυ
ροντ' ἐν τῷ αὐτῷ, πατὴρ, λόγος, καὶ πνεῦμα ἀγίου
καὶ οὗτοι οἱ τρεῖς ἐν εἰσι

Καὶ τρεῖς εἰσὶν οἱ μαρτυ
ροντ' ἐν τῇ γῇ, πατὴρ, υἱὸς καὶ αἷμα.

Here the article is omitted before the words expressive of Father, Son, and Holy Ghost, because there is no article in the Latin, and it occurred not to the translator, that the usual Greek was *ὁ πατήρ, ὁ λόγος, τὸ πνεῦμα*. He has also ἐν τῇ γῇ, which is false Greek, for ἐπὶ τῆς γῆς, because he found in the Latin, in terra. He has likewise omitted καὶ οἱ τρεῖς εἰς τὸ ἐν εἰσι, which is wanting in many Latin MSS. because the Lateran council, held in 1215, had rejected it through polemical motives. The omission of this clause at the end of the 8th verse proves, not only that the writer of the *Codex Montfortianus* copied from the Vulgate, because no ancient Greek MS. omits the clause in that place, but that he copied even from modern transcripts of the Vulgate, because this final clause is found in all the MSS. of the Vulgate, written before the 13th century. It is further alleged, that πνεῦμα, in the 6th verse, is altered to χριστός, because christus is the reading of the Vulgate, though it is not found in any Greek MS. Besides, in this MS. the Latin arrangement is observed with regard to the division of the text into chapters, though at the same time the κεφαλαια of Eusebius are noted. This Latin arrangement was introduced by Hugo de S. Caro, in the 12th century, and is that of our printed Bibles; but though observed in the modern MSS. of the Vulgate, it was in general not admitted into the Greek MSS. which adhered to the κεφαλαια of Eusebius. Its admission, therefore, into the *Codex Montf.* not only shews what influence the Vulgate has had in this MS. but proves, at the same time, independently of other arguments, that the *Codex Montf.* is very modern. For no Greek MS. is known, in which the text is divided into our present chapters, that was written before the 15th century; when the Greeks, who fled from their own country into the west of Europe, became transcribers for the members of the Latin church, and of course adopted the Latin divisions. Moreover, the dots over the ι and υ, which have been urged in favour of the antiquity of this MS. on the authority of Montfaucou, who, in his

"Palæographia," had said that these dots were in use a thousand years ago, are likewise used in the most modern MSS. (see the same Palæographia, p. 224. 336.); and therefore, so far from being a proof of antiquity, they are used as an argument to prove, that the Cod. Montf. is very modern. No one MS. written in small letters, among the specimens produced by Montfaucon, before the 12th century, has these dots. As these letters, *i* and *u*, are always dotted in the Cod. Montf., but not always in the MSS. of the 13th and 14th centuries, and still less often in those of the 12th century, we may infer that the Codex Montfortianus is at least as modern as the 15th century. Michaelis's *Int. to the N. T.* by Marsh, vol. ii.

BRITANY, or BRETAGNE, in *Geography*, was, before the revolution, a considerable province of France, with the title of a duchy, reunited to the crown by Francis I. in 1532. It derived its name from the Britons, by whom it was chiefly inhabited, when they were driven from their own country by the Saxons, and sought refuge in that part of Gaul called *Armorica*, which see. This province forms a kind of peninsula, bounded on the north, west, and south by the sea, and on the east by Maine and Anjou. Its mean length is estimated at 57 leagues, and its breadth at about 33: its extent of coast was computed at about 150 leagues, containing a considerable number of bays and good ports. Its navigable rivers are the Loire and the Vilaine, united with the Drance by means of a canal between Rennes and Dijon. The other rivers are the Ardre, the Isle, the Men, the Borneau, the Claye, and the Aden, which discharge themselves into the ocean. The climate is temperate; and the soil, which is generally gravel or gravelly sand, with low ridges of granite, is diversified with hills and plains; and extensive heaths, resembling Cornwall in its appearance, in some places covered with forests of wood, and in others well cultivated, and producing wheat, hemp, flax, &c. Numerous herds of cattle are bred and fattened in the pastures; game and fish are plentiful; cider is the ordinary drink of the inhabitants, and some parts produce wines and brandy. In some districts of this province there are mineral springs, and mines of iron, lead, and coal. The character of the Britons is rough and choleric; but they are brave, good soldiers, and excellent seamen. The commerce of this province is considerable, and consists of a variety of articles, recited under its principal towns. By the new arrangement, Bretagne forms the departments of the Ille and Vilaine, the North-coasts, Finisterre, Morbihan, and Lower Loire.

BRITE, in *Agriculture*, a term applied to hops, when they are over-ripe or shatter; in which case they are said to *brite*.

BRITISH AMERICA, in *Geography*. See AMERICA.

BRITISH COIN. See COIN.

BRITISH CONSTITUTION. See CONSTITUTION.

BRITISH CROWN. See CROWN.

BRITISH ISLANDS, in *Geography*, are those which are adjacent to the British coasts, and subject to the crown of Great Britain. Of these a geographical description, and other particulars relating to them, will be found under their respective names. We shall here only observe, that some of them, as the isle of Wight, of Portland, of Thanet, &c. are comprised in some neighbouring county, and are therefore to be looked upon, in a legal point of view, as annexed to the mother island, and part of the kingdom of England. As to others that require more particular consideration, see *Isle of MAN*, *ALDERNEY*, &c.

BRITISH LANGUAGE. The language of the ancient Britons, when they were first invaded by the Romans, was a dialect of the CELTIC; which had been the language of all the nations of Europe descended from Gomer, and still continued to be spoken by the people of Gaul, and several other countries. This is undeniably evident (says Dr. Henry,

Hist. vol. ii. p. 336.) from the nature and reason of things; from the testimony of ancient authors; from the names of rivers, lakes, mountains, &c. in Britain being significant and descriptive in the Celtic tongue; and from the remains of that most ancient and venerable language in some parts of Britain, as well as in some countries on the continent. See WALES.

BRITO, BERNARD DE, in *Biography*, a Portuguese historian and elegant writer, was born at Almeida in 1569, and having entered into the order of Cistercians, was sent to pursue his studies in Italy. On his return he was appointed principal historiographer for Portugal, and was the first writer who undertook a general history of that country; of which, under the title of "*Monarchia Lusitana*," he published one volume in 1597, and a second in 1609. The work was continued by fathers Antony and Francis Brandano to seven volumes folio; the last of which was printed at Lisbon in 1612. Brito also wrote "*Eulogies of the Kings of Portugal, with their Portraits*;" "*Ancient Geography of Portugal*;" and "*Chronicle of the Cistercian Order*." He died in 1617. *Nouv. Dict. Hist.*

BRITOLAGÆ, in *Ancient Geography*, a people who, according to Ptolemy, inhabited Lower Mœsia, towards the mouth of the Danube.

BRITTEN, in *Geography*, an island in the Frozen ocean, near the south-west coast of Nova-Zembla. N. lat. 71° 6'. E. long. 55° 14'.

BRITTLENESS, in *Natural Philosophy*, that quality of bodies by which they are soon and easily broken by pressure or percussion. It stands opposed to tenacity.

Brittle bodies are extremely hard; the least percussion exerts a force on them equivalent to the greatest pressure, and may consequently easily break them. This effect is particularly remarkable in glass suddenly cooled, the brittleness of which is thereby much increased. Tin, though in itself tough, gives a brittleness to all the other metals, when mixed therewith. The brittleness of glass seems to arise from the heterogeneity of the parts whereof it is composed, salt and sand, which can never bind intimately together.

In timber, brittleness seems to be connected with durability; the more brittle any sort of wood is, the more lasting it is found. Thus it is oak is of so long duration, while beech and birch, as being tough, presently rot, and are of little service for building.

BRITTLENESS of the hoof, in horses. See HOOF.

BRITTON, THOMAS, in *Biography*, the musical small-coal man. This was an ingenious, innoxious, and humble man, of a profession which no longer subsists. Not only the use, but even the name of small-coal is hardly known at present. Dr. Johnson defines it: "Small-coal, little wood coals, used to light fires;" and illustrates the word from the Spectator, and Gay.

"A small-coal man, by waking one of these distressed gentlemen, saved him from ten years imprisonment." Spectator.

"When small-coal murmurs in the hoarser throat,
From smutty dangers guard thy threatened coat."

Gay's Trivia.

In our own memory, small-coal was daily cried about the streets, and of general use in the capital at least, in kindling fires.

Britton was a great favourite of Hearne, the antiquary, whom he much resembled in his fondness for old things, and who has given a long account of him in the appendix to "*Homingi Chartularium Ecclesie Wigorniensis*," and informs us, that Britton was born at or near Higham Ferrers, in Northamptonshire, from which place he went to London, where he bound himself apprentice to a small-coal man. After he had served his full time of seven years, his master

Have him a sum of money not to set up. Upon this, Tom went into Northamptonshire again, and after he had spent his money, he returned, and set up a small-coal trade, though his master was still living, taking a stable in Clerkenwell, which he turned into a house. This seems the only dishonourable action with which Tom could ever be charged.

Some time after he had been settled in business here, he became acquainted with Dr. Garaniere, his neighbour, an eminent chemist, who admitting him into his laboratory, Tom, with the doctor's consent and his own observation, soon became a notable chemist, contrived, and built himself a moving laboratory, in which, according to Hearn, "he performed with little expence and trouble, such things as had never been done before."

Besides his great skill in chemistry, he became a practical, and, as was thought, a theoretical musician. Tradition only informs us, that he was very fond of music, and that he was able to perform on the viol da gamba at his own concerts, which he at first established gratis in his miserable house, which was an old mean building, the ground-floor of which was a repository for his small-coal; over this was his concert-room, long, low, and narrow, to which there was no other ascent than by a pair of stairs on the outside, so perpendicular and narrow, as scarcely to be mounted without crawling.

Hearn allows him to have been a very diligent collector of old books of all kinds, which, in his courses through the town crying his small-coal, he had a good opportunity of doing at stalls, where he used to stop and select for purchase whatever was ancient, particularly on his two favourite subjects of chemistry and music. On the former, it has naturally been suggested, that he had picked up books on Rosycrucian mysteries, and not impossible, but that he may have wasted some of his small-coals in the great secrets of alchemy in the transmutation of metals.

With respect to music, he collected all the elementary books in English that were then extant: such as Morley's introduction, Simpson's division violist, Playford, Butler, Bath, and Mace; nine books of instruction for the psalmody, flute, and mock trumpet. But besides his vast collection of printed music, the catalogue of which fills eight pages in 4to. of sir J. Hawkins's hist. of music, he seems to have been such an indefatigable copyist, that he is said to have transcribed with his own hand, very neatly and accurately, a collection of music which sold after his decease for near 100l.

Mr. Walpole, in his anecdotes, says, that "Woolaston the painter, who was a good performer on the violin and flute, had played at the concert held at the house of that extraordinary person, Thomas Britton the small-coal man, whose picture he twice drew, one of which was purchased by sir Hans Sloane, and is now in the British museum: there is a mezzotinto from it. T. Britton, who made much noise in his time, considering his low station and trade, was a collector of all sorts of curiosities, particularly drawings, prints, books, manuscripts on uncommon subjects, as mystic divinity, the philosopher's stone, judicial astrology, and magic; and musical instruments, both in and out of vogue. Various were the opinions concerning him: some thought his musical assembly only a cover for seditious meetings; others, for magical purposes. He was taken for an atheist, a presbyterian, a jesuit. But Woolaston the painter, and the son of a gentleman, who had likewise been a member of that club, averred it as their opinions, that Britton was a plain, simple, honest man, who only meant to amuse himself. The subscription was but ten shillings a year; Britton found the instruments, and they had coffee at a penny a dish. Sir Hans Sloane bought many of his books and MSS. now

in the museum, when they were sold by auction at Tom's coffee-house near Ludgate."

We have in early life conversed with members of this concert, who spoke of him in the same manner. So late as the middle of the last century, mezzotinto prints of him were in all the print shops, particularly an excellent one by Smith, under which, and almost all the prints of Britton, were the following verses by Hughes, who frequently performed on the violin at the concerts of this ingenious small-coal man.

"Though mean thy rank, yet in thy humble cell
Did gentle peace and arts, unpurchased, dwell;
Well pleased Apollo thither led his train,
And music warbled in her sweetest strain.
Cyllenius so, as fables tell, and Jove,
Came willing guests to poor Philemon's grove.
Let useless pomp behold, and blush to find,
So low a station, such a liberal mind."

In most of the prints, he was represented with his sack of small-coal on his shoulder, and his measure of retail in his hand.

In the Guardian, N^o 144, Steele, speaking of the variety of original and odd characters, which our free government produces, says: "We have a small-coal man, who beginning with two plain notes, which made up his daily cry, has made himself master of the whole compass of the gammut, and has frequent concerts of music at his own house, for the entertainment of himself and friends."

But the assertion of sir John Hawkins, that Britton was the first who had a meeting that corresponded with the idea of a concert, is not correct: in the time of Charles I. and during the usurpation, at Oxford, meetings for the performance of *Fancies* in six and seven parts, which preceded sonatas and concerts, were very common. And in Charles the Second's time, Banister, father and son, had concerts, first at taverns and public houses, and afterwards at York buildings.

It is, perhaps, not a matter worthy of dispute; but we imagine, that it would be difficult to prove that Handel ever played at the small-coal man's concert. Handel was proud, and never had much respect for English composers. He had been caressed and patronized by princes and nobles so long, that he would as soon have gone into a coal-pit to play at a concert, as to the hovel of our vender of small-coal.

About the commencement of the last century, a passion prevailed among several persons of distinction, of collecting old books and MSS.: and it was their Saturday's amusement during winter, to ramble through various quarters of the town in pursuit of these treasures. The earls of Oxford, Pembroke, Sunderland, and Winchelsea, and the duke of Devonshire, were of this party, and Mr. Bagford and other collectors assisted them in their researches. Britton appears to have been employed by them; and as he was a very modest, decent, and unassuming man, he was a sharer in their conversation, when they met after their morning's walk, at a bookseller's shop in Ave-Maria lane. Britton used to pitch his coal sack on a bulk at the door, and dressed in his blue frock, to step in and spend an hour with the company. But it was not only by a few literary lords that his acquaintance was cultivated; his humble roof was frequented by assemblies of the fair and the gay; and his fondness for music caused him to be known by many dilettanti and professors, who formed themselves into a club at his house, where capital pieces were played by some of the first professional artists, and other practitioners; and here Dubourg, when a child, played, standing upon a joint-stool, the first solo that he ever executed in public.

We cannot terminate this article better than from Dr. Aikin's account of Britton. (Gen. Biog.) The circumstances of his death were as extraordinary as those of his life,
if

if the story is to be credited. A ventriloquist was introduced into his company by an acquaintance who was fond of mischievous jests. This man, in a voice, seemingly coming from a distance, announced to poor Britton his approaching end, and bid him prepare for it by repeating the Lord's prayer on his knees. Britton, whose mystical and magical books, had probably made him credulous, obeyed the injunction; went home, took to his bed, and actually died in a few days. This was in September 1714. He was buried with a very respectful attendance in Clerkenwell church-yard.

BRITUIN, in *Geography*, a cape on the west coast of Nova Zembla. N. lat. $74^{\circ} 40'$. E. long. $52^{\circ} 14'$.

BRIVA Isara, in *Ancient Geography*, a place of Gaul, on the Isara or Oise, a little north of its confluence with the Sequana or Seine.

BRIVAS, a place of Gaul, belonging to the Averni, upon the Elaver or Allier, a little north of Condate: famous as the burial place of St. Julian, near which the emperor Avitus was interred in 456. See **BRIOUDE**.

BRIVATESPORTUS, or **GESOBREVATE**, *le Croisic*, a place of Gaul, at the mouth of the Loire, near its union with the river Herius or Vdaine, according to Ptolemy.

BRIUEGA, or **BRIOCA**, in *Geography*, a small town of Spain, in Cathle, seated on the Tajuna, having a castle. It trades in wool and fluffs. In 1710, general Stanhope, commander of the English forces, was obliged to surrender himself and his men prisoners of war at this place.

BRIVES, a town of France, and principal place of a district, in the department of Correze, situate in a fertile valley on the Correze; 4 leagues S. W. of Tulle. The place contains 5762, and the canton 13,685 inhabitants: the territory comprehends 195 kilometres, and 11 communes. This is a considerable place, lively, and very populous. The surrounding country produces wine, and nut oil, and abounds in wood. The town has some manufactures, and is adorned by many neat churches. N. lat. $45^{\circ} 10'$. E. long. $1^{\circ} 40'$.

BRIVESAC, a town of France, in the department of the Correze; 6 leagues E. of Brives.

BRIVIO, **GIOVANNI**, in *Biography*, an Italian singing-master, and composer of Milan, where he opened a singing-school in 1730. The celebrated Salimbeni, Appianini, and Mancini, were his scholars; as was Giulia Frasi, who was so long a favourite singer in England, and who, though only a second rate performer at the Opera, was many years the best female singer at our concerts, and in Handel's Oratorios.

Brivio, as a composer, had considerable merit, and furnished the lyric theatres of Italy with several successful operas.

BRIVIO, in *Geography*, a town of Italy, in the Milanese, on the road from Bergamo to Como.

BRIX, a town of France, in the department of the Channel; 5 miles W. of Valognes.

BRIXA, *Le*. See **LEBRIXA**.

BRIXELLUM, in *Ancient Geography*, a town of Gallia Cispadana; now **BRESELLO**, which see.

BRIXEN, *Bozen*, in *Geography*, a district of the Tyrol, in Germany, is situated among the Rætian Alps, and is very fruitful, especially in wine. The prelate has a revenue of about 30,000 crowns per annum, and is a prince of the empire and state of the circle of Austria: though in ecclesiastical matters, he is suffragan to the archbishop of Salzburg. He has a vote and a seat in the diet of the empire, and furnishes his contingent of taxes and imposts. The religion of the diocese is Roman catholic; but among the peasants there are some Lutherans: the capital is Brixen.

BRIXEN, the capital of the preceding bishopric, seated on the river Eysach, at some distance south of the Brenner mountains. It is surrounded with hills and vineyards, and is a well-built populous town; the houses being adorned

with piazzas, and painted on the outside. It has many public buildings, exclusive of the cathedral, which are handsome, and several spacious squares; the mineral waters in its vicinity cause it to be much frequented. In 1080, a council was held here by the emperor Henry IV. which deposed pope Gregory VII. This town was taken by the French in March 1796. N. lat. $46^{\circ} 35'$. E. long. $11^{\circ} 50'$.

BRIXENSTADT, a town of Germany, in the circle of Franconia, and principality of Anspach, affording an asylum for involuntary homicides; 16 miles E. N. E. of Wurzburg.

BRIXIA, in *Ancient Geography*, a town of Regio Transpadana, belonging to the Cenomani, seated on the Mela; now **BRESCIA**, which see.

BRIXIA, a river of Sufiana, which discharges itself into the Persian gulf, and which rendered the coast dangerous, according to Pany, by the quantity of mud deposited by it.

BRIXTON BAY, in *Geography*, lies on the west side of the isle of Wight, and is an open bay to the north-west from the south point of this island. The ground is rocky, and in swelling seas or winds in shore, it does not afford a desirable retreat nor a safe anchorage.

BRIZA, *Quaking grass*, in *Botany*, ($\beta\rho\iota\zeta\omega$, to nod,) Linn. 84. Reich. 90. Schreb. 115. Gærtn. 6. Tab. 1. Juss. 32. La Marek, Tab. 45. Smith Flor. Brit. 34. Class. triandria digynia. Nat. Ord. Gramina. Gen. Char. Cal. glume many-flowered, two-valved, spreading, blunt, collecting the flowers into a subcordate, two-rowed spikelet. Cor. two-valved; the lower valve the size and figure of the calyx, the upper one very small, flat, roundish, enclosing the other. Nect. two-leaved; folioles linear, crenulate. Stam. filaments three, capillary, oblong. Pist. germ, roundish, spreading. Stigmas, plumose. Peric. none; the corolla unchanged contains the seed, and when ripe, opens and drops it. Seed, one, adhering to the corolla, compressed. Eff. Char. Cal. bivalved, many-flowered; little spikes two-rowed. Cor. two-valved, ventricose, with cordate obtuse valves; seed adhering to the corolla, depressed.

La Marek observes, that Briza is too nearly allied to Poa, to make a good distinct genus. He has, however, kept them separate, but judging that what has been called a multivalve calyx in Uniola, its principal difference from Briza, is nothing more than two or three abortive florets, he has abolished the genus, and described its species under Briza. In agreement with the greater number of authors, we have thought it best to preserve the original distribution. Species 1. *B. minor*. Lin. (Eng. Bot. 1316,) *aspera*, Knap. (Gram. Brit. 61.) "Spikelets triangular, seven-flowered; calyx longer than the florets, stipule very long, lanceolate." Dr. Smith. Root fibrous, small, annual. Culm erect, about seven inches high, round, roughish, with minute spines pointing downwards, leafy, often branched at the base. Leaves sheathing, erect, lanceolate, acute, flat, of a pleasant green, striated, rough at their margin. Sheath striated, smooth. Stipule lanceolate, very long, embracing the stem, decurrent, adhering to the leaf above, very tender. Panicle spreading widely; branches growing two together, branchlets dichotomous, divaricated, capillary, rough, green. Spikelets pendulous, trembling, deltoid, smooth, beautifully variegated with white and green, with about seven flowers. Calyx-glumes nearly equal, concave, very obtuse, striated, membranaceous at the margin, longer than the florets. Florets alternate, gradually smaller; inner glumes very small, emarginate. Dr. Smith describes the culm as smooth, but in specimens sent us from the west of England, it has a slight roughness, just sensible to the touch, and visible with a strong magnifier. We have, therefore, followed Mr. Knap in this part of the description. The greater length of the calyx is most observable when the panicle has just burst from its sheath. At a more advanced period

period the distinction nearly disappears. It is a rare plant in England, peculiar to the southern counties, and chiefly found in Cornwall. 2. *B. media*, Linn. common quaking grass, cow-quakes, shakers, ladies-hair, bird's eyes. Eng. Bot. 340. Knap. Gram. Brit. 60. "Spikelets ovate, seven-flowered, calyx shorter than the florets, stipule very short, obtuse." Dr. Smith. *Root* perennial, fibrous, elongated. *Culm* erect, round, leafy, very smooth. *Leaves* acute, flat, striated, a little rough. *Sheaths*, very long, striated, smooth. *Stipule* very short, obtuse, scarcely decurrent, not adhering to the leaf above. *Panicle* widely spreading, many-flowered, branches growing by twos, branchlets as in the *minor*, but brown, not green. *Spikelets* pendulous, trembling, ovate, or a little heart-shaped, smooth, shining, variegated with white and brown. *Calyx* glumes nearly equal, concave, obtuse, scarcely striated, scarious at their margin. *Florets* as in the *minor*. Dr. Smith. Common in the dryish meadows of Europe, and other parts of Europe. It has no peculiar excellence, and has never been cultivated separately. 3. *B. virens*, Linn. "Spikelets ovate, seven-flowered: calyx equal to the florets." Very like the preceding, but the leaves are twice as broad. *Root* annual. *Stipule* acute, decurrent, adhering to the leaf above. *Panicle* fuller, green, more branched; branchlets much divaricated, occasioned by callous knots depressing them at their base. *Flowers* rather smaller, readily falling off when shaken. Native of the Levant, Spain, &c. Introduced into England, 1787, by Mr. Zier. 4. *B. geniculata*, Willd. "Spikelets ovate, calyx shorter than the flowers, culm geniculate." Thunb. Cape of Good Hope. 5. *B. Capensis*. (*Poa Brizeides*, Linn. Sup.) "Spikelets ovate, ten-flowered, panicle close. Thunb." Pedicels simple. Cape of Good Hope. 6. *B. maxima*, Linn. "Spikelets cordate; florets seventeen." *Root* annual. *Leaves* broad. *Culm* about a foot and half high. *Spikelets* very few, very large, shining, scarious, variegated with green and white. *Peduncles* simple. Italy, Portugal, Cape of Good Hope, India. 7. *B. eragrostis*, Linn. "Panicle oblong; spikelets lanceolate, many-flowered." La Marck. *Root* annual. *Culm* from five to seven inches high, decumbent near the bottom. La Marck observes, that it is nearly allied to *Poa eragrostis*, and Willdenow doubts whether it be more than a variety of it; but Villars asserts that it may always be distinguished by the outer valve of the corolla, which is concave, pellucid, with a nerve running along the middle, and two along the edge. South of Europe. 8. *B. monspessulana*, Allion. "Spike nodding, simple; spikelets alternate, peduncled, subsolitary, ovate; calyx five-flowered." Martyn's Miller.

BRIZACA, in *Ancient Geography*, a town of Asia, in Armenia Major. Ptolemy.

BRIZANA, a river of Asia, in Persia Propria. Its mouth was dangerous, according to Arrian, on account of the banks and rocks with which it abounded. Ptolemy calls this river Brisoana.

BRIZE, in *Agriculture*, a word that signifies such lands as have remained long without tillage.

BRIZE-vents, or BRISE-vents, a kind of shelters used by gardeners, who have not walls on the north side, to keep the cold winds from damaging their melon-beds.

Brize-vents are enclosures six or seven feet high, and an inch thick, made of straw, supported by stakes fixed into the ground, and props across both inside and outside, fastened together with willow twigs, or iron-wire.

BRIZEMBOURG, in *Geography*, a town of France, in the department of the Lower Charente, and district of St. Jean d'Angely; $2\frac{1}{2}$ leagues S. of St. Jean d'Angely.

BRIZEN, a town of Germany, in the circle of Upper Saxony, and Middle Mark of Brandenburg; 4 leagues N. of Wittenberg.

BRIZIO, or BRICCIO, FRANCESCO, in *Biography*, a painter of architecture and landscape, was born at Bologna in 1574, and educated first in the school of Passerotti, and afterwards under Ludovico Caracci. Having applied with great diligence to the study of the principles of perspective and architecture, he acquired a style in his compositions of such distinguished excellence, that his pictures were much admired, not only for the truth of the perspective, and the beauty of the colouring, but also for the grandeur of his ideas, the majestic style of the architecture, the elegance of the ornaments, and the noble taste of landscape, which he introduced to set off his buildings. He was also an engraver, and is said to have assisted Agostino Caracci in the plates which he engraved; we have also some etchings by this master. Of his prints we may mention his "Holy Family," from Correggio; "St. Roch," from Parmigiano; the "Flight into Egypt," from Ludovico Caracci; and "Christ and the Woman of Samaria," from Agostino Caracci. He died in 1623. Pilkington. Strutt.

BROACH, BROCHA, in *Middle Age Writers*, denotes an awl or bodkin. Among us broach is chiefly used for a steel instrument serving to open holes in metals. It is sometimes also applied to a stick on which thread or yarn is wound; and, in the North, to a sort of wooden needles used in knitting certain coarse things.

See an account of the broach used in weaving tapestry, under TAPESTRY.

In some part of England, a spit is called a broach and hence also to broach a barrel, is to tap it. The ancient lords received from their tenants a fee or tribute, called *pertusagium* for the liberty of broaching a kag of ale.

The term *broach*, or *broche*, is also used in Scotland to denote a certain utensil used by the Highlanders for fastening their vest, and resembling the "fibula" of the Romans. This broach is commonly of silver, of a round figure, and furnished with a tongue, crossing its diameter, and serving to fasten the folds of the garment: some have two tongues, one on each side of a cross bar in the middle. Ancient broaches of elegant workmanship, and richly ornamented, are preserved in several families; some of which are inscribed with names, to which particular virtues were ascribed, and others furnished with receptacles for relics, supposed to defend from harm: so that they seem to have been used not only in dress, but for the purpose of amulets.

BROACH, in *Geography*. See BAROACH.

BROACH to, is when a ship sailing large suddenly flies up to the wind, in consequence of the difficulty of steering; or of bad steerage, &c. so that the sails are all taken aback.

BROAD-ARROW, in *Heraldry*, differs from the *pheon* by having the inside of its barbs plain.

BROAD Bank, in *Geography*, a bank on the coast of Flanders, the south end of which is about 4 or 5 leagues N. E. by N. from Calais cliff. On the west side between this and Rattle-bank is a channel of 18 or 19 fathoms.

BROAD Bay, a bay of America, in the district of Maine, lying on the line of Lincoln and Hancock counties, bounded by Pemaquid point on the west, and Pleasant point on the east.

BROAD Bay, on the coast of Wales. See ST. BRIDE'S Bay.

BROAD-cast Husbandry, in *Agriculture*, that sort of arable cultivation in which the seed is put into the soil by the hand without the aid of machinery. In this way the seeds are scattered over the surface of the ground, without being confined in regular rows, as is the case in the drill method, which is mostly opposed to it. The putting of the seed into the earth in this way seems better suited to the stony and more stiff kinds of land, than that by means of machines, as they must constantly be liable to be put out of order, and of course

to deposit the seed in an irregular manner. See HUSBANDRY.

BROAD-cast Sowing, that mode of putting grain, turnips, pulse, clover, grasses, &c. into the earth, by dispersing them over the surface by the hand. See SOWING.

BROAD Fourteens, in *Geography*, the name of a sand which lies 5 or 6 leagues N. E. from the Texel, extending by a small tail N. from the Texel, and N. W. by N. from Flyer Vlieland island towards the south. Upon this sand are generally 14 fathoms of water, and between it and the land from 18 to 19, and more northerly 20 fathoms.

BROAD Haven, a considerable harbour of the county of Mayo, Ireland, lying between Urris and Binwy heads. It is very extensive, has good ground, and water of sufficient depth for any ship; but is so much exposed to northerly winds, that there is not room for more than two large ships in well sheltered anchorage. Small vessels, however, may go farther up, and lie very safe on soft sand, with three or four feet water under them at low water. The western shore of this bay is formed by the peninsula of the Mullet, sometimes erroneously represented as an island. There are at present only a few fishing villages on the coast of this harbour. About two miles N. by E. of Binwy head are three or four very remarkable rocks, called the *Stags of Broadhaven*. Lon. between $9^{\circ} 40'$, and $9^{\circ} 49'$ W. Lat. $54^{\circ} 19'$ N.

BROAD piece, in *Coinage*, a denomination given to certain gold pieces broader than a guinea; particularly Caroluses and Jacobuses.

BROAD River, in *Geography*, an arm of the sea, extends along the west and north-west sides of Beaufort or Port Royal island, on the coast of South Carolina, and receives Coosa river from the north-west, which may be also called an arm of the sea. These two arms embrace all the islands between Coomabee river and Dawfuskee sound, with which Broad river also communicates. Channels between Broad river and Coosa form the islands. The entrance through Broad river to Beaufort harbour, which is one of the best in the state, lies between Hilton's head and St. Phillip's point.

BROAD River, or *Cherakee-haw*, a water of Savannah river, from the Georgia side, which empties into the Savannah at Petersburg.

BROAD River, in South Carolina, rises by three branches from the N. W. viz. the Ennoree, Tiger, and Packolet, which unite about 40 miles above the mouth of the Saluda river; and this, with Broad river, forms Congaree river. Broad river may be rendered navigable 30 miles in North Carolina.

BROAD-Sand, lies on the west side of the buoys of the channel in the Zuyder sea, within the Texel.

BROAD-side, in the *Sea-Language*, a discharge of all the guns on one side of a ship at the same time.

A broad-side is a kind of volley of cannon, and ought never to be given at a distance from the enemy above musket-shot at point blank.

BROAD Sound, in *Geography*, is the opening from the S. W. into the roads and harbours of the Scilly islands. In this sound there is good anchorage, when St. Mary's island on the E. S. E. and Samson island to the W. N. W. and the S. point of Treco island on the N. are nearly at the same distance of about a mile.—Also, a sound in the N. W. point of France, called by the French "Passage de Liroise," lying between Point de Sant and the island of Ushant, and extending to sea about 5 leagues from St. Matthew's point.—Also, a sound on the coast of Norway, between which and the north part of Stadland are Flowack islands.—Also, the sound which is the entrance into Boston harbour from the

N. E. in a direct line for Nick's Mate island.—Also, a sound in the South Pacific ocean, on the east coast of New Holland, within the bay of Inlets, having cape Palmerston for its N. W. entrance. It is separated from Thirsty sound by an island lying in the direction of S. S. E. and S. called Long island. S. lat. $21^{\circ} 30'$ to $21^{\circ} 50'$. E. long. $149^{\circ} 20'$.

BROAD-flairs Pier, lies within the bight of the point between the north Foreland and Ramsgate, and nearly at west from the Foreland.

BROAD-stone, in *Building*, a species of free-stone, thus denominated because it is raised broad and thin out of the quarries; or not exceeding two or three inches in thickness; chiefly used for paving.

BROAD-wheeled Waggon. See WAGGON.

BROAD-worm, in *Zoology*, synonymous with *lumbricus latus* of old writers. See TÆNIA, and TAPE-WORM.

BROADALBIN, in *Geography*, a township of America, in Montgomery county, New York; containing, by the state-census of 1796, 277 inhabitants, who are electors.

BROADFIELD, a post town in Westmoreland county, Virginia; 96 miles from Washington.

BROADKILL, a post town in Sussex county, Delaware; 166 miles from Washington.

BROADLEY, a town of Poland, in the principality of Belez: 48 miles E. of Belez.

BROBACH, a town of Germany, in the circle of the Lower Rhine, and electorate of Treves; 15 miles S. E. of Treves.

BROCADE, in *Commerce*, a sort of stuff, or cloth of gold, silver, or silk, raised and enriched with flowers, foliages, or other figures, according to the fancy of the manufacturer.

Formerly, the term was restrained to cloths woven either wholly of gold, both of wool and warp, or of silver, or of both together; but by degrees it came likewise to pass for such as had silk intermixed, to fill up and terminate the flowers of gold and silver. At present, any stuff of silk, satin, or even simple taffaty, when wrought and enriched with the flowers, &c. obtains the denomination of brocade.

In the manufacture of brocades, the flattened gilt wire is spun in threads of yellow silk, approaching as nearly as possible to the colour of gold itself. The wire, winding off from a bobbin, twists about the thread as it spins round, and by means of curious machinery, a number of threads are thus twisted at once by the turning of one wheel. The principal art consists in so regulating the motion, that the several circumvolutions of the flattened wire in each thread may just touch one another, and seem as it were, one continued covering. At Milan, it is said, there is made a sort of flattened wire, gilt only on one side, which is wound upon the thread, so that only the gilt side appears; the preparation of this wire is kept a secret, and has been attempted in other places with little success. There is also a gilt copper wire, made in the same manner as the gilt silver. Savary observes, that this kind of wire, called false gold, is prepared chiefly at Nuremberg; and that the ordinances of France require it to be spun, for its distinction from the gilt silver, on flaxen or hempen threads. The Chinese, instead of flattened gilt wire, use slips of gilt paper, which they both interweave in their stuffs, and twist upon silk threads; but whatever be the pretended beauty of the stuffs of this kind of manufacture, it is obvious that they must want durability: accordingly, the Chinese themselves, as we learn from Du Halde, sensible of this imperfection, scarcely use them any otherwise than in tapestries, and such other ornaments as are not intended to be much worn or exposed to moisture.

The Venetians have carried on a large trade, to the Levant, in a kind of brocade called *damasquette*, which, though

though it has only about half the quantity of gold or silver as that made among us, looks far more beautiful. The flattened wire is neither wound close together on the silk threads, nor the threads struck close in the weaving; yet, by passing the stuff betwixt rolls, the disposition and management of which is kept a secret, the tissue or flower is made to appear one entire brilliant plate of gold or silver. The French ministry judged this manufacture important enough to deserve their attention; and accordingly, for contriving the machinery, they engaged the ingenious M. Vaucanson, known throughout Europe for his curious pieces of mechanism, who, in the memoirs of the academy for the year 1757, gives an account of his success, and of the establishment of such a manufacture at Lyons.

The lower roll is made of wood, thirty-two inches in length and fourteen in diameter; the upper one of copper, thirty-six inches long and eight in diameter: this last is hollow, and open at one end, for introducing iron heaters. For making the rolls cylindrical, he has a particular kind of lathe, wherein the cutting tool, which the most dexterous hand could not guide in a straight line through such a length as thirty-six inches, is made to slide, by means of a screw, on two large steel rulers, perfectly straight, and capable of being moved at pleasure, nearer, and always exactly parallel, to the axis of the roll.

He first disposed the rolls nearly as in the common flattening mill. In this disposition, ten men were scarcely sufficient for turning them with force enough to duly extend the gilding; and the collars, in which the axis of the rolls turned at each end, wore or galled so fast, that the pressure continually diminished, insomuch that a piece of stuff of ten ells had the gilding sensibly less extended on the last part than on the first. He endeavoured to obviate this inconvenience by screwing the rolls closer and closer in proportion as the stuff passed through, or as the wearing of the collars occasioned more play between them; but this method produced an imperfection in the stuff, every turn of the screw making a sensible bar across it. To lessen the attrition, each end of the axes, instead of a collar, was made to turn between three iron cylinders, called friction-wheels: but even this did not answer fully, for now another source of unequal pressure was discovered. The wooden roll, being compressible, had its diameter sensibly diminished: it likewise lost its roundness, so that the pressure varied in different points of its revolution. On trying different kinds both of European and Indian woods, all the hard ones split, the soft ones warped without splitting, and, of more than twenty rolls, there was not one which continued round for twenty-four hours even without being worked in the machine.

These failures put him upon contriving another method of pressing the rolls together, so that the force should always accommodate itself to whatever inequalities might happen. The axis of the copper roll being made to turn between friction wheels as before, that of the wooden one is pressed upwards by a lever at each end furnished with a half collar for receiving the end of the axis. Each lever has the end of its short arm supported on the frame of the machine, and the long arm is drawn upwards by an iron rod communicating with the end of the short arm of another lever placed horizontally: to the long arm of this last lever is hung a weight, and the levers are so proportioned, that a weight of 30 pounds presses the rolls together with a force equivalent to 17.536 pounds, which was found to be the proper force for the sufficient extension of the gilding. By this contrivance four men can turn the rolls with more ease than ten can turn those which are kept together by screws; and the same weight acting uniformly in every part, the pressure continues

always equal, though the wooden roll should even become oval, and though the stuff be of unequal thickness.

A piece of cloth, of about two ells, is sewed to the beginning and end of the stuff, to keep it out to its width when it enters and parts from the rolls, which could not be done by the bands for fear of burning or bruising them: as it would take too much time to sew these cloths to every small piece of an ell or two, a number of these is sewed together. The stuff is rolled upon a cylinder, which is placed behind the machine, and its axis pressed down by springs to keep the stuff tight as it comes off. Four iron bars, made red-hot, are introduced into the copper roll, which in half an hour acquires the proper degree of heat, or nearly such a one as is used for the ironing of linen: the wooden roll is then laid in its place, and the machine set to work. If more than thirty ells are to be passed at once, the wooden roll must be changed for another, for it will not bear a longer continuance of the heat without danger of splitting, and therefore the manufacturer should be provided with several of these rolls, that when one is removed, another may be ready to supply its room: as soon as taken off from the machine, it should be wrapt in cloth and laid in a moist place.

The principal inconvenience attending the use of this machine is, that the heat necessary for extending the gilding, though it improves the brightness of white and yellow silks, is injurious to some colours, as crimson and green. A double pressure will not supply the place of heat: and the only method of preventing this injury, or rendering it as slight as possible, appeared to be to pass the stuff through with great celerity.

Rich brocades may be cleaned, and the lustre of them recovered, by washing them with a soft brush dipped in warm spirit of wine.

Neither alkaline liquors nor soap should be used for this purpose; because the former, while they clean the gold, corrode the silk, and change or discharge its colour, and the latter also alters the shade, and even the species of certain colours. But spirit of wine may be used without any danger of its injuring either the colour or the quality of the subject, and, in many cases, it proves as effectual for restoring the lustre of the gold, as the corrosive detergents.

Spirit of wine seems to be the only material adapted to this intention; however, this is not proper in all cases: for if the base metal, with which the gold of the covering was alloyed, has been corroded by the air, the particles of the gold may thus be disunited; and the silver underneath, tarnished to a yellow hue, may continue a tolerable colour to the white; but in such cases the removal of the tarnish would be prejudicial to the colour. See Lewis's *Com. Philosophico-Technicum*, p. 62. 226.

BROCADE-SHELL, in *Conchology*, a trivial name given sometimes to *CONUS GEOGRAPHICUS*. Linn. In a more general sense, the epithet brocade, synonymous with the French *brocard*, is applied to various other objects of natural history, whose disposition of colours, and markings, bear a fancied resemblance to that sort of stuff, silk, cloth, and which is commonly understood by the word brocade. Brocard among the French, and brocade with us, is not, therefore, the language of naturalists, but of dealers, and unscientific collectors.

BROCARDICS, BROCARDICA, denote maxims or principles in *Law*; such as those published by Azo, under the title of *Brocardica Juris*.

Vossius derives the word from the Greek *πρωταρχια*, q. d. *first elements*. Others, with more probability, from *Burchard*, or *Brochard*, bishop of Worms, who made a collection of canons, called from hence *Brocardica*; and as this work

work abounded much in sentences and proverbs, the appellation *brocardia* became hence extended to every thing.

BROCA TEL L. called by the French *brocardel*, an ordinary kind of stuff made of cotton, or coarse silk, in imitation of *brocade*; chiefly used for tapeltry and other furniture. That manufactured at Venice is the most esteemed.

BROCA TEL LO, a name given by lapidaries to a calcareous stone or marble, composed of fragments of four colours, white, grey, yellow, and red.

BROCCO, in *Geography*, a town of Naples, in the county of Lavara, 5 miles W. of Capua.

BROCCOLI, in *Botany and Gardening*. See *BRASSICA OLERACEA*.

BROCHOS, in *Surgery*, is a term of doubtful signification. It has been considered by some as a Greek name for the *liqueur*, or noose; and by others, as denoting bandages in general. Castellus informs us, that this word relates to certain chyrurgical instruments; and he refers to the authority of Galen and Oribasius. It has also been considered as expressive of a privation of voice, or aphonia. Persons having a very large and prominent upper lip, have been denominated *brochi*: although Dr. Turton, in his Medical Glossary, says, that *brochus* signifies one who has "the chin and nether lip sticking out."

BROCHUS, in *Ancient Geography*, a town of Phœnicia, situate near a marsh, between Libanus and Antilibanus. Polybius.

BROCK, among *Sportsmen*, sometimes denotes a badger, otherwise called a grey *brock*.

BROCK, and **BROCKET**, are also used to denote a hart of the third year.

BROCKDROP, in *Geography*, a town of Germany in the circle of Lower Saxony, and duchy of Holstein; 6 miles W. of Krempe.

BROCKEL, or **BRAKEL**, a town of Germany, in the circle of Westphalia, and county of Verden; 5 miles E. of Rotenburg.

BROCKEN. See *HARTZ*.

BROCKLESBY, RICHARD, in *Biography*, who attained to considerable eminence, and acquired a splendid fortune by the practice of medicine in London, was of a respectable family of Cork, in Ireland, but was born at Monchead in Somersetshire, where his mother was on a visit to one of her relations at the time of his birth. This happened on the 11th of August, 1722. His parents were quakers; but it does not appear that they were solicitous to initiate him in the principles of that sect. At an early age he was sent to a famed academy at Ballymore, in the north of Ireland. There he formed an intimacy with Edmund Burke, which was improved into the most cordial friendship when they met together afterwards in London. Having completed his school education, he went to Edinburgh, and after attending the lectures of the professors in the different branches of medicine there, he proceeded to Leyden, and took his degree of doctor, under the celebrated Gaubius, in June, 1745, giving, for his inaugural thesis, a dissertation "*De Saliva sana et morbida*." The following year he came to London, and settled in Broad-street: and as the income allowed him by his father was not large, and he found that sum not much increased, for the first few years, by the profits of his profession, he determined to regulate his expences in such a manner, as to secure him from the misery of dependence. "Never suffering himself," as he was used to say, "to have a want that was not accommodable to his fortune." The same year he published an Essay concerning the Mortality of the Horned Cattle, which contributed to extend his

VOL. V.

name and character. In 1751 he was admitted a licentiate in the Royal College of Physicians, in London. In 1754 he received an honorary degree of doctor in medicine, from the university of Dublin, and the following year he was admitted by the university of Cambridge, *ad eundem*. He then became a candidate, and in June, 1756, was elected a fellow of the College of Physicians. As his practice was now much increased, and by the prudence of his conduct, and the suavity of his manners, he had conciliated to himself the friendship of his professional brethren, he was, by their recommendation, appointed physician to the army by Lord Birrington. In this capacity he went to Germany, and continued there, until a few months before the conclusion of the war, in 1763. The following year he published the result of his observations and practice, under the title of "*Economical and Medical Observations, from 1738 to 1763*," 8vo. He now returned to London, and settled in Norfolk-street, in the Strand. His fortune was by this time increased by an estate of 600*l.* per annum, which devolved to him on the death of his father; and the duke of Richmond, and five other noble personages, agreed to give him pensions of 100*l.* per annum each, as a recompence for attending their families. This, with his half-pay from the army, made up a handsome income; and as he possessed that aidemanly virtue, as dean Swift calls it, discretion, he was enabled to keep a carriage, and to live with some degree of splendour. Soon after he was made a fellow of the Royal Society: and not being incumbered with a family, he dedicated what time he could spare from attending his patients, &c. to reading, or to associating with persons eminent for literature and science. On his suggestion, a professorship in chemistry was added to the establishment of the college at Woolwich; and on his recommendation the late Dr. Adair Crawford, author of an ingenious philosophical treatise on heat, was appointed the first professor. Though it has been intimated, that the doctor's habits were frugal and economical, yet there are abundant proofs he was not deficient in liberality. On being informed that Dr. Johnson, with whom he cultivated a strict intimacy, wished, in the latter part of his life, to visit the continent for the recovery of his health, but was restrained from going, by the narrowness of his circumstances, he, in a handsome and delicate manner, made him an offer of an annuity of 100*l.* per annum for the remainder of his life; and on Dr. Johnson's declining to accept the offer, he pressed him to reside in his house, as more airy and healthy than that in which he then lived. To his friend Edmund Burke he sent 100*l.* which he told him he had intended leaving him at his death, but thought it might then come to him, at a time when it would be of little use. The present was accepted, in a manner which shewed that the doctor was not wrong in his conjectures. In the year 1794, finding the infirmities of age increase fast upon him, he gave up his half-pay in the army, and declined, excepting among his particular friends, visiting patients. A little before this time, his patron and friend, the duke of Richmond, had appointed him physician-general to the royal regiment of artillery, and corps of engineers. This he retained, as giving him occasion of going to Woolwich, and visiting the laboratory there, to which he was attached. In the beginning of December, 1797, he went to Beaconsfield, to the house of Mrs. Burke, the widow of his deceased friend, where he continued a few days, and returned on the 11th of the month, to dine with his two nephews, Mr. Beby and Dr. Young, the charge of whose education he had taken principally upon himself. Though much fatigued with his journey, he appeared pleased with the interview,

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and

and supported his part of the conversation with cheerfulness. At nine he retired to rest, but found the labour of going up stairs almost too much for him; and observed, "What an idle piece of ceremony this buttoning and unbuttoning is to me now." After sitting some minutes in a chair to recruit himself, he went to bed, and in a few minutes quietly expired. His fortune, which is said to have exceeded 30,000*l.* was left between his two nephews, a few legacies to friends and distant relations excepted.

As Dr. B. was of a quiet and peaceable disposition, he was not likely to enter into any serious broil; he was, however, at one time, obliged to accept a challenge. The occasion was this; the late doctor, afterwards Sir John Elliot, in the course of his attendance on a patient with Dr. B. had made use of means to obtain the favour of the family of the patient, which were not compatible with the character of a gentleman. Of this Dr. B. talked openly, and the expressions he used on the occasion were reported to Dr. Elliot, with an intimation, that if he did not insist on an apology from his antagonist, no one would, hereafter, meet or associate with him. A duel was the result, which, however, terminated without the effusion of blood, the seconds having taken care to place the combatants at such a distance, that their balls, if they should hit, would do no mischief.

Besides the works mentioned before, Dr. B. was author of "*Oratio Harveiana*," published 1760, 4to.; "*An Account of a poisonous Root lately found mixed with Gentian*," Phil. Trans. No. 486.; "*Experiments on cutting the tendons, in various animals*," *ibid.* vol. 43.; "*Case of a Lady labouring under Diabetes*," Med. Obs. vol. 3.; "*Experiments relative to the Analysis of Seltzer Water*," *ibid.* vol. 4.; "*Case of an Encysted Tumour in the Orbit of the Eye*," *ibid.*; and "*A Dissertation on the Music of the Ancients*," supposed to be written in the early part of his life.

BROD, a fortified town of Slavonia, seated on the Save, and famous for a victory gained over the French in 1688. N. lat. 45° 20'. E. long. 18° 36'.

BROD, *Bomisch*, a town of Bohemia, in the circle of Kaurzim; reduced to ashes in 1637, and since rebuilt; 7 miles N. W. of Kaurzim.

BROD, *Teutsch*, a town of Bohemia, in the circle of Czaslau, on the Sazava, taken by the allies in 1741; 20 miles S. S. E. of Czaslau.

BROD, *Ungarisch*, a town of Moravia, in the circle of Hradisch; 8 miles S. E. of Hradisch.

BRODEAU, JOHN, (Lat. *Brodeus*), in *Biography*, a learned critic, was born at Tours about the beginning of the 16th century, and having studied law at Bourges under Alciatus, devoted himself to the belles lettres. He travelled into Italy, and formed connections with Sadolet, Bembo, Manutius, and other literary characters. After his return to France, he distinguished himself by several works of criticism, the principal of which is a collection of observations, corrections, explanations, &c. of ancient authors, entitled "*Miscellanea*." The first six books of this work were published in the second volume of Gruter's "*Lampas, seu Fax Artium*," in 1604; and the four latter books in the fourth volume of the same collection. In his notes on Euripides, he has been charged with plagiarism. He was also versed in mathematics, and the oriental languages, as well as classical literature. He died at Tours, where he was canon of St. Martin, in 1563. Gen. Dict.

BRODENFELD, in *Geography*, a town of Germany, in the circle of Upper Saxony, and territory of Vogtland; 3 miles E. of Oelsnitz.

BRODERA, a fortified town of Hindoostan, in the country of Guzerat; situate on the small river Dader, in the north-east part of the tract lying between the rivers Tapti and Myhie, through which the great road leads from Surat to Ougein. This is a modern town in comparison with several others, having been built by the son of the last king of Guzerat, near the site of an ancient town, formerly called Radipore, but now Old Brodera, which is entirely gone to decay. It stands in a very fertile, though sandy, country, has good walls and towers, and is full of artificers, who manufacture the finest stuffs of Guzerat, bafts, nicanees, cannaquins, cheloes, &c.; the cottons of Brodera are finer than those of Baroach, but narrower and shorter. Indigo is also an article of trade in this place, and the vicinity supplies gum-lac. The Dutch factory established at Brodera in 1620, was abandoned before the year 1670. N. lat. 22° 15' 30". E. long. 73° 11'.

BRODERIES, *Fr.* a term in *Musick* for embroidering or gracing a melody. It is equivalent likewise with *doubles*, variations, *fleurtil*, an old term for flourishing an air. All these terms are used for the notes of music which the performer adds to his part in the execution, to vary a melody often repeated, to embellish passages too plain and simple, or to shine by the activity of throat or finger. Nothing manifests the good or bad taste of a musician, says Rousseau, more than the choice and application of these ornaments. French vocal performers were very sparing of their *broderies* or graces in the middle of the last century; for if we except the celebrated Jeliote and mademoiselle Fel, no French singer durst venture to make a single change in his part on the stage. French melody had been for some years growing more slow, and lamentable, that it was capable of no improvement by graces. The Italians are unable to execute a melody quite plain: they give full scope to their memory or fancy, and try who can make the greatest number of changes; an emulation often absurd, and carried to an offensive excess. However, the accents of their melody are so strongly marked, that there is little fear of the air being so disguised, as not to be recognizable through all the performers' redundancies.

With regard to instruments, a solo player may do what he pleases; but a performer in a full piece, who dares embroider his part, was never suffered in a good orchestra.

BRODETZ, in *Geography*, a town of Bohemia, in the circle of Boleslaw, 5 miles S. of Jung Buntzlaw.

BRODIATORES, in the *Middle Age*, a kind of *librarii*, or copyists, who did not write the words and letters plain, but variously flourished and decorated, after the manner of embroidery. Du-Cange Gloss. Lat. tom. i.

BRODNITZ, in *Geography*, a town of Prussia, in the bishoprick of Culm; 30 miles E. of Culm.

BRODOW, a town of Germany, in the circle of Lower Saxony, and duchy of Holstein; 4½ miles N. E. of Newstadt.

BRODY, a town of Poland, in the palatinate of Lemberg; 30 miles S. of Lucko.

BRODZIEC, a town of Lithuania, in the palatinate of Minsk; 48 miles E. of Minsk.

BROECK, CRISPIN VANDEN, in *Biography*, a painter and engraver, was a native of Antwerp, and flourished about the year 1590. As a painter, he had some reputation in the historical line; but the prints engraved from his designs, which are numerous, evince him to have been a man of genius and great fertility of invention. Among the engravings that are attributed to him, is the "*Circumcision of Christ*," in *chiaroscuro*; the outline of which is etched in a bold free manner on copper; and the block of wood, which produces the lighter

tints, is so contrived as to imitate the hatchings of white chalk upon the lights.

The daughter of this artist, viz. "Barbara Vanden Broeck," learned to draw of her father, and was probably instructed in the art of engraving in the school of the Colaerte. Her progress, however, was such as to reflect no small credit on her talents. Mr. Strutt notices the following plates of her execution; the "Last Judgment," done altogether with the graver, and in the style of Martin Rota; a "Holy Family," with St. John and several angels; and another "Holy Family," with St. John kneeling, and attendant angels, published by Hendius, A. D. 1621.

BROECKHUYSE, JOHN, Lat. *Broukhufius*, an elegant scholar and Latin poet, was born at Amsterdam in 1649. Disliking the profession of an apothecary, to which he was apprenticed, he left his master, and entered on board an India ship; and by degrees became master of an armed vessel. In this situation he felt an inclination for letters and poetry; and, by the advice of Grævius, applied to the study of the Latin language, of which in a few months he made himself complete master. He afterwards abandoned his sea-faring employment, and devoted himself with ardour to classical studies. Whilst he was on board his ship, he wrote several pieces, one of which was entitled "Celadon, or Impatience to revisit his Country;" and a collection of his poems was published at Utrecht in 1684, by which he acquired great reputation. As a critic, under which character he excelled, he published valuable editions of Sannazarius, Propertius, Tibullus, and Aonius Palearius. He also translated into Latin father Rapin's "Parallel of Homer and Virgil." He died in 1707, and a monument was erected to his memory at Amsterdam, where he was interred. A splendid edition of his poems in 4to. was published at Amsterdam, in 1711. Moreri. Gen. Biog.

BROECKHUYSEN, BENJAMIN VAN, a Dutch physician of considerable learning and ingenuity, of the 17th century. After taking his degree of doctor in medicine at Leyden, he was made physician to the armies of the republic, and then physician to the fort and town of Bois le Duc. He was also known and esteemed by king Charles II. of this country, when resident in Holland.

His works are "*Œconomia Corporis animalis, seu Cogitationes succinctæ de Mente, Corpore, utriusque Conjunctione*," Noviomagi, 1672. "*Œconomia animalis ad Circulationem Sanguinis breviter delineata*," Gouda, 1685, 8vo. He was a follower of the system of Des Cartes, and maintained that the blood was heated in the heart by fire actually resident there; and to this he attributed the impulse it received, and which maintained and supported its circulation. "*Rationes philosophico-medice*," Haag, 1687, 4to, written in a florid and poetical style, explaining the animal economy on Cartesian principles. Haller. Bib. Anat. Eloy. Dict. Hist.

BROEK, ELIAS VANDEN, a painter, was born and studied at Antwerp in 1657, and became the disciple of Ernest Sturen, and studied De Heem, says Houbraken, or of Mignon, according to Descamps. He painted, in a loose, easy, and natural manner, all sort of fruits, flowers, frogs, and reptiles. He designed and coloured every object after nature. Broek died in 1711. Pilkington.

BROEK, in *Geography*, a town or rather a large village of North Holland, distinguished by the elegant neatness and beauty of the houses and streets, and also of the inhabitants. The houses, which are built of wood and covered with tiles, are painted and ornamented on the outside with a variety of vivid colours, according to the fancy of the owner; and the windows are generally shagged and decorated with curtains.

The inside of the houses is also equally neat and embellished. In the fronts of most of them are agreeable gardens, diversified with gravel walks, shell-work, images, and little hedges, or painted rails. The streets are paved with bricks, and watered by rivulets that pass by the sides of the houses; and in order to their being kept clean, they are too narrow to admit of carriages, nor are cattle suffered to pass through them. The same attention to neatness and ornament is manifest in the environs of Broek. The town is chiefly inhabited by persons who have retired from business, or who are connected with some commercial houses at Amsterdam. The females are beautiful, but singularly reserved, particularly among strangers. The principal articles of trade are cattle and corn. Broek is distant one league W. from Monikedam.

BROERS BANK, lies on the coast of Holland, across a village of the same name, and the cloyster of Ten Duyn, running W. N. W. about a league into the sea.

BROEUCQUES, JOHN FRANCIS DU, was born at Mons, in 1690. At a proper age he was sent to Louvain, and in 1712 was admitted doctor in medicine; having finished his studies there, he returned to Mons, where he was much esteemed for his professional abilities, and continued practising to the time of his death, which happened suddenly, July 11th, 1749. He published in 1725, in 12mo. "Réflexions sur la Méthode de traiter les Fièvres par le Quinquina." In this he combats, and successfully, some of the prejudices still remaining against the use of that medicine. "Preuves de la Nécessité de regarder les Urines, et de l'Usage que les Médecins en doit faire pour la Guérison des Maladies," 1729.

BROEUCQUES, ANTHONY FRANCIS, one of the sons of the former, took his degree in medicine at Louvain in 1747, and on the death of his father succeeded to his practice, in which he continued until 1767, the time of his death. Two small useful works, the result of much practice, were published by him: "Discours sur les Erreurs vulgaires, qui se commettent dans le Traitement des Enfants," Mons, 1754, 12mo. "Reformation des Erreurs vulgaires sur le Régime que la Médecine prescrit aux Malades et aux Convalescens," Mons, 1757, 12mo. Eloy. Dict. Hist.

BROGLING, a method of fishing for eels, otherwise called SNIGGLING.

BROGLIO, or BROIL, in *Geography*, a town of Piedmont, in the county of Nice, 15 miles N. E. of Nice. N. lat. 44° 12'. E. long. 6° 42'.

BROGNE, a town and abbey of the county of Namur; 10 miles W. S. W. of Namur.

BROILING OF MEATS, in *Domestic Economy*. See *DRESSING of Meats*.

BROJO CASTRA, in *Geography*, a town of European Turkey, in Livadia; 22 miles N. of Livadia.

BROKEN, among *Painters*, a colour is said to be broken, when it is taken down or degraded by the mixture of another.

BROKEN Arrow, or Clay-Catfka, in *Geography*, an Indian town in the Creek country, in West Florida, on the west side of Chatauche river; 12 miles below the Cusitah and Coweta towns, where the river is fordable.

BROKEN-BACKED, in *Sea-Language*, denotes the state of a ship which is so impaired and loosened in her frame, as to droop at each end; a disorder to which the French ships are most exposed, on account of their length, &c.

BROKEN Bay, in *Geography*, a capacious inlet, being the estuary of the Hawksbury and other rivers, on the eastern coast of New Holland, about 8 miles to the northward of Port Jackson. S. lat. 33° 20'. E. long. 151° 27'.

BROKEN Islands, a name given to an assemblage of rocky eminences,

eminences, for the most part barren, situate on the coast of Arracan, in the East Indies, and affording shelter only to pirates and thieves. N. lat. $16^{\circ}30'$. E. long. $94^{\circ}25'$.

BROKEN Knees. Among *Horse-Jockies*, broken knees are a mark of a stumbler.

BROKEN Numbers, in Arithmetis. See NUMBER and FRACTIONS

BROKEN Ray, in Dioptrics, the same with ray of REFRACTION, which see.

BROKEN Wind, in Veterinary Science, a disease frequently happening to horses. - The following are the indications which mark its presence. The breathing of the horse becomes altered from its natural state, and from an easy, gentle, and uniform respiration is changed to a painful, laborious, heaving, and violent agitation of the flanks, which rise by several successive undulations to a preternatural height, then suddenly relax and fall downwards beyond the natural extent of these parts; the nostrils become dilated, and held rigid and opened to their utmost extent, and the face becomes every where emaciated and contracted: such are the appearances in very aggravated cases; in more recent cases these appearances are less evident, and it is a disease that can exist in every degree of mildness or violence.

When the disease has been of long standing, and little pains or care is taken with the animal, as may be more particularly observed in cart horses, and horses employed in farmers' work in the country, the abdomen becomes large and pendulous; but in more recent cases, and in horses otherwise situated, we have observed that, in the early stage at least, the abdomen is rather contracted and is painfully held up in this disorder.

Great thirst attends this disease, perhaps arising from the increased action or fever which it occasions, and this has been too often mistaken for the cause of it, and has led to the most cruel privations.

There is no disorder, perhaps, of the horse, which has so much engaged the attention of anatomists and of speculative ingenious men, as this, to discover its cause. It has, however, we believe, never yet been satisfactorily explained; at least, there is no author that we are acquainted with that has formed any connected or probable account of it, unless perhaps very lately, and which was derived from the source we are about to mention.

Haller seems to have supposed it proceeded from a relaxed or ruptured diaphragm. Lower imagined that a relaxation or injury of the phrenic nerves might occasion it; some have assured us, after examination, that the lungs are not at all affected in this complaint, and that its seat was about the larynx and air passages; and some of the writers on this subject have believed, that the lungs were grown too big for the chest, and that this was the source of the mischief, and there have been many other conjectures equally absurd. Some thought they elucidated the nature of this disease by comparing it to a consumption, and others to an asthma. We trust something more natural and satisfactory will be found in the following statement of our observations on this singular disease.

In the year 1795, being engaged in the dissection of a grey mare that was sent to the veterinary college to be destroyed on account of this complaint; on opening the chest, the lungs appeared free from inflammation, being very white; and, as it appeared free from redness and increase of colour, the general concomitant of disease, we were led for a while to consider the lungs as not the seat of the disorder, as others had done (for several of the pupils were present at this dissection). On cutting into their substance, no inflammation was perceivable; on examining them more closely,

we observed a small bladder or vesicle on the outside of the lungs, in the external investing pleuritic coat; this was conceived by some who were present to be a tubercle, and that tubercles might be the cause of the broken wind. Suspecting, however, from its appearance, that it was not solid, but contained air, it was punctured, and it immediately subsided. This instantly suggested to the writer of this article, that the lungs were actually in a state of *emphysema*, or that air was contained in a state of extravasation in their substance, and which not only seemed evidently the case in this instance, but we have since fully verified it by examination and dissection of a considerable number of cases of broken wind, and found that it is the constant appearance. This extravasation of air in the substance of the lungs is perhaps occasioned by a rupture of the air-cells, as suggested by Mr. Coleman at that time, unless it is formed in them, and thrown out by some morbid operation of the blood-vessels, as sometimes happens in the intestines and *vagina*; for the exact way in which this *emphysema* arises has not been yet ascertained. It fully explains the cause of the white appearance of the lungs, the membranes being separated and divided by air lying between them partially admit the light, also the puffy appearance they make, and the crackling noise they give on their being handled; all admit of a ready explanation by this discovery, and so do the symptoms which attend the disorder; for the common air escaping, from disease or a sudden rupture of the cells, into the membranes composing the lungs, thereby compress and obliterate more or less the natural cavities destined for the reception of the air, and thus occasion the effort we observe to overcome this obstruction, and which naturally induce the appearances we have described as the symptoms attending this disorder: it also accounts for its incurability, and the oppression which a full stomach occasions. As the extravasation proceeds, the complaint gradually, or sometimes suddenly, increases, so as to be insupportable to the animal; and at length being quite useless, he is necessarily destroyed. In some cases, the disease, without much increasing, may exist for many years, and till the horse dies from other disease or age. This white appearance of the lungs it is that had deceived so long those who had been led through curiosity to examine the lungs in this complaint; it being so unusual to see any part in a state of disease more delicately white than in its healthy state; and singular it is, that the extravasated air should not bring on the inflammation and destruction of these organs.

Horses, in bad cases of broken wind, are observed to void air in considerable quantities by the anus, as though the extravasated air of the lungs was absorbed and carried to the intestines; or it is probably only indigestion which is the cause of this: and the smiths, not unfrequently, on this account, cut through and divide the *sphincter ani*, then the power of closing the rectum is lost, and the air escapes without any noise; and they are led from hence frequently to imagine they have cured the complaint.

We are now led to consider what the cause is, which in the general estimation of mankind leads horses to this disease, viz. their being allowed too much water; and here, we apprehend, every observer of common feeling and humanity must be shocked at the recollection of what instances have fallen within his own observation of cruelty in this respect, and of what horses are daily and hourly suffering from the most barbarous of all customs, the denying a sufficiency of water to sound horses to prevent their becoming broken-winded. True it is, that water administered to horses in an improper manner, especially after the privation above spoken

spoken of, may become a cause of their being broken-winded; but would any one infer from this, that it is necessary that all horses should be kept almost entirely without water, exposed to a never-ceasing thirst, till an opportunity of gratifying the appetite in this way occurs; and the natural and healthful beverage being too largely taken, becomes a poison, and induces the very mischief which so much cruel and useless pains had been taken to avoid; for the horse that is allowed to drink frequently, and as much as he likes, will never from this source become broken-winded. No horse on a common, exposed to the water of the brook, which he can partake of as often as he pleases, will ever become broken-winded from this cause, unless he had previously suffered a privation of water, and, in his first excesses to overcome his thirst, had injured himself. Let us now consider, under what circumstances it is advantageous to deprive a horse for a time of his water. The traveller, who starts in the morning on his journey, would be incommoded, if the horse's stomach was loaded with water: it is quickly absorbed from the stomach, and passing off in perspiration, becomes unightly and troublesome: and though it may be true, that perspiration, not too heavy, by keeping a moisture on the skin, and by its evaporation, induces a coolness that might be refreshing, yet to be inundated with it would be highly disagreeable. The water should, therefore, be given at an earlier hour in the morning, and should have time to pass off before the horse is used on the road; and if he be deprived, in a great measure, of it during the day, he should be the more plentifully supplied with it during the night-time, so as not to create a violent thirst, which can only be gratified, the first opportunity that happens, at the expence of his health, or perhaps his existence.

Sorry should we have been, if, after much inquiry into the nature of this disease, we should have discovered that the above practice of depriving horses almost entirely of water, though cruel, was necessary; and that we must acquiesce, with painful sensations, in the use of this custom. We are, on the contrary, convinced from experience, as well as the most incontrovertible reasoning, that the practice is as destructive and pernicious, as it is cruel and unnatural; for we are aware, the suggestions of humanity would avail but little, where an opposite course would best serve the interests of mankind in regard to this animal: however, they are, fortunately for it, not incompatible: on the contrary, all the comforts he can receive will but insure his life and labours.

It should be recollected that the horse is fed on the driest food, as corn, beans, bran, hay, &c. and this requires, to its being well digested, a certain portion of moisture, which must be either derived externally, or from the blood; and horses are often expected to work hard under these circumstances, to sweat and perspire profusely, and digest their food as well, without any water; the consequence of this is, that their dryness and thirst must arrive at a pitch that is scarcely governable; and to these causes we may add, as contributing to the mischief, the hot, crowded, low stables of large towns and cities, where they are often, in consequence of such treatment, seized with various inflammatory complaints, as affections of the limbs, eyes, brain, and lungs, and other diseases. They are sometimes miserably allowed to wet their mouths on the road, and this is deemed sufficient for their wants; or if they by any accident get to water, the consequences ensue that we have above described.

With chaises and post coaches are ever seen the greatest number of broken-winded horses, because the artificial and mischievous system pursued by the drivers of such vehicles na-

turally lead to it. It is a practice with the brewers' dray-horses, both in the metropolis and the country, as often as they come home, to let them go to the trough and drink their fill; among these, broken-winded horses are very rare, though they have all the water they can desire.

Wetting horses all over with cold water, while in a profuse sweat, we believe not to be so injurious a custom as would first appear, if the law for its application is understood, but, on the contrary, very beneficial and refreshing. Those who do it should be apprised of the danger of carrying it to the extent that would chill the horse, when the worst consequences would often ensue: to avoid ill effects, the horse, after this bathing, should not be left long to stand still and chill, or in any cold place, or draft of air; but while his skin is yet warm, (as in the case of a return-chaise,) he should be put in, and drove home, till again perspiration is fully induced upon the skin, when all danger would be prevented; and it would be best, perhaps, not to repeat it, at least to the same extent on his arrival home: as he is then to stand still in the stable, there would be some risk of inflamed lungs, inflamed feet, or the gripes, from the blood being confined in the interior of the system.

Muddy water is often conceived to be best for horses, and is given them in preference by some grooms. A horse, however, must arrive at an extraordinary degree of thirst before he would touch it; and it is only better, as being in general warmer, having been exposed to the air and sun, and is certainly safer for horses than water drawn from a cold spring or deep well; the contrast of temperature being too great with the horse heated by violent exercise.

When the cause of any disease is not understood, the theories for its explanation will be vague and unsatisfactory, and the remedies various, often opposite, and almost infinite, and so it has been with this complaint; for there is nothing can equal the absurd nostrums recommended in books of farriery, in this complaint in particular, as well as in some others; and the farther we go back, the more sure and sound is the information respecting it. The ideas of the Romans were coarse and absurd; but the Greeks appear to have had a better knowledge of it, as is seen by the following translation given by Ruellius "*Cum in pulmonibus quid rumpi caperit, hoc vitium τρωμαξὲς Graeci quasi pulmonis rupta dixeris appellatur;*" and it is afterwards much better described, in a chapter given by Theophrastus in the same work, and at considerable length, too much so to admit of being inserted in this place. Whether, however, the term *Pulmonis rupta* did really convey to their ideas the actual cause of the disorder, may be doubted by the context, any more than broken-wind to an Englishman, or *Cheval pouffé* to a Frenchman. The ancients appear to have had a belief in its being cured, especially before it became inveterate; the remedies they mention, however, may be fairly suspected of possessing any such power.

We cannot conclude this article more usefully to the public than by cautioning them against a common practice, especially among the lower order of horse-dealers, of violently squeezing the wind-pipe and throat, to ascertain if a horse be broken-winded, which is often attended with the most mischievous consequences; the cough will be in proportion to the violence of the irritation used, and this, even in cases of broken wind, unless in the last stage of it, when other symptoms sufficiently denote it; so that, as a criterion we believe it to be of little value.

A grey poney was brought to the Veterinary College, during the professorship of M. St. Bel in the year 1791, with great difficulty of breathing, a copious discharge of saliva from the mouth, and a running at the nose; so far it appeared somewhat like glanders; but the glands under the jaw,

jaw, and all the external parts of the throat were free from swelling.

The difficulty of breathing was considerable, and threatened suffocation; this induced us to suppose some obstruction was the cause, either in the nostrils, fauces, or larynx.

The operation of bronchotomy was had recourse to, which immediately relieved him: present suffocation being thus prevented, our next plan was to remove the obstacle, which we imagined might be in the nose. The frontal bone was trepanned, and it was intended to trepan the nasal bone, but this was not executed, for the pus from the former found its way through into the nose, and the nose was injected every day, through this opening, with a warm decoction of herbs. As the orifice in the trachea every day became smaller, it was difficult to keep in the *canula*, which accidentally a few days after falling out, the horse was suffocated and expired. On opening the head, there was no obstruction any where to be found; on opening the larynx, the true cause was discovered.

The internal membrane that lines the larynx, or wind-pipe, was enlarged or distended with a fluid, in a way that prevented the admission of air. This membrane was detached from the sides of the larynx, and so distended, that the two portions met each other in the centre of the pipe, forming two hemispherical tumours, which acted as valves, and completely excluded the admission of air. On cutting into these tumours, they were composed of cellular membranes distended by a small portion of fluid: the surrounding parts did not bear any marks of inflammation. If these tumours had formed on one side only, they might have been attributed, perhaps, to some puncture, or some injury from bleeding, or other cause of this sort; but being on both sides of the throat, it is probable both sides must have been irritated, to produce it, and nothing so likely as violent compression of that sort we see men use when they propose to try horses for broken wind; for they endeavour to squeeze the pipe till both sides meet, otherwise the horse will not cough, or only slightly. Since this, another exactly similar case was brought to one of the slaughter houses of town, while we were casually staying there, and the horse was said to die of suffocation, they could not tell why. On examining the larynx, a similar mischief was discovered.

During the last six years, we have opened more than 10 horses that were broken winded, and uniformly found the lungs emphysematous: violent breathing and appearances, in every respect like broken-wind, attend other affections where the lungs are injured, as in large abscesses forming in the lungs, water thrown out in the chest in roasters, and even violent pain in any part of the body, will produce appearances resembling broken wind, which again disappear when those affections are removed.

When the stomach is loaded, especially with water, all the symptoms of this disorder are more easily remarked, especially on exercise; it is, therefore, one of the most sure means of ascertaining it; and on this account horses with this complaint, are in general kept from drinking great quantities of water, which they are much disposed to do, probably from the fever observed to attend the complaint, and also, perhaps from the blood in the lungs not undergoing so completely the changes it ought to do in that viscus.

Some horses are differently affected in broken wind to others; the respiration is quickened in some without much heaving, and the abdomen in such is contracted and hard, instead of being large and pendulous. It is sometimes attended with a cough, which is not deep, but short and hard, as though the lungs resisted perfectly the impulse of this exertion. On exercise the cough is much increased, after which he seems relieved; the head in coughing is held low, his

neck stretched out as though he endeavoured to bring something from his throat: "*quasi officula devorasset*:" the face has a rigid emaciated appearance, resembling, though less violent, that constriction which attends lock jaw. The eyes are often yellow from diffused bile; the nostrils dilated and rigid. The appetite is not affected by it, if any thing it is increased.

The writer of this article endeavoured to rupture the cells of the lungs of a sound horse, by inflating them, and laying weights upon them, and found that no moderate pressure would do it; indeed when removed from the body no experiment could be very satisfactory, and he desisted from farther experiments with this design.

BROKER. The origin of the word is contested; some derive it from the French *broyer*, "to grind;" others from *brocarder*, "to cavil, or riggle;" others deduce broker from a trader *broken*, and that from the Saxon *broc*, "misfortune;" which is often the true reason of a man's breaking. In which view, a broker is a broken trader, by misfortune; and it is said that none but such were formerly admitted to that employment.

BROKERS are of several kinds; exchange-brokers, insurance-brokers, stock-brokers, and pawn-brokers.

BROKERS, exchange, are a sort of negotiators, who contrive, make, and conclude bargains between merchants and tradesmen, in matters of money or merchandize, for which they have a fee or premium. See **EXCHANGE**.

These, in our old law-books, are called *broggers*, and in Scotland, *broccarii*, i. e. according to Skene, mediators or intercessors in any contract, &c. See **PROXENETA**.

They make it their business to know the alteration of the course of exchange, to inform merchants how it goes, and to notify to those who have money to receive or pay beyond sea, who are proper persons for negotiating the exchange with: and when the matter is accomplished, that is, when the money is paid, they have for brokerage, two shillings per 100l. sterling.

These, by the statutes of 8 and 9 William III. 6 Ann. c. 16. are to be licensed in London by the lord-mayor and aldermen, who administer an oath, and take bond for the faithful execution of their office: and any person acting without such a licence and admission, is liable to the forfeiture of 500l. and persons employing them forfeit 50l. This is also the case at Bristol, by stat. 3 Geo. II. c. 31. They are also to register contracts, &c. under the like penalty: and not to deal for themselves on pain of forfeiting 200l. They are likewise to carry about with them a silver medal, having the king's arms and the arms of the city, &c. and to pay 40s. a year to the chamber of the city.

In France till the middle of the 17th century, their exchange brokers were called "courtiers de change;" but by an arret of council in 1639, the name was changed for that more creditable one of "agent de change, banque, et finance;" and in the beginning of the 18th century, to render the office still more honourable, the title of "king's counselors" was added.

At Grand Cairo, and several places of the Levant, the Arabs, who do the office of exchange brokers, are called "consuls;" the manner of whose negotiating with the European merchants has something in it so very particular, that we have referred it to a distinct article.

The exchange-brokers at Amsterdam, called "makelaers" are of two kinds; the one, like the English, called "sworn brokers," because of the oath they take before the burgo-masters; but the owners negotiate without any commission, and are called "walking brokers."—The first are in number 395; whereof 375 are Christians, and 20 Jews; the others are nearly double that number; so that in Amsterdam there

are nearly 1000 exchange brokers.—The difference between the two consists in this; that the books and persons of the former are allowed as evidence in the courts of justice; whereas, in case of dispute, the latter are disowned, and their bargains disannulled.

The fee of the sworn exchange brokers of Amsterdam is fixed by two regulations of 1613. and 1623. with regard to matters of exchange, to eighteen sols for 100 livres de gros, or 600 florins, i. e. three sols for 100 florins; payable, half by the drawer, and half by the person who pays the money. But custom has made considerable alterations herein.

The Jews, Armenians, and Banians, are the chief brokers throughout most parts of the Levant and the Indies. In Persia, all affairs are transacted by a sort of brokers whom they call “*delal*,” i. e. “*great talkers*.” The manner of making their contracts is very singular, and has been explained under the article BANIANs.

The French distinguish two kinds of brokers; one for the service of merchants, the other of manufacturers, artificers, and workmen. The business of the former is to facilitate the sale of goods in the wholesale and mercantile way; that of the other, to procure the goods wanted for manufacturers, artificers, &c. or to sell their goods when made. At Paris there is scarce a company of tradesmen, or even mechanics, but have their brokers, who are usually taken out of their body, and make it their sole business to negotiate in the particular kinds of goods to which such company is by statutes restrained. There are brokers for drapery, brokers for grocery, brokers for mercery, &c. There are even brokers for tanners, curriers, cutlers, and the like. Dict. of Comm.

BROKERS, *insurance or policy*, are agents who transact the business of insurance between the merchant or party insured and the underwriters or insurers. These insurance brokers, from the nature of their employment, ought to be, and indeed generally are, persons of respectability and honour, in whom unlimited confidence may be reposed. To the broker the merchant looks for the regularity of the contract, and a proper selection of responsible underwriters: and to him, also, the underwriters look for a fair and candid disclosure of all material circumstances affecting the risk, and for the payment of their premiums. There is usually an open account between each broker, and every underwriter, with whom he has much dealing. In this account the broker makes himself debtor to the underwriter for all premiums, and takes credit for all losses to which the underwriter is liable, and which the broker is authorized to receive. Indeed, it is generally understood, that by the usage of trade in London, the underwriters give credit only to the broker for their premiums, and can resort only to him for payment; and that he alone, and not the underwriters, can recover the premiums from the insured. This point, however, has never been settled by any judicial determination. But though the underwriter thus looks to the broker for his premium, and though the broker in his account with the underwriter, takes credit for the losses and returns of premiums, which he is authorized to receive from the underwriter; yet, such losses are not to be regarded as a *debt* from the underwriter to the broker. In the case of the bankruptcy of a policy broker, the court of king's bench (23 Geo. III.) held, that though credit for the premiums must be given to the broker, because the underwriters know nothing of the principals; yet, that they could not set off the losses or returns of premium due to the principals, and which *they* only could sue for, against a debt due from the defendants to the bankrupt. In this case, the defendants had no commission *del credere*. In a subsequent case, where the action was brought by the assignees of an underwriter against the factor, it was

determined (26 Geo. III.) that the defendant might set off losses upon policies subscribed by the bankrupt, and due to the defendant's correspondents; but there the defendant had a commission *del credere*, which, lord Mansfield said, made him liable to his correspondents for losses, without first bringing an action on the policy against the underwriter.

Where the merchant happens to reside at a distance from the place where he means to be insured, the policy is usually effected by the mediation of his agent or correspondent there, who, if he be not a broker, employs one, and gives him all necessary instructions. In order to his being an agent in such a case, he must either have express directions from the principal to cause the insurance to be made, or else it must be a duty arising from the nature of his correspondence with the principal. And no general authority which he may have in relation to a ship or goods, will make him an agent for the purpose of insuring, on behalf of the parties interested. However, though one man cannot, in general, compel another against his consent to become an agent for procuring an insurance to be effected for him, there are three cases, in which an order to insure must be complied with: as, *first*, where an agent has effects of his principal in his hands; *secondly*, where he has been in the practice of making insurances, and has given no notice to discontinue; and, *thirdly*, where he accepts bills of lading sent him on condition to insure.

To the office of agent or broker, great responsibility attaches; and, in the execution of it, it is the duty of each to conduct himself with the greatest fidelity, punctuality, and circumspection. For in this, as in all other cases, where a man, either by an express or implied undertaking, engages to do an act for another, and he either wholly neglects to do it, or does it improperly or unskilfully, an action on the case will lie against him to recover a satisfaction for the loss or damage resulting from his negligence, or want of skill. Hence, if a merchant here accept an order from his correspondent abroad to cause an insurance to be made, but limits the broker to too small a premium, in consequence of which no insurance can be effected; he is liable to make good the loss to his correspondent; for though, it is his duty to get the insurance done at as low a premium as possible, yet, he has no right so to limit the premium, as to prevent the insurance from being effected. And even a voluntary agent, who has no prospect of remuneration for his trouble, is liable, provided that he takes any step in the business.

It is not only the duty of the agent, in transacting the business of insurances, to conduct himself with fidelity and punctuality towards his employer, but he is also bound to observe the strictest veracity and candour towards the insurer: for any fraud or concealment on his part will avoid the policy, even though the insured be altogether ignorant and innocent respecting it.

In an action against an agent, or broker, whether for negligence or unskilfulness in effecting an insurance, the plaintiff is entitled to recover to the same amount as he might have recovered against the underwriters, if the policy had been properly effected. But he can only recover what, in *point of law*, he might have recovered on the policy; and not what the indulgence or liberality of the underwriters might probably have induced them to pay. In such an action, the agent may avail himself of every defence, such as fraud, deviation, non-compliance with warranties, &c. which the underwriters might have set up in an action on the policy: but if the agent act in the usual manner, it will be deemed sufficient.

There are many reasons why an agent or broker ought not to be an insurer. He becomes too much interested to settle with fairness the rate of premium, the amount of partial losses,

losses, &c.; and though he should not himself occasion any unnecessary delay or obstacle to the payment of a loss, he will not be over-anxious to remove the doubts of others: besides, he ought not, by underwriting the policy, to deprive the parties of his unbiassed testimony, in case of dispute.

If an agent or broker, meaning to appropriate the premium to himself, and take the chance of a safe arrival, represent to his employer that an insurance has been effected agreeably to his instructions, the principal may maintain trover for the policy against the agent or broker; and, upon proof of a loss, he shall recover to the same amount as he would have been entitled to recover against the underwriters, if a policy had been effected. *Marshall on Insurance*, vol. i. See INSURANCE and POLICY.

BROKERS, piece, a sort of petty dealers in drapery, who sell fragments or remnants of cloths, stuffs, silks, and the like, at under price.

BROKERS, stock, are those employed to buy and sell shares in the joint stock of a company or corporation; and also, in the public funds. The negociations, &c. of these brokers are regulated by stat. 6 Geo. I. cap. 18. and 7 & 10 Geo. II. cap. 8. which, among other things, enact, that contracts in the nature of wagers, &c. incur a penalty of 500l. and by the sale of stock, of which the seller is not possessed, and which he does not transfer, a forfeit of 100l.; and contracts for sale of any stock, of which the contractors are not actually possessed, or to which they are not entitled, are void, and the parties agreeing to sell, &c. incur a penalty of 500l.; and that brokers keep a book, in which all contracts, with their dates, and the names of the parties concerned, shall be entered, on pain of 50l.: these enactments, however, are little regarded by the gamblers in the public funds. See STOCK-JOBBER.

BROKERS of household furniture. See APPRAISERS.

BROKERS, pawn, are persons who keep shops, and let out money to necessitous people upon pledges, for the most part on exorbitant interest. These are more properly called pawn-takers, or tally-men, sometimes fripers, or friperers.

Of these is to be understood the statute of 1 Jac. I. c. 21. by which it is enacted, that the sale of goods, wrongfully gotten, to any broker in London, Westminster, Southwark, or within two miles of London, shall not alter the property thereof. If a broker, having received such goods, shall not, upon the request of the right owner, truly discover them, how and when he came by them, and to whom they are conveyed, he shall forfeit the double value thereof to the said owner.

But there are several excellent regulations respecting pawnbrokers of later date. By stat. 25 Geo. III. c. 48. pawnbrokers are annually to take out a licence on a 10l. stamp, within the bills of mortality, and 5l. in any other part of the kingdom, for each shop kept, under a penalty of 50l. By stat. 29 Geo. III. c. 57. confirmed by stats. 31 Geo. III. c. 52. and 33 Geo. III. c. 53, pawnbrokers are allowed the following rates of profit for interest and warehouse-room. For every pledge upon which there has not been lent above 28. 6d. one half-penny, for any time during which the said pledge shall remain in pawn, not exceeding one month, and the same for every month afterwards, including the current month in which such pledge shall be redeemed; for 5s., one penny; for 7s. 6d., one penny half-penny; for 10s., two-pence; for 12s. 6d., two-pence half-penny; for 15s., three-pence; for 17s. 6d., three-pence half-penny; for 1l., four-pence; and so on progressively and in proportion for any sum not exceeding 40s.; and for every sum exceeding 40s. and not exceeding 10l., at the rate of 3d. and no more for the loan of every 20s. of such money lent any month; and so in proportion for any fractional sum. A

party applying for the redemption of goods pawned, within seven days after the expiration of any month, may redeem them without paying any thing for the seven days; and applying after seven days, and within sixteen days, pays the profit for one month and the half of another month; but after the expiration of the first fourteen days, the pawnbroker may take for the whole month. He is required to make entries, and to give duplicates. Any person fraudulently pawning the goods of another, and convicted before a justice, shall forfeit 20s. and the value of the goods pawned, &c. to be ascertained by the justice; and on failure of payment, be committed to the house of correction for not more than three months, nor less than one month, and be publicly whipped; the forfeitures being applied to the satisfaction of the injured party, and the defraying of costs, and the overplus, if any, to the poor of the parish. Any person counterfeiting or altering a duplicate, may be seized and taken before a justice, who is to commit the offender to the house of correction for not more than three months, nor less than one. If a person shall offer to pawn any goods, refusing to give a satisfactory account of himself and the goods; or if there be reason to suspect that the goods are stolen; or if any person, not entitled, shall attempt to redeem goods pawned; they may be taken before a justice for examination: and if it appear that the goods were stolen or illegally obtained; or that the person attempting to redeem them has no title or pretence to the same, the justice is to commit him to be dealt with according to law, provided the nature of the offence shall authorize such commitment by any other law; or otherwise, for not more than three months, nor less than one. A justice may grant a search-warrant, and a peace-officer break open doors, and restore the goods, if found, to the owner. If pawn-brokers refuse to deliver up goods pledged within one year, on tender of the money lent and interest, a justice is empowered, on conviction, to commit them till the goods be delivered up, or reasonable satisfaction be obtained. Goods may be sold by public auction after the expiration of one year; being exposed to public view, and catalogues of them published, and two advertisements of sale by the pawnbroker to be inserted in some newspaper, two days at least before the first day's sale, under penalty of 5l. to the owner. Pawnbrokers, receiving notice from the owners of goods before the expiration of a year, are not allowed to dispose of them, till after the expiration of three months from the end of the said year. They are to enter an account of sales in their books of all goods pawned for upwards of 10s.; and the overplus, in case of sale, shall, upon demand within three years, be paid to the owner, necessary interest, costs, &c. being deducted: and refusal to pay the overplus shall incur a forfeiture of treble the sum lent, to be levied by distress. Pawnbrokers shall not purchase goods in their custody, or suffer them to be redeemed for that purpose; nor lend money to any person appearing to be under twelve years of age, or intoxicated, or purchase duplicates of other pawnbrokers, or buy any goods before eight in the forenoon, and after seven in the evening; nor receive any goods in pawn before eight in the forenoon, or after nine at night, between Michaelmas and Lady-day; and before seven in the forenoon, and after ten at night, during the remainder of the year, except the evenings of Saturday, and those preceding Good Friday and Christmas day; nor carry on the trade on any Sunday, Good Friday, or Christmas day. Pawnbrokers are to place in their shops, a table of rates allowed by this act; and they are required to have their Christian and surname, and business, written over the door, under a penalty of 10l. half to the informer, and half to the poor. Pawnbrokers offend-

ing against this act, in cases where no penalty is provided, shall for every offence forfeit 5*l.* leviable by distress, half to the informer, and half to the poor. Complaint shall, in all cases, be made within twelve months. This act does not extend to pledges for money above 10*l.*, nor to persons lending money upon goods at 5 per cent. interest.

In the cities of Italy, there are companies established by authority for the letting out money in pawns, called "mounts of piety;" an honourable title, like that of the "charitable corporation," but little becoming such institutions; inasmuch as the loan is not *gratis*. In some parts of Italy, they have likewise "mounts of piety" of another kind, wherein they only receive ready money, and return it again, with interest at so much per annum. At Bologna, they have several such "mounts;" which are distinguished into *frank and perpetual*; the interest of the former is only four per cent.; in the latter, seven.

BROKERAGE, the fee paid to a **BROKER**.

BROKRY, in *Geography*, a town of Hindoostan, in the country of Candish; 8 miles S.W. of Burhanpour.

BROLO, a town of the island of Sicily, in the valley of Demona; 7 miles W. of Pati.

BROMBERG, a town of Polish Prussia, seated on the river Bro, called also *Bilgoff*, which see.

BROME, ALEXANDER, in *Biography*, a poet of the 17th century, was attorney of the lord mayor's court of London in the reign of Charles II., and wrote the greatest number of the songs and epigrams that were published in favour of the royalists, and against the "rump," in the time of Oliver Cromwell, and during the rebellion. These, with his epistles and epigrams, translated from different authors, were printed in one volume 8vo. after the restoration. He also published a version of Horace, and left behind him a comedy entitled "The Cunning Lovers." He also published two volumes in 8vo. of the plays of Richard Brome, a dramatic writer in the reign of Charles I., who had been originally a menial servant to the celebrated Ben Jonson. One of the plays of R. Brome, called "The Jovial Crew," was not long ago revived, and successfully exhibited. He died in 1652. The editor of his plays, A. Brome, was born in 1620, and died in 1666. *Biog. Dram.*

BROME, in *Geography*, a town of Germany, in the principality of Luneburgh-Zell, seated on the Ohre, and belonging to a jurisdiction of the same name, which comprehends a part of the marshy forest of Dromling.

BROME grass, in *Botany*. See **BROMUS**.

BROMELIA, (in memory of Olaus Bromel, a Swede, author of *Lupologia*, Stock. 1687, 12mo. and *Chloris Gothica*, 1694, 8vo.) in *Botany*, Linn. gen. 395. Reich. 427. Schreb. 450. Class. *hexandria monogynia*. Nat. Ord. *coronarie*. *Brom.* J. A.

Gen. Char. *Cal.* perianth three-cornered, superior, permanent; segments three, ovate. *Cor.* either monopetalous with three deep divisions, or of three petals, narrow, lanceolate, erect, longer than the calyx. *Nectary*, adhering to each petal above the base, converging. *Stam.* filaments six, awl-shaped, shorter than the corolla, inserted into the receptacle. Linn. Schreb., on the corolla or calycine glands. Bosc., on calycine glands produced above the germ (thence in some degree *gymandrous*?) Juss. Anthers erect, arrow-shaped. *Pist.* germ inferior; style simple, thread-shaped, the length of the filament; stigma obtuse, trifid. *Pericarp*, a berry or capsule, one or three-celled. *Seeds*, somewhat oblong, obtuse.

Ess. Char. *Calyx* trifid, superior. *Cor.* with nectareous scales at the base.

* Flowers on a common receptacle; corolla monopetalous. Vol. V.

Species, 1. *B. Ananas*, pine-apple. (La Marck Ill. Pl. 224.) "Leaves ciliate-spinous, sharp-pointed; spike comose." Linn. *Root* perennial, fibrous. *Root-leaves* from two to three feet long, and from two to three inches broad, channelled, often a little glaucous. *Stem* short, cylindric, thick, leafy. *Spike* glomerate, dense, scaly, oval or conic, crowned with a tuft of leaves, similar to the root and stem leaves, but smaller. *Flowers* bluish, sessile, small, and scattered upon the common, thick, fleshy receptacle. *Germ*, half buried in the substance of the receptacle, which, after the flowers fall off, increases in size, and becomes a succulent fruit, covered on all sides with small triangular scales, and resembling the strobile of the genus *Pinus*, whence its common English name is derived. It is a native of South America, and is said to be found also in Africa and the East Indies. 2. *B. Karatas*. Linn. "Leaves erect, long, narrow; flowers sessile, aggregate, subradical. *Root* perennial, fibrous, blackish. *Leaves* smooth, light-green, disposed in a kind of circle, and leaving a large open space in the middle. *Flowers* numerous, purple, or bluish, sessile on the crown of the root, and forming a close, orbicular, convex group. *Calyx* and *germ* covered with a ferruginous down. *Corol.* funnel-shaped. *Pericarp*, berry ovate, three-celled, very fleshy, succulent, of an agreeable, acidulous taste, when ripe. *Seeds* oblong. La Marck, from the MSS. of Plumier. A native of South America and the West Indies. 3. *B. hemispherica*. La Marck. "Subcaulescent; flowers sessile, disposed in a close hemispherical group. Nearly allied to the preceding; but the leaves are more open and shorter; and the root, when the plant is in fructification, throws up a very short stem. La Marck supposes that the *humilis* of Linnæus is only a variety of the *hemispherica*, of a smaller size, with fewer flowers, and less pleasant fruit. A native of Mexico.

** Flowers upon distinct receptacles, with polypetalous corollas; the proper bromelias of Plumier.

4. *B. Pinguin*. Linn. "Leaves ciliate-spinous, sharp-pointed; raceme terminal." (La Marck. Illustr. Pl. 223. Gært. Pl. 11. fruit.) Resembling *B. ananas* in general habit. *Root* perennial. *Leaves* five or six feet long, according to Jacquin, more thorny than those of *B. ananas*, green above, and covered with a whitish powder beneath; the inner ones red and shorter than the others. *Stem* cylindric, thick, firm, two or three feet high, pubescent, surrounded by the red interior leaves. *Scales* pale red, or whitish, diminishing in size as they approach the summit of the stem. *Flowers* rose-coloured, sessile, in the axils of the upper scales, and forming a beautiful, pyramidal spike. *Fruit* about the size of a walnut, ovate-pyramidal, obscurely three-cornered, three-celled, covered with a thick suberose-fleshy rind, rugged, with confluent dots, and terminated by the permanent, trifid stigma resembling a tuft of small leaves. The fruit is described by La Marck as a capsule, but is said by Brown (Jamaic.) to have an agreeable sweet pulp, joined with such a sharpness, that, if suffered to continue in the mouth, it will cause the blood to ooze from the palate and gums. A native of the West Indies. Description chiefly from La Marck. 5. *B. nudicaulis*. "Radical leaves dentate-spinous; stem leaves very entire." Linn. *Root* perennial, parasitical, attaching itself to the trunks of large trees. *Root-leaves* two feet long, three inches broad, stiff, concave, smooth, green, pointed, and edged with strong black spines. *Stem* cylindric, firm, thick, two or three feet high, covered with a short down, which generally gives it a whitish colour, though it is sometimes almost entirely red. *Stem-leaves* or *scales* oblong, very entire, part red or purple, part whitish. *Flowers* spiked, rose-coloured, sessile, not accompanied by scales, whence

BROMELIA.

whence its trivial name, and by which it is so clearly distinguished from the preceding, that it ought to form part of the specific character. *Berries* ovate, of a bright red colour. Its leaves like those of the European *dipfacus*, or teasel, retain the water from rain and dew, and afford a delicious draught to the hunter and traveller in its native scorching climate. Common in the woods of the West Indies, and sent from the coast of Guinea to Mr. Miller. 6. *B. spicata*. La Marck. "Radical leaves short and spinous; stem-leaves very long and very entire, without spines." Burm. Amer. *Root-leaves* lanceolate, sharp-pointed, striated, covered beneath with a whitish powder, and a little enlarged at the base. *Stem* or *Stems* cylindric, firm, about the thickness of the finger. *Stem-leaves* sword-shaped, pendent. *Flowers* of a beautiful red, in a close pyramidal spike. *Braëtes* lanceolate. *Corolla* three-petalled; petals an inch and a half long, ending in a small purple point. *Stamens* white, included in the corolla. Native of Martinico. 7. *B. lingulata*. Linn. "Leaves ferrate-spinous, obtuse; spikes alternate." Mill. *Root* perennial, fibrous. *Root-leaves*, some almost lying on the ground, others upright, pale green, concave, many of them rolled up into the shape of a horn, and terminated by a short blunt point. *Stem* four feet high. *Stem-leaves* alternate, oblong, pointed, concave, without spines. *Spikes*, one terminal, the others in the axils of the scales, or upper leaves of the stem. *Flowers* small, sessile. *Berries* round, with a small point, in simple racemes, of a bright coral red. *Seeds* small, oblong, reddish. A native of the West Indies. 8. *B. braëteata*. Willd. "Leaves ferrate-spinous; braëtes ovate-lanceolate; scape elongated; raceme compound; branchlets subdivided; flower sessile." Swartz. *Root* perennial, parasitical. *Braëtes* scarlet, membranaceous, very entire. 9. *B. paniculigera*. Willd. "Leaves ferrate-spinous; braëtes lanceolate; raceme compound; branchlets subdivided; flower peduncled." Swartz. *Scape* more than a foot high. *Braëtes* scarlet, alternate, membranaceous, half a foot long. *Raceme* two feet long, erect. *Peduncles* an inch long, tomentose. 10. *B. Chrysantha*. Willd. "Leaves ferrate-spinous; braëtes lanceolate, toothed; raceme sub-compound, shorter than the leaves; flowers peduncled." *Raceme* a foot long, compound at the base. *Flowers* yellow. *Peduncles* smooth. *Braëtes* shrivelling. 11. *B. Acanga*. Linn. "Panicle diffuse; leaves ciliate-spinous, sharp-pointed, recurved." Native of Brazil. This species, which appeared in the first edition of the Species Plantarum, was omitted in the second, from a doubt whether it is specifically distinct from *B. Karatas*; but, on farther consideration, it was replaced by Linnæus himself in the Systema Naturæ, and has been admitted by the subsequent editors of the Species Plantarum, but is not noticed by La Marck.

Plumier, and the other older botanists, divided this genus into three; *Anana*, *Karata*, and *Bromelia*. The flowers of the *Anana*, says Jussieu, are in a close spike, on a scape which is leafy at top; as the spike ripens, it takes the form of a fleshy, scaly, esculent strobile, composed of united berries, which are scarcely divided into cells, and frequently do not ripen their seeds. The *Karatas* have a dense radical corymbus, and ovate berries. The *Bromelias* are loosely spiked or panicled on a scape or stem; and the fruit can scarcely be called a berry. La. Marck, if he were not unwilling to increase the number of genera without absolute necessity, would be disposed to keep the *Anana* and *Karata* united, on account of their common receptacle and monopetalous corolla, and to separate the rest which have poly-petalous corollas on distinct receptacles. The general and essential characters, as they stand in Linnæus, Schreber,

Martyn, and even La Marck, will by no means include all the species; we have therefore enlarged the former, and abridged the latter, in order to make them sufficiently comprehensive.

Propagation, Culture, and Use. The *Ananas*, or common pine-apple, has long been cultivated in the West Indies; but its fruit has only lately been brought to perfection in Europe. The first person who completely succeeded was Mons. Le Cour de Leyden, in Holland, a contemporary of Mr. Miller: though it was introduced into England so far back as 1690 by Mr. Bentick. It is propagated, either from seed, or from the crown at the top of the fruit, or from the suckers at the side of the stem. As the method of propagating by seed is the slowest, it is seldom practised in Europe. There are, moreover, here comparatively few plants which bear perfect seed, owing, as Mr. Miller conjectured, to the greater number having only stamiferous flowers; and he founded his opinion on the different situation of the cells in the two kinds; those which produce seed lying near the centre of the fruit, and those which are abortive nearer the rind.

When the seed is intended to be preserved, the ripe fruit should be hung up in a warm room, till all the moisture of its pulpy part is evaporated, and should afterwards be kept in a dry place. In spring, when the weather begins to grow warm, the seed should be sown in a pot filled with good garden earth; the pot should then be plunged in a hot-bed; and when the plants have acquired a certain height, they should be removed into fresh pots, and treated like other tropical plants. The grand essential is to guard them from too much moisture.

The *Ananas*, contrary to a common opinion, is thought by some persons to be equally good, whether it be produced from the crown or the suckers. See the next article.

BROMELIA, in *Gardening*, comprehends a plant of the fine fruit kind, the *B. Ananas*, or pine-apple, and some other species raised for the purpose of variety.

Of the first there are several varieties in cultivation; but those which principally deserve the attention of the cultivator, are the queen, which is the most to be relied on for a certain and regular crop; the Antigua and sugar-loaf, the fruit of which is larger; the Montserrat, the king, and the green pine.

The white pine, called by Miller the queen pine, is the most common in Europe. Its flesh is whitish and fibrous; and its rind, when ripe, is as yellow as that of an orange. Its smell is highly pleasant, and it excels most of the rest in size and beauty; but it falls short of some others in flavour, edges the teeth, and makes the lips smart. The yellow pine edges the teeth less; but both are exceeded by the sugar loaf, which is distinguished from all the others by the purple stripes on the inside of its leaves. Its fruit, when ripe, inclines to a straw colour. The Montserrat pine is now rare, in Europe, but is esteemed one of the best in America. The protuberances of the fruit are longer and flatter than those of the common sort. The smooth pine may be a distinct species: its fruit having no crown of leaves, and its root and stem-leaves being without spines. There are several other varieties; but as they are continually changing, it is not necessary to specify them.

The *Karatas* is chiefly propagated by seeds; for though it throws out suckers, they are ill-shapen, and produce unfightly plants. The seeds should be sown early in the spring, in small pots filled with light rich earth, and plunged into a hot-bed of tanner's bark. When the plants are strong enough, they should be transplanted each into a separate pot, and again plunged into the hot-bed, where they should

should remain till Michaelmas, and then be removed into the stove, and treated like the ananas. The penguin is cultivated in precisely the same manner. Neither of them will produce their fruit in England, till they are three or four years old. The latter being very spinous makes an impenetrable hedge, and is much used in the West Indies for fencing pasture lands.

The other species are cultivated only for curiosity, and are raised from seeds brought from their native country, not producing any in England.

Besides the varieties of the *B. ananas*, or pine-apple, above mentioned, there are others known to gardeners, and sometimes introduced into cultivation.

The culture of the pine-apple is more difficult, and requires a more exact and nice attention in its management, in this climate, than that of almost any other plant. It is only capable of being accomplished so as to afford good fruit, by the assistance of the stoves of the hot-house, with the artificial aid of fire heat. And in order to effect the business with the greatest ease and convenience, and in the most perfect manner, besides the stove of the hot or fruiting-house, others are necessary for the purpose of bringing the plants forward in, till ready to set out in the fruiting-stove, which are termed nursery-stoves, or pits of successive stoves. And where large quantities of such plants are cultivated, it is also useful to have what are termed bark-pits, formed either by deep frames of wood or of brick work six feet in width, with sufficient length, five or six feet deep behind, and four and a half in front, having the tops glazed; for the purpose of making hot-beds in, for the immediate reception of the crowns and suckers from the parent plants, and to prevent the succession-stove from being crowded too much. Where the whole culture of these plants is to be effected in one stove only, the plants must be raised and fruited together, by which practice not one half of the same hot-house can be occupied at one time with fruiting plants; besides, the young plants are often liable to be brought forward too rapidly. All these different stoves and nursing pits should be provided with proper fires and fire places, so contrived as to work steadily and save fuel as much as possible, as upon this the expense of the culture of these plants in a great measure depends. See *HOT-HOUSE STOVE* and *BARK PITS*.

It is remarked by Mr Nicol, that stoves for this use are variously constructed: "some are single pitted, some double, and some even triple: some have flues running under, and some round the bark-bed." These he considers as being very dangerous to the roots of the plants, if overheated. He also disapproves of double and triple stoves, as being very uneasy to work in stormy weather, and confining a vast quantity of stagnant unwholesome air in dull hazy weather. A stove in which there is a perfect command of fire-heat, and which admits a free circulation of air in all parts, is to be preferred, and none are so convenient for this purpose as single ones. The situation for them should be dry, and the bottoms or floors raised above the surface of the ground. The common practice of having borders for vines to be trained up the rafters, Mr. Nicol considers as highly prejudicial to the pine plants.

Preparation of the bark beds.—The circumstance of importance in the culture of these plants, is that of forming the beds in the stoves and pits. These are differently constituted with different cultivators, and are designed for the purpose of plunging the pots into, with the plants in them, in order to their due growth and support. These beds are mostly composed of tanners' bark, as being a substance that not only affords the most uniform and durable heat, but which is best suited to the nourishment and growth of the plants and fruit, as well as the most manageable. See *BARK BED*.

The great art in making of these beds, is that of producing such an uniform moderate bottom heat as may not injure the roots of the plants, while it is sufficient to promote their regular growth. The author of the "Scotch Forcing Gardener" observes, that his idea of "the quantity and quality of bottom heat that is required by the pine," is different from that generally entertained. He never wishes the plants, except in striking suckers, to stand in a bottom heat higher than that of blood heat, and that too of a mild moist nature. If the watch stick to the depth of the bottom of the pot feels just a little warm to the hand, or when applied to the cheek, when the body is of a comfortable temperature, it is sufficient; and he thinks it consistent with reason, that the bottom and superficial heat should correspond at all times. In order more effectually to attain this end, and that the roots may sustain no injury, he has recourse to the following rules in forming, turning, and trenching the beds. He never lifts the tan in the pit, or adds above an eighth part of new, which, if necessary, he gives place to by skimming off a little of the surface of the old. The new tan is never suffered to lie within a foot of the surface, by which means the pots are instantly plunged in the old. He lays the half of whatever quantity of new tan is added in the bottom of the trench, and divides the other equally to within a foot of the surface of the beds. In trenching he throws the sides to the middle, and the middle to the sides, that there may be an equal mixture of the old tan. Thus the beds are rendered of a mild and equal temperature from the first, and continue much the same for three or four months, and after the first filling they are attended with very little expence for new tan. It is obvious, therefore, that, in filling the pit of a new pinery, it should either be done several months before the plants are placed in, or the tan should be well sweated and wasted, by previous turning in an open shed, &c. And in other cases, it is adviseable not to plunge the pots above half their depth for the first two or three months after filling. In adding new tan, it should invariably be thrown up in a heap for eight or ten days before using, in order to drip and sweeten, and should never be applied fresh from the tan yard, as it is wet and apt to heat violently, as well as cake in the beds. It is remarked, that some object to tan, as being expensive and troublesome in working with; but if this method is practised, these inconveniences will be inconsiderable; and as the plants require frequent shifting, the trouble of stirring up the bark-beds at such times is but trifling; the addition of new tan being sometimes unnecessary. He is convinced that there is no ingredient which can be substituted for tan, that will equally answer the purpose in the pinery, and of course recommends the use of it in preference to all others, where it can be easily procured; and more or less of it is always necessary. He considers oak leaves as the next best material, but they cannot be had in many places. Where they are used, he advises that at least eighteen inches of well reduced tan be laid on the surface to plunge the pots in; after these, a mixture of stable dung and tree leaves of any kind. But they should be well fermented before they are used, and at least two feet of reduced tan laid on the surface for the reception of the plants. It is supposed by some, that the reason of pines being planted in pots instead of the surface of the beds, is the want of permanent heat in them, as they may be removed with more facility in the time of renewing the bark, &c.; but Mr. Nicol has a different opinion of the matter, so that, if the heat of the beds were ever so permanent, he would grow them in pots. As all the different plants of any kind do not grow alike in their native climates, much less the pine in an artificial one, there is a necessity for having, at least, two compartments, and growing the plants in

BROMELIA.

pots, that they may be removed and classed according to circumstances, with the greater ease and safety. Besides, many sorts of plants, in any situation, do much better in pots than otherwise; of these are all of the succulent tribe, amongst which is the pine. There would also seem another reason, which is the loose incoherent nature of tan not affording a proper medium for the growth and support of such luxuriant plants.

The usual periods of forming and renovating or refreshing these beds are the beginning of the autumn, as September, October, and the following month, that the heat may be well kept up during the winter, and in the spring, as about the beginning of April; a forking up being given in the interval between these periods. The pits in these cases should be constantly well filled up, to allow for the settling that always takes place.

Mould proper for potting the Plants.—The most suitable sort of earthy material for the culture of the pine-apple plant is that of the firm vegetable kind, or some composition in which it is a principal ingredient; a large proportion of which should always be provided in a proper state for the purpose. The most beneficial kind is that which is obtained from the decayed leaves of the oak, or a mixture of it with that from those of ash, elm, beech, sycamore, &c. This mould is prepared by collecting them as they fall in the autumn, and placing them in a heap, throwing a very little light mould over them, to prevent their blowing away. They should remain in this state during the winter, and till the beginning of May, when they should be turned over and mixed well together. In this way, by the spring following, they will be reduced into a mould proper for use. This should, however, be sifted before it is employed, in order to remove pieces of stick or other improper matters. A compost of turfy vegetable mould with rich garden soil and well rotted stable dung from a hot-bed, in the proportion of one-third of the latter, which have remained together for a considerable time, is likewise recommended by some. Brown, strong, loamy earth, when reduced by long exposure to the air, is another useful material; and pigeons' dung that has been at least two years in an heap, and frequently turned and exposed to the influence of the weather, may be employed: also shell marle, and sea or river gravel, which has been sifted and kept in a dry place, having the size of large peas, &c. may sometimes be employed. The proportions in which they are advised to be made use of for different purposes in the culture of these plants by Mr. Nicol, are these: "For crowns and suckers entire vegetable mould, with a little gravel at bottom, to strike in; afterwards three-fourths vegetable mould, and one-fourth loam, mixed with about a twentieth part of gravel, and a little entire gravel at bottom, till a year old. For year old plants, till shifted into fruiting pots, one half vegetable mould, one half loam, to which add about a twentieth part of gravel, and as much shell marle with a little gravel at bottom, as above. For fruiting in, one half loam, a fourth vegetable mould, a fourth pigeons' dung, to which add gravel and marle, as above, and lay two inches of entire gravel at bottom."

Raising the Plants.—This is the next point of material consequence in the cultivation of these plants, and which is effected either by the crowns produced on the tops of the fruit, the offsets, or suckers from between the leaves, and the roots of the old plant. The last should never be employed when it can be avoided; of the other two, suckers are preferred by some, while crowns have the advantage, according to others; but Mr. Nicol justly remarks, that if the former have the superiority in being the stronger plants, they have likewise the disadvantage of running to fruit more unseasonably

than the latter. The crowns are procured by twisting them off the fruit when it is made use of, and the suckers by breaking down the leaf immediately beneath them, and moving them gently both ways till they come off, which should not be attempted till the under parts appear of a brownish colour, and ripe, as under other circumstance, they are liable to break in the middle and be spoiled. When taken off, they should each of them be cleared of a few of the lower outward leaves about the bottom where they are to form roots, by rubbing them off; some also pare the under parts of the stumps smooth with a knife. They are then laid or hung up in a dry place four or five days, or more, that the over moisture and wounds of the stumps, or thick parts of the plants, may be dried up and sufficiently healed over before they are planted, and the danger of their rotting be prevented. The author of the "Scotch Forcing Gardener," however observes, "that if they are perfectly ripe, and the old plants have had no water for a week or two before they were taken off (which they ought not), nothing of this kind is necessary." Each plant frequently affords many suckers, but rarely more than one crown. The crowns are usually gathered one by one as the fruit is used, and stuck into a bark-bed till the whole crop of them, as well as the suckers, can be potted together. The plants, after being thus prepared and collected, must be placed, according to their sizes, singly in pots three or four inches in diameter, and five or six deep, provided for the purpose, and filled with entire vegetable mould, as directed above, having the bottoms previously laid with clean gravel, of the size of horse beans, to the thickness of an inch or something more: some, however, only advise pieces of slate or tile to be put over the holes in the pots. The first is probably the best method, as preventing the water most effectually from stagnating about the roots of the plants.

In planting they should be put neither too shallow, nor too great a depth, but have the mould pretty closely pressed round them.

The nursing pit should be prepared for their reception by having new tan to the extent of a fifth or sixth part added, but none suffered to lie within ten or twelve inches of the surface. In these beds, when of a due heat, the pots should be plunged up to their brims, in regular order, at the distance of two or three inches pot from pot each way, keeping them perfectly level, and the largest towards the back parts. Some advise a slight watering to be immediately given, but others think that neither the crowns nor suckers should have any for the first fortnight after planting, nor any over-head the first winter, lest they should be injured in their hearts by the damp which it occasions.

As the plants thus raised only produce fruit in the second, or more generally, in the third year's growth, commonly with suckers and crowns for future increase, and become afterwards of no use but as stocks for supplying a few more suckers, there is obviously a necessity for raising fresh supplies of plants annually.

Culture in the raising Stove.—The management of the plants the first year, or while they remain in the nursery-stoves and pits, requires much attention to keep them in a regular and healthy growth by preserving a continued proper degree of heat in the beds, and a judicious application of water with a suitable admission of free air. Mr. Nicol observes, that where the plants have been struck in the beginning of September, the beds will mostly continue of a kindly heat till about the beginning of November, but should then be wrought over, introducing about an eighth part of new tan by trenching it in. But though the plants will in general have made good roots by this period, they do not in

BROMELIA.

common stand in need of being fresh potted; such only as are in any degree matted being put into other pots of the next size to those in which they are growing. The matted part being simply taken off, they should be replaced with the bulb as entire as possible. They are then to be plunged in the beds, as in the former case, quite up to the brims of the pots, and should remain till the beginning of April; at which period the beds should be again wrought over, as directed above, and the plants have the mould wholly shaken from the roots, after which they should be replaced in the same pots with fresh mould, and replunged in the beds. In this case the roots being fresh should never be disturbed, the parts that are decayed in the stumps or other places being merely removed.

As the heat of the beds, without the aid of fire, will not be sufficient during these periods for the healthy growth of these plants, it will be requisite to have recourse to that of the artificial kinds. This should be applied about the beginning of October, or the following month, according to the state of the season. In the application of this heat great care should be had to keep it so moderate as not to force the plants forwards too much, and render them in danger of fruiting unseasonably, while it is sufficient for their perfect growth. The former is shewn by their drawing up with long leaves and white hearts; and the latter, by the want of the proper healthy aspect. To accomplish this in the most certain manner, Mr. Nicol recommends working the stoves so as to keep the thermometer as near as possible to 65°, at seven or eight o'clock in the morning and nine at night, until about the first of March, and then to increase it gradually to 70°, at which it should be maintained so long as artificial heat may be required. When the weather is very severe, it is likewise necessary to cover and defend the glasses in the night time, as well as occasionally in the day, with canvas for the purpose, cloths fixed with rollers and pullies, or large garden mats. At the above period the plants usually begin to grow in a vigorous and rapid manner, and require potting again about the first or middle of May, at which time the bed should be stirred up to about half its depth, and, if necessary, a very little new tan worked in. The plants should be put into pots about six inches in diameter on the inside in the tops on a medium according to their sizes, with the balls entire; and if any of them are matted, that part should be displaced, plunging them to the brims at the distance of about fifteen inches from centre to centre of the plants in the largest kind, and a foot in the smaller kinds, giving a slight watering at the time. Another potting becomes necessary about the beginning of August; and where there are three compartments the plants should now be removed into the succession-house, the bark-beds being worked over to the bottom. The plants must be put into pots of eight inches diameter, plunging them to the brims at the distance of sixteen inches on a medium, and settling them with a gentle watering. At these periods a more free admission of fresh air becomes necessary, especially when the weather is mild and favourable. Where other houses or succession-stoves are employed in the culture of these plants, they may at this time be removed into them, in order to be more conveniently managed in their growth the second year.

Culture in the Succession Stoves, or Pits. In the second year's growth it will be necessary, towards the middle of November, to work the bark-beds over to last during the winter; but the plants need not be shifted, the decayed leaves about their bottoms being only twitted off, and a little fresh mould laid on the surface of the pots, where it may be requisite, replunging the pots to the brims as before. Some advise the leaves of the plants to be tied up while they are potting or

removing them, in order to keep them from being bruised; but the writer just mentioned disapproves of the practice, as he finds they are generally much more bruised in tying than when left loose. The method which he follows, is to have a person standing opposite to him in the time of potting, which is performed on a stage about a yard high, whose business is to hold up the leaves in a loose, though regular manner, between the arms, and prepare and hand the pots. In this manner he has often been able to shift an hundred one-year old plants in two hours. In conveying the plants through the doors of the stoves, the person should proceed with the back foremost, by which means the leaves are saved from injury, as the pot goes first, and the leaves are drawn backwards after it.

About the beginning of March the plants again require shifting, and the bark-beds should then be trenched over as before. The plants at this time must be shaken out, and replaced in the same pots, in new mould, cutting off any of the decayed roots, or the ends of the stumps, twitting off a few of the bottom leaves, plunging them as before in the beds, and giving them a slight watering. Towards the first of June, the plants should again be shifted. The bark-beds being wrought over to about half their depths, and a little fresh tan added when necessary, the plants, with their balls entire, should then be placed in pots of about ten inches diameter, plunging them, at the distance of eighteen inches from centre to centre, into the beds, and settling them with a little water.

In regard to potting, it is remarked by the same author, that at all times a few of the bottom leaves should be twitted off each plant, that fresh roots may be made more readily to furnish the surface, which tends to keep them more steady in the pots. The fire heat in these cases should be begun about the same period as before, according to Mr. Nicol, and kept to about 60 degrees of the thermometer till the beginning of March, and then gradually increased to 65° for the remainder of the season. The plants should be refreshed occasionally with a little water, according as the earth in the pots becomes dry, or as the state of the weather demands. They should likewise have a more free admission of fresh air, whenever the season will admit of it without danger.

Culture in the fruiting-stove or hot-house. The plants raised in the nursery pits, and continued in their growth in the succession-stoves, having attained a proper size and strength, should, towards the latter end of August, or the beginning of the following month, be placed in the pots in which they are to fruit, in the same manner as before, and deposited in the stoves of the hot-house, which should have the bark-beds prepared for their reception, by trenching them over to the bottoms, and adding about a tenth part of new tan in a proper state of preparation for the purpose, being well blended, and made so as to fill up the pits well. The pots in which the plants are now put, should be about a foot in diameter; which should be plunged in the beds to the brims, a gentle watering being immediately given. In potting the plants, Mr. Nicol in these cases advises the use of a small stick to trundle the mould down between the balls and the sides of the pot, so as to leave no cavities, a circumstance which should be attended to, as being of great utility. The management in this state differs but little from that of the preceding; the chief circumstance to be regarded, is that of keeping up the heat in as regular a manner as possible, with the addition of a due quantity of refreshing moisture, and free air. The beds should, about the middle of November, be stirred up to half their depth, and a little tan added; but the plants must not be shifted at this period, only

BROMELIA.

only requiring to be re-plunged to the brims again in the beds for the winter. It is the common practice at this time to add a large quantity of new tan, in order to keep up a strong bottom heat through this season; than which Mr. Nicol thinks nothing can be more erroneous. He has already remarked, that the bottom and superficial heat ought to correspond at all times; and if the house is to be brought to 60° only for the winter, it follows, he supposes, that a very moderate bottom heat is sufficient. The temperature of the house being so much reduced in winter, is, he concludes, to prevent the plants from starting too soon into fruit; and their doing so is frequently more in consequence of too much bottom heat, than irregularity in the temperature of the stove. In the beginning of February, which is the best shewing season, the bark-beds will require trenching, which is the only time of the year that the above author advises a deviation from the rules given above. From this time the house, in his opinion, should be brought as high as 70°, and the bottom heat keep pace with the artificial, for which new tan, to the extent of a sixth part, should be added. Such of the plants, he observes, as are not shewn, are healthy at the root, and stand erect and firm in the pots, should have a little fresh mould laid on the surface by the removal of about two inches of the old. But those that are already shewn, and those that are anywise unhealthy, or appear stunted, should be shaken out entirely, and replaced with fresh mould in the same pots; but none of the roots, unless wasted, should be cut away, or removed. This, so far as it respects the plants that are shewn, he presumes has not been hitherto recommended; he is consequently happy in being enabled to do it with confidence, as it has ever been a matter to be regretted, that pines, from the want of sun and air in the winter months; are apt to be stunted, and shew their fruit too soon; and that fruit so shewn, seldom comes to any considerable size or flavour; the plants so stunted, being unable to nourish the fruit, and these, from the want of sunshine in the early months, coming far short in flavour of that matured at a later period. It is added, that the experiment was tried on a dozen of plants, the half of which were in, and the other half past, the flower at this time of the year; the result was, that they were kept back a full month by the operation; those that were past the flower equalled, and those that were only in flower exceeded any of the others of their own forwardness at the time of shifting. Being encouraged by this success, he treated his whole stock of fruiting plants in the same manner in the following seasons, and they were kept back to a better season, and swelled their fruit to as good a size as those that shewed in February. Towards the beginning or middle of May, the bark-beds should be again trenched to the bottom, a tenth part of new tan added, and the plants re-plunged in the beds in the same manner as in the preceding cases, nothing further being necessary. Though it is not possible to apply the heat constantly with that degree of exactness that has been recommended, it is of great importance to approach it as near as can be conveniently done, which, by proper attention to the thermometers employed for the purpose, may in a great degree be accomplished, especially where the person who manages the fires, has likewise the command of the house, which should always be the case.

Several sorts of fuel are employed, but coal or cinders make the most regular and durable fires, where they can be obtained. Ground tan heat may also be employed where the fire-places are properly constructed for the purpose. See *HOT-HOUSE*.

With regard to the admission of air, the author of "The Scotch Forcing Gardener" recommends very large portions

in the fruiting-house while the fruit is ripening, as it is, he thinks, not only essential to the flavouring of it, but highly conducive to the ripening and hardening of the suckers, which is also a point of importance. Though it is the practice of some to shade their plants from the sun, the above author supposes they can never have too much of its influence. It is advised, that in winter even frosty air should be admitted in a moderate degree at the top of the house, and in fresh weather, at this season, to the extent, that the thermometer may not be more than 5° above the fire-heat medium, being continued till the middle of March; after which, and for the whole season, not more than 10°. It is observed that in winter fires are frequently made in the morning, solely for the purpose of admitting air, and at the same time keeping up the temperature of the house, and that although the pine, from its nature, does not appear to quickly feel the effects of bad management, there are few plants in reality do it more so, and too due an attention to the temperature of the house, especially in winter, cannot be paid, the want of which is sure to throw the plants into fruit in an untimely season.

In respect to the application of water in the culture of these plants, it is advised to be given very sparingly in dull weather, particularly in the winter season, from about the beginning of October to the first or middle of March, once in eight or ten days is generally sufficient, in a small proportion; but from that period plentiful waterings are requisite, in considerable quantities at a time, mostly once in three or four days. Watering much over head in winter, except in clear weather, is not advised; but in the summer months it is recommended, as a good practice, to first give the quantity requisite to the root from the spout of a watering pan, and then a sufficient quantity to wet every part of the leaves from the rose; the reason of which is, that the different kinds of pines are formed to require very different quantities of water: the queen requiring more than the king; the Antigua, or brown sugar loaf, and the Montserrat and green or stript sugar loaf, a medium between the two, in plants of an equal state of health and size.

With the fruiting plants, very large quantities are required from the time they are out of flower, till they begin to colour; but which should then be gradually withheld, and towards its maturity totally, as this increases the flavour of the fruit, and perfects the ripening of the suckers.

Steaming is considered as not only useless to the health of the pine, but, in dull hazy weather, prejudicial; of course, when there are grapes in the hot-house, it should be regulated so as to suit them.

Water well impregnated with air should be used at all times, which should be applied about eight in the morning, and from four to five in the afternoon. In the watering of these plants, a tin pipe is recommended as useful and convenient, for the more ready conducting the water in the quantity intended to any particular plants of the bark-beds. It should be six feet long, an inch and half in diameter at the upper end, and at the other about half an inch, and be formed of two or three separate pieces to lengthen or shorten at pleasure. At the longest end a kind of funnel should either be fixed, or so contrived as to take off and on occasionally, to receive the water from the watering pot. By this means water is capable of being conveyed to the plants separately, in any proportion, to the hearts of them, without wetting the bark-beds more than is necessary to moisten the earth in the pots, &c. It is particularly applicable in winter as well as in the spring, during the bloom of the fruiting plants. In winter it may sometimes be proper to have some conveniences in the stove to preserve water in, that

that it may be raised in its heat a little previous to watering the plants with it.

Some have attempted the culture of the pine-apple without the assistance of hot-houses, or stoves constructed for the purpose, simply by common deep garden frames, and dung hot-beds, aided by occasional linings, in order to promote and keep up a regular degree of heat; but this is a very imperfect method, and seldom attended with much success.

The injuries to which these plants are chiefly exposed during their growth, are brown and white scaly insects, of the *coccus* tribe, and the ant. But as the last is seldom seen, if the former be not present, Mr. Nicol concludes that their presence is in consequence of that of the insects on which they seem to feed. And the brown scaly insect is conceived to be no further injurious, than by discolouring the plants; but the white scaled, or bug, is of the most mischievous nature to the plants, as, where it abounds, they never succeed well. In order to remove them, Mr. Nicol found the following method answer perfectly, in a case where the plants were greatly affected. Having prepared a strong heat for the plants in the bark bed of the nursing pits, he shook out and cut every fibre from their roots, whereby they were rendered the same as suckers at first, not excepting those that were in fruit, some of which were just in flower, dipped them into a liquor prepared by boiling two pounds of soft soap and flower of sulphur, with one pound of roll tobacco, and two ounces of nux vomica, in eight gallons of water to six; put them into pots of six inches diameter, and plunged them to the brims; kept up a fire heat to about 75° , gave them but little air, shading them in sun-shine, and afterwards gave them plentiful waterings over head with the same mixture, reduced to about half its former strength. He continued this treatment for two whole months; at the end of which he again shook out their roots, and washed the whole plants in pure water, put them into fresh pots of eight inches diameter, and re-plunged them into a kindly heat in another nursing pit, treating them in all respects as any other plants. He never saw a vestige of the bug afterwards; a few of those plants that were shewn, however, died, but the others, he observed, produced such fruit as might be expected from plants of such sizes of any other kind.

Time of Maturation, and cutting of the Fruit. The common season for the ripening of this sort of fruit is from June till September; but from August to the end of the latter month is the principal period of their attaining to the greatest perfection. Mr. Nicol remarks, that some kinds put forth suckers at the base of the fruit, which should be rubbed off as they appear; others put forth suckers from the root; and as these are not proper to be taken into the stock, they should also be twisted off, or otherwise destroyed, as they appear. It is added, that if a plant were to be divested of all its suckers, the fruit would open to a much larger size in consequence; but as this waste ultimately tends to the extirpation of the whole stock, it is by no means advisable. It is proper, however, to reduce the number of suckers on the plant to two or three at most, which should be done in the May shifting; and as the suckers are about half grown at the time, the cultivator is enabled to choose the best, and at the same time to easily destroy the others, by breaking out their hearts. Where the increase of the stock is the object, all suckers, even at the root, should be encouraged in their growth. As some of the kinds also grow on long foot-stalks, which are apt to bend down as the fruit gets heavy, they should be supported by small stakes, or other means, as when the fruit falls over the stalk, it is liable to be bruised, and the nourishment of the fruit retarded.

This sort of fruit loses much of its flavour, when suffered to grow till fully ripe; where not prevented, it should therefore always be cut by the time it has attained a greenish yellow colour, and either left in the heart of the old plants, or laid on the wall-plate, &c. in the stove for a few days, after it has been separated from the stem.

The sign of the fruit having attained perfection in most kinds, is that of their assuming a fine golden colour, with a delightfully fragrant smell; at which time it should always be removed. The method of performing which, is by having several niches of the stems with it, and also the crown of leaves at the top. It is eaten in the highest perfection soon after being cut; but when required, it may be preserved for several weeks, by putting the stem into a bottle of pure water, renewed every two or three days, and placed in a well-dried room of above 60° of heat.

The cultivation of the other species may be performed either by sowing the seeds obtained from abroad, in the autumn or spring months, in pots plunged in the hot-beds of the stove, or by means of suckers, in the manner of the pine-apple plants. They must be kept constantly in the stove, where they afford much variety, when properly managed, in assemblage with other plants of the same sort.

BROMFIELD, WILLIAM, in *Biography*, who, in a long course of practice, attained to the highest degree of reputation in his profession, was born in London, in the year 1712, and was initiated in the practice of surgery, under Mr., afterwards serjeant, Ranby. With such a preceptor, and with a mind susceptible of information, he early found himself capable of practising on his own account. In the year 1741 he began to give lectures in anatomy and surgery, and soon found his theatre crowded with pupils. Two or three years after, in conjunction with the reverend Mr. Madan, he formed the plan of the Lock hospital, for the sole reception of that unfortunate class of patients, who are affected with the venereal disease. By a strong and forcible appeal to the humanity of the public, and by shewing the advantages that ultimately might redound to them, from the improvements that might be expected to be made, in such an asylum, in the method of treating that frightful disease; a subscription was raised sufficient to enable the projectors of it to erect the present spacious and handsome building, but not for its maintenance, which is still effected by voluntary contributions. To this hospital Mr. Bromfield was made surgeon, an office he filled with advantage to the patients and credit to himself for many years. With a view of contributing to its success, he altered an old comedy, "The City Match," written in 1659, by Jasper Maine, and procured it to be acted at Drury-lane theatre, in the year 1755, for the benefit of the hospital. He was also, very early after its being instituted, elected one of the surgeons to St. George's hospital. In the year 1761, he was appointed in the suite of the noble persons, who were sent to bring over the princess of Mecklenburgh, our present queen, and was soon after appointed surgeon to her majesty's household. In the year 1751, he sent to the Royal Society a case of a woman who had a fetus in her abdomen nine years, which is printed in their transactions for the same year. In 1757, he published an account of the English night shades, the internal use of which had been recommended in scrophulous cases; but they had failed in producing the expected benefit with him. Under their use, the ulcers became worse; they occasioned thirst, dimness of sight, and, if not cautiously given, death. In 1759, he gave "A Narrative of a Physical Transaction with Mr. Aylet, Surgeon, at Windsor." This is a controversial piece, and the author clears himself from the imputation of having treated his antagonist improperly. In 1767, he published, "Thoughts concerning

concerning the present peculiar Method of treating persons inoculated for the Small-Pox." This relates to the Suttons, who were now in the zenith of their reputation. He thinks their practice of exposing their patients to the open air in the midst of winter, of repelling the eruption, and checking or preventing the suppurative process, too bold, and hazardous. On the whole, however, he acknowledges, they were deserving of commendation, for the improvements they had introduced, in the treatment, both of the inoculated, and natural small-pox. His next work, the most considerable one, written by him, was "Chirurgical Cases and Observations," published in 1773 in 2 vols. 8vo. Though there are much judicious practice, and many valuable observations contained in these volumes, yet they did not answer the expectations of the public, or correspond to the fame and credit the author had obtained; accordingly in the following year they were attacked by an anonymous writer, said to be Mr. Justamond, in a pamphlet, entitled, "Notes on Chirurgical Cases and Observations, by a Professor of Surgery." The strictures contained in these notes are keen and ingenious, and, though evidently the produce of ill-humour, yet seem to have had the effect of preventing so general a diffusion of the cases, as the character of the author would otherwise have procured them. They have never been reprinted. About this time the author took a spacious mansion in Chelsea Park, which he enlarged, altered, and furnished in an elegant style. It is now occupied by sir Henry Wilson. Hither he retired, after doing his business, which he began gradually to contract into a narrower circle. With that view, a few years after, he gave up his situation as surgeon to the Lock hospital. His other appointments he kept to the time of his death, which happened on the 24th of November, 1792, in the 80th year of his age. The above are all the memorials we have been able to collect of this ingenious gentleman, of whom no life has been before written.

BROMIO, in *Geography*, a torrent of Switzerland, in the canton of Bellinzzone, which takes its rise in mount Uccallo, or the Vogelsberg, near Splugen, and joins the Tesino in the Levantine valley.

BROMISCUS, in *Ancient Geography*, a town in Macedonia, situate, according to Thucydides, in the gulf where the lake of Bolbé discharged itself into the sea.

BROMIUS, in *Entomology*, a species of **TABANUS**, having a purple band through the eyes, and the body cinereous. Linn. Fn. Sv. Frequent in Germany, and some other parts of Europe. Degeer calls this *Tabanus maculatus*.

BROMLEY, in *Geography*, a market town in the county of Kent, England. The manor of Bromley was given by king Edgar, in 700, to the bishop of Rochester, who, in consequence, had a palace erected here, and the bishops of that see appear to have made it their seat till the present time. Near the palace is a spring, which has been found to possess the same qualities as the water at Tunbridge Wells. In monkish times this was held in high estimation, and a chapel was erected near it for the use of pilgrims. A college, or hospital, was erected at Bromley, by Dr. Warner, bishop of Rochester, in the reign of Charles II. for twenty poor clergymen's widows. This is said to have been the first endowment of the kind in England. In consequence of a bequest from the reverend Mr. Hetherington, of 2000*l.* and of bishop Pearce, who left 5000*l.* more, the trustees have been enabled to augment the annual allowance to the widows from 20*l.* to 30*l.* and the chaplains from 30*l.* to 60*l.* By another bequest from a Mrs. Betenson, ten additional houses have been erected, and endowed. Bromley is situated on the river Ravensbourn, at the distance of 10 miles S. E. from London. Here are a

weekly market on Thursday, and two fairs annually. The town consists of 424 houses, and 2700 inhabitants. Wilson's History of Bromley, 12mo.

BROMLEY, a township of America, in Bennington county, Vermont, about 32 miles north-easterly from Bennington, containing 71 inhabitants. Also, a town in Somerset county, New Jersey, about 20 miles N.W. of Brunswick.

BROMLEY, or **ABBOTS BROMLEY**, a small market town of Staffordshire, in England. The adjunct *abbots* was given to it in consequence of its abbey, which is now entirely destroyed. This town consists of one street, near the centre of which is the town-hall, where the court-leet and court-baron of the earl of Uxbridge are annually held. Bromley stands in a fine open fertile country, distant 129 miles N.W. from London, and 11 from the city of Litchfield. Here are a weekly market on Tuesdays, and three annual fairs. The town contains 202 houses, and 808 inhabitants.

Near Bromley is Blithfield, the seat of lord Bagot; and at two miles distance is How-croft, the seat of the earl of Shrewsbury. The forest of Needwood, considered the great ornament of Staffordshire, is 3 miles from this place.

BROMPTON. See **CHATHAM**.

BROMSEBRO, a town of Sweden, in the province of Smaland, which has a large bridge over the river that here discharges itself into the sea. A small island lies in the middle of the river, on which two stones are erected for boundaries. This place is famous for a congress, held in 1541, and again in 1572, for settling some disputes concerning the arms of the three northern crowns; and also, for a treaty of peace, concluded in 1645, between Sweden and Denmark. It is 4 leagues from Christianople.

BROMSGROVE, a town of Worcestershire, in England, is noted for its manufactures of worsted, linen cloths, fish-hooks, needles, nails, &c. It had formerly a manufactory for broad and narrow cloths, but this is removed into Gloucestershire. In the reign of Edward I. Bromsgrove sent two members to parliament, and it has had many privileges conferred on it by different monarchs. Edward VI. founded a grammar school here, which was additionally endowed by sir Thomas Cooks. The church and town are large and handsome, and the former, from its high situation, is approached by a flight of fifty steps. It is ornamented with some painted glass, and contains several fine monuments. Among these is one for judge Lyttleton, 1600; bishop Hall of Bristol, 1710; sir Humphrey Stafford, who was killed in Cade's rebellion; sir John Talbot, of Grafton; and another ascribed to a daughter of Henry VII. This parish contains twelve manors, and its houses amounted, in 1801, to 1178, and its inhabitants to 5998, of which 1208 were engaged in manufactures and trade. Bromsgrove is 116 miles N.W. from London, and 12 from the city of Worcester.

About one mile and a half distant is Grafton manor, the ancient seat of the earl of Shrewsbury. Hewell-Grange, the seat of the earl of Plymouth, is at 4 miles distance. Dodford priory is within two miles of Bromsgrove. Nash's History of Worcestershire.

BROMUS, in *Botany*, (*Вруша, food*.) Linn. 89. Reich. 95. Schreb. 120. Juss. 32. Willd. 140. La Marck, Illust. 119. pl. 46. Smith Flor. Brit. 38. Clafs, *triandria digynia*. Nat. Ord. *gramina*, grasses.

Gen. Char. *Cal.* glume, many-flowered, two-valved, spreading, collecting the florets into an oblong two-rowed spikelet; valves ovate-oblong, acuminate, awnless; the lower one smallest. *Cor.* two-valved; the outer valve the size and form of the calyx, concave, obtuse, bifid, putting out a straight

straight awn generally below its apex; inner one lanceolate, small, awnless. *Neß*. two-leaved; leaflets ovate, acute, gibbous at the base. *Stam.* filaments three, capillary, shorter than the corolla; anthers oblong. *Pyl.* germ top-shaped; styles two, short, reflex, villous. *Stigmata* simple. *Pericarp.* the corolla closely shut, adhering to the seed, not dehiscent. *Seed* single, oblong, covered, convex on one side, furrowed on the other.

Edl. Char. *Cal.* two valved; spikelets many-flowered, oblong, two-rowed; (the awn below the apex of the outer glume of the corolla, Linn.) inner glume fringed with strong, distant, bristly hairs, Dr. Smith.

The genus *Bromus* is entirely artificial, and there are no natural boundaries between it and *festuca* that have been hitherto ascertained. It was originally assumed by Linnæus, that a terminal straight awn should determine a plant to be a *festuca*; but in practice this distinction has not been strictly observed, and great confusion has accordingly arisen in the distribution of species. Dr. Smith's new character will prove a happy one, if it shall be found to prevail in all the foreign species, which have the general habit of *Bromus*; but we fear it will sometimes fail. It is already sufficiently evident, that the position of the dorsal awn, and the fringe of the glume, cannot both be admitted into the essential character of the genus.

Sp. 1. *B. secalinus*, Linn. (*Eng. Bot. pl.* 1171. Knap. p. 79.) *Polymorphus*, Scopoli, Hudson, Withering. "Panicle spreading; peduncles nearly simple; spikelets ovate, compressed, ten flowered, florets distinct, roundish." Dr. Smith. Smooth rye brome-grass. *Root*, annual. *Stem*, about three feet high, simple, round, smooth, and leafy. *Leaves*, broadish, flat, ribbed, rough at the edge and underneath, clothed above with short, soft hairs; sheaths furrowed but not rough. *Stipule*, very short. *Panicle*, when young, erect, with lanceolate, closed spikelets; when mature, pendent, with the spikelets so expanded that the rachis is visible between them. *Calyx* unequal, awnless; glumes elliptic, smooth, three-nerved, membranaceous at the edges. *Florets* roundish, smooth, rarely downy, ovate, flat; outer glume marked with seven slight ribs, with a rough and rather short awn; inner glume toothed rather than fringed. Dr. Smith. Knap. Native of England, in Norfolk frequent. 2. *B. multiflorus*, Weigel, Gmelin. Willd. (Knap. Tab. 80.) Considered by Linnæus, a variety of *secalinus*. "Panicle spreading; peduncles seldom with more than one spikelet; spikelets, ovate-lanceolate compressed, fifteen-flowered; florets subimbricate, roundish." Dr. Smith. *Root*, annual. *Stem*, smooth. *Lower leaves*, naked beneath, a little hairy at the edge above. *Upper leaves*, pubescent, with a short woolliness beneath, hairy above; all rough at the edge; sheath smooth. *Stipule*, very short, lacerated, scarcely hairy. *Panicle*, as in the former. *Spikelets*, ovate-lanceolate, rather compressed, imbricate, and finally rather remote. *Glumes* generally slightly pubescent, rarely smooth. Dr. Smith. 3. *B. mollis*, Linn. said by La Marek, in *Boeoc.* Meth. to be only a variety of *B. secalinus*, but the error is corrected in the *Illustr.* (Curtis & Eng. Bot. 1078. Knap. 77.) "Panicle erect, close, compound. Spikelets, ovate. Florets, imbricated, depressed, ribbed, downy." Dr. Smith. *Root*, annual, of a few simple fibres. *Stem*, erect, about two feet high, simple, striated, generally smooth; joints swelling, often thickly clothed with hairs. *Leaves* and their sheaths thickly covered with a soft hoary pubescence. *Stipules*, bluntly jointed. *Panicle*, two or three inches long, erect, at first close, afterwards a little expanding; branches half-whorled, the upper simple, the lower more or less subdivided, angular, pubescent. *Spike-*

lets, nearly upright, ovate, acute, rather tumid. *Florets*, from seven to ten, closely imbricated, elliptical, concave, and depressed. *Calyx* of two unequal glumes, scarious at their edges, keeled, villous, marked with seven or nine strong green ribs. *Cor.* glumes similar to those of the calyx, the external one bearing a rough awn about its own length, a little below its summit: inner one membranaceous, without nerves, with a thick green fringed edge. Its compound dense panicle, and its strongly ribbed, depressed, closely imbricated glumes, at once distinguish it from the two former. The *B. nanus* of Weigel is only a starved dwarf variety. Dr. Smith. It is a common plant in meadows; and in some parts of the north of England, constitutes a principal part of their herbage, but chiefly in fields lately laid down, and owing perhaps not to its being preferred on account of its own excellence, but to the largeness of its seeds, which are more easily gathered, and consequently more profitable to the collector. Mr. Knapp informs us, that in the southern part of Scotland it is cultivated by itself like ray-grass in England. 4. *B. racemosus*, Linn. *Polymorphus*, Hudson, &c. (*Eng. Bot.* 1079. Knap. 78.) "Panicle, nearly erect, spreading, simple; spikelets ovate, of about six imbricated, depressed, ribbed, smooth florets." Dr. Smith. It agrees in general habit with the preceding, but is more slender; its glumes are perfectly smooth and shining, and their ribs less prominent. 5. *B. pedunculatus*, Willd. "Panicle, spreading; spikelets, ovate, smooth, inner valve of the corolla fringed, awnless." Thunberg. A native of the Cape of Good Hope. 6. *B. lanceolatus*, Willd. "Panicle, erect, spreading; spikelets, lanceolate, smooth, a little compressed; awns, at the time of flowering, straight; at the ripening of the seed, bent." Roth. *Root*, annual. A native of dry situations about the Caspian sea. 7. *B. alopecurus*, Willd. "Panicle, close, erect; spikelets round, awns divaricated." Vahl. *Spikelets*, nearly sessile, spirally twisted at the bottom. 8. *B. squarrosus*, Linn. "Panicle nodding; peduncles simple; spikelets ovate, twelve-flowered; florets imbricated, depressed; awns divaricated." Dr. Smith. *Root*, annual. *Stem*, a foot high, simple, smooth, striated, leafy. *Leaves* and sheaths pubescent, with a very short deflexed down. *Panicle* with few flowers. *Peduncles*, simple, compressed, thickening upwards. *Spikelets*, very large, ovate, swelling, polished, closely imbricated. *Calyx*, unequal, nerved, awnless. *Corol.* outer glume but little larger than the calyx, many-nerved, bipartite at the summit: awns awl-shaped, rugged, the length of the glumes; inner glume much less, ciliated with a few distant bristles. *Seed*, elliptic, adhering to the corolla, villous at the summit. Native of France, Germany, Siberia, &c. Its claim to be admitted into the British Flora rests entirely on the authority of Hudson, who probably mistook for it some variety of *B. secalinus*. 9. *B. japonicus*, Willd. "Panicle, spreading, branched; spikelets oblong, smooth; awns divaricated." Thunb. *Root*, annual. A native of Japan. 10. *B. bifidus*, Willd. "Panicle, erect, branched; spikelets ovate, with about three flowers; glumes bilid, setaceous; awn divaricated." Thunb. *Spikelets*, small, smooth. *Glume*, terminated by two awl-shaped points of nearly its own length. *Awn* jointed, reflexed. 11. *B. pargant*, Linn. "Panicle nodding, curled; leaves naked on both sides; sheaths hairy; glumes villous." *Root*, perennial. *Stem*, a foot and half high, strong. *Leaves*, the breadth of a reed, keeled, green. *Sheaths* with reversed hairs. *Spikelets*, from eight to fourteen, flowered, oblong. Gathered in Canada by Kaim. 12. *B. catharticus*, Willd. "Panicle, spreading, erect, nearly simple; spikelets, broadly lanceolate, striated, rough; awns short, straight." Vahl. *Root*, perennial, scaly. *Sheaths* naked

B R O M U S.

Spikelets, broader than those of the preceding, acute. A native of Chili, whose inhabitants use a decoction of its root as a purgative. 13. *B. brizoides*, La Marck, Ill. "Panicle, erect; spikelets, ovate, smooth; glumes furnished with broad membranaceous auricles." Native of Mont-Video. Commerçon. 14. *B. inermis*, Reich. "Panicle, erect; spikelets, roundish, awl-shaped, naked, nearly awnless." Pollich. *Root*, perennial, extremely creeping. *Stem*, a foot and half high, striated, smooth. *Leaves* broad, acuminate, smooth, dark green; mid-rib whitish, rough. *Panicle*, at first close and upright, afterwards widely spreading; and nodding a little at the top. *Pedicels* several together, lower ones very long, upper ones very short, often quite simple. *Spikelets* containing from seven to ten florets. *Glumes of the calyx* unequal, lanceolate, concave, blunt, smooth, greenish, with broad, silvery, thin, membranaceous edges; larger glume with one green nerve, smaller with three. *Glumes of the corolla* unequal; larger with seven green raised breaks, awn short, frequently wanting; smaller, flat, membranaceous, narrower, the edges rolled back, and surrounded by two green rough breaks. Martyn quoted from Krocker Flora Silesiaca. La Marck in his Illust. has directed the description in Encyc. Meth. to be expunged. Native of Germany and Switzerland. 15. *B. asper*, Linn. Sup. *ramosus*, Syst. Veg. Ed. 13. but not Mantissa; *nemorialis*, Hudson; *hirsutus*, Curtis; *dumetorum*, La Marck. (Curtis fasc. 2. Pl. 8. Eng. Bot. 1172. Knap. 85.) "Panicle drooping, branched; florets lanceolate, almost cylindrical, but slightly ribbed; leaves uniform, lower ones hairy." Dr. Smith. *Root* annual or biennial. *Stem* often six feet high, erect; smooth in the upper part. *Leaves* spreading, broad, of a full green, ribbed, rough, clothed with long spreading hairs, all nearly of equal breadth; *sheaths* rough, with deflexed hairs. *Spikelets* linear-oblong, pendulous, often brownish, a little downy. *Calyx-glumes* very unequal. *Florets* about nine, roughish on the keel; awn rough, shorter than the glumes; inner glume closely fringed; its membranaceous edges bent in. *Antheas* saffron-coloured. Moist woods and hedges in England, Germany, Switzerland. 16. *B. erectus*, Hudson, Ed. 1. *pratensis*, La Marck. (Eng. Bot. 471. Knap. 86.) "Panicle, erect, a little branched; florets lanceolate, roundish, radical leaves narrow, ciliate, with white scattered hairs." Dr. Smith. *Root* perennial, black, downy. *Stem* about three feet high, erect, stiff and straight, simple, rarely pubescent. *Leaves* linear-lanceolate, striated, rough. *Sheaths* striated, smooth. *Panicle* nearly simple. *Spikelets* linear-oblong, compressed, erect, often of a purple hue, either smooth or downy. *Calyx-glumes* lanceolate, acute, keeled; the inner one larger, three-nerved. *Florets* from five to nine, imbricated, lanceolate, a little compressed, somewhat angular, keeled, slightly nerved, rough at the keel; awns about the length of the keel, barely dorsal, straight, rough: inner glume rather downy than pectinated. Approaching to *festuca*, in which genus Dr. Smith would have been inclined to place it, if it had not so close an affinity with *B. asper*, an indubitable bromus. Sandy or chalky soil in England and France. 17. *B. littoreus*, Willd. "Panicle nearly erect, rough; spikelets oblong, from four to six-flowered, smooth, nearly awnless." Retz. Native of Sweden, Pomerania, Switzerland. 18. *B. ciliatus*, Linn. "Panicle drooping; leaves slightly hairy on both sides, as also the sheaths; glumes ciliated." *Root* perennial. *Stem* slender. *Spikelets* oblong, compressed, eight-flowered. *Calyx-glumes* naked, *Corol-glumes* lanceolate, very hairy at their edges, but not on the back. Native of Canada. 18. *B. sterilis*, Linn. (Curtis Fasc. 1. Pl. 9. Eng. Bot. 1030. Knap. 84.) "Panicle

drooping, mostly simple; florets lanceolate, ribbed, furrowed, leaves downy." Dr. Smith. *Root* annual, small; fibres capillary. *Stem* a foot and half high, slender, striated, leafy to the top. *Leaves* spreading, flat, rather flaccid, narrow, sharpish, ribbed, rough at the edges. *Sheaths* cylindric, ribbed, with soft deflexed hairs. *Stipule* oblong, torn. *Panicle* large, slender, spreading, rough. *Spikelets* lanceolate, pendulous, brownish green, afterwards dark purple, from six to eight-flowered. *Calyx glumes* very unequal, the larger one angular, ribbed. *Corol glumes* with 7 or 9 nerves, the two near the edge the greatest, furrowed, and a little downy between the ribs: the inner glume pectinated with distant bristles. *Styles* growing laterally out of the germen. A native of uncultivated places in England and other parts of Europe. 19. *B. arvensis*, Linn. (Eng. Bot. 920. Knap. 82.) "Panicle spreading; peduncles branched; spikelets lanceolate, about eight-flowered; florets elliptical, imbricated, depressed, smoothish." Dr. Smith. *Root* annual, small. *Stem* two or three feet high, leafy, striated, smooth. *Leaves* striated, a little downy on each side, rough at the edges. *Sheaths* thickly clothed with soft hairs pointing downwards. *Stipule* very short. *Panicle* rather erect, many-flowered; branches whorled, spreading, rough. *Spikelets* acute; at first erect, afterwards drooping; remarkable for a glossy appearance, scarcely observable in other bromi. *Calyx-glumes* very unequal, acute, ribbed, membranaceous at the edge. *Glumes of the corolla*, the outer one rough at the keel, membranaceous at the edge; inner one smaller, without nerves, obtuse, pectinated at the edge. *Seed* villous at the summit. A native of England, and other parts of Europe, sometimes in corn fields, but as frequently in cultivated places. 20. *B. spiculi tenuata*, Knapp. (Pl. 81.) "Panicle branched and drooping; branches supporting one or several spikelets; spikelets acutely lanceolate; florets smooth." Allied to the preceding. *Stem* from one to three feet high. In its more luxuriant state, branches very long; upright when young, flexile and pendent in maturity. *Spikelets* about eight-flowered. *Calyx* smooth, four-ribbed, serrated on the keel. *Corolla* smooth, but with some small spines on the back. When the panicle first rises from the sheathing of the upper leaf, the lower stage of branches is generally, though not universally, supported by two caducous bracts, perhaps peculiar to this species. Found by Mr. Knapp sparingly at Seaton, on the coast of Durham. 21. *B. geniculatus*, Linn. Man. "Panicle erect; florets distant; peduncles angular; stem procumbent at the knot." *Root* annual. *Stems* scarcely four inches high, decumbent to the last knot. *Panicle* spreading. *Pedicels* not at all attenuated, but compressed, obscurely three-sided, but with only two sharp angles, rough. *Spikelets* oblong, four-flowered. *Florets* rough, scarcely downy. *Awn* straight, the length of the floret. Native of Portugal. 22. *B. tetragonum*, Linn. "Panicle drooping; spikelets linear." *Root* annual, or at most biennial. *Stems* about a foot high, after flowering lying on the ground. *Leaves* narrow, flat, pubescent on the lower side, white-villose on the upper, ciliate towards the base; lower sheaths villous. *Peduncles* capillary. *Spikelets* about five-flowered. *Awn* straight, very slender, the length of the glume. Native of the continent of Europe, on walls and dry hills. 23. *B. giganteus*, Linn. *strigosus*, La Marck, Illust. (Curtis Fasc. 5. Pl. 7. Knap. 87.) "Panicle drooping, branched, with about four florets in the spikelet." Knap. *Root* perennial. *Stem* from four to seven feet high, smooth and shining, striated, leafy. *Leaves* rather erect, acuminate, a foot long, broad, flat, ribbed, rough on both sides and at the edges; sheaths long, striated, perfectly smooth. *Stipule* short, clasping the stem, purplish. *Panicle* elongated, branched, many-flowered, the rachis and branches rough. *Spikelets* alternate, ovate-

ovate-lanceolate, smooth, drooping. *Calyx-glumes* unequal, acuminate, smooth, keeled; the inner one broad, or with three ribs. *Outer glume of the corolla* smooth, ovate-lanceolate, scarcely keeled, with five ribs at the summit; *awn* terminal, two or three times longer than the floret, capillary, white, sometimes a little bent; inner glume the length and nearly the breadth of the other, its edge rough, but not ciliated. Dr. Smith, who on that account places it under the genus *festuca*. Mr. Knapp says the inner valve of the corolla is minutely fringed, and in his figure, the awn is decidedly dorsal, but neither of these particulars is confirmed by our specimens gathered in Yorkshire. We have, nevertheless, continued it among the bromi, induced rather by the general habit of the plant, than by any other consideration. A native of woods and moist hedges in the temperate parts of Europe. 24. *B. rubens*, Linn. "Panicle fasciculated, spikelets nearly sessile, villous, awns erect." The *scoparius* of Linnæus is suspected by La Marck, and determined by Cavanilles, to be only a variety. *Root* annual. *Stem* from seven to ten inches high, a little bent at its lower knots. *Leaves* smooth, short, and striated. *Spikelets* sometimes smooth, sometimes green, often blood-red, but generally paler: awns sometimes upright, sometimes divaricated on the same plant. Native of Spain. 25. *B. rigens*, Linn. Mant. "Panicle spiked; spikelets nearly sessile, erect, downy, with about four florets." *Stems* six or seven inches high, leafy. *Leaves* ribbed, slightly hairy on the upper surface; sheaths covering the whole culm. *Spikelets* scattered, tenacious. *Awns* nearly erect, the length of the spikelet. A native of Portugal, Vandel. 26. *B. triflorus*, Linn. "Panicle spreading, with about three flowers." *Stem* near two feet high. *Leaves* with short hairs. *Panicle* six or seven inches long. *Spikelets* oblong, pointed. La Marck. Native of Germany and Denmark. 27. *B. diandrus*, Curtis; *madritensis*, Linnæus; *murais*, Hudson, 2d Ed. *ciliatus*, 1st Ed. *dilatatus*, La Marck: (Curtis Flor. Lond. Fasc. 1. Pl. 9. Eng. Bot. 1806. Knapp. 83.) "Panicle upright, spreading, scarcely subdivided; florets lanceolate, ribbed; furrowed with only two stems." Dr. Smith. *Root* annual. *Stems* a foot and a half high, erect, stiff, slender, striated, smooth. *Leaves* often entirely smooth; sheaths ribbed, a little keeled, generally smooth, but sometimes with hairs pointing downward. *Stipule* short. *Panicle* scarcely three inches long, erect. *Spikelets* linear-lanceolate, erect, rough, often brownish. *Florets* diandrous, slightly ribbed, the two principal ribs standing peculiarly close to each other. Found by Dr. Withering in Portugal, and by Sir Joseph Banks at the foot of St. Vincent's rock near Bristol. It is probably the same plant with the *B. rigidus* of Willdenow, who does not appear to have known that the *madritensis* of Linnæus is diandrous. 28. *B. spilioides*, Linn. Mant.; *incrassatus*, La Marck. Encyc. Method. "Panicle erect, ovate-pyramidal, spikelets smooth, about four-flowered, pedicels flattened, and enlarged above." La Marck. *Root* annual. *Stem* six or seven inches high, slender. *Leaves* narrow, smooth. *Panicle* upright, rather close, oblong. *Spikelets* smooth, greenish, or tinged with purple violet. *Florets* three or four, each supported by a pedicel, broader and flat towards the top. *Awns* straight and perfectly terminal. A native of Italy and Spain; determined by La Marck from a living plant. 29. *B. rameus*, Linn. "Stem much branched; spikelets sessile; leaves involute-subulate." *Root* perennial, creeping, hard, jointed, producing at different intervals tufts of leaves and stems. *Stems* a foot and a half high, slender, smooth, leafy; throwing out toward the bottom short, alternate generally barren branches. *Leaves* short, glaucous, rolled up. *Spikelets* from three to five, from eight to ten-flowered; awns short,

terminal, resembling those of *B. pinnatus*. La Marck. On the shores of the Levant and Portugal. 30. *B. pinnatus*, Linn. "Spike simple, erect, two-rowed; spikelets sessile, roundish; awns shorter than the glume: leaves almost naked." Dr. Smith. *Root* perennial, a little creeping. *Stem*, a foot and half, or two feet high, erect, simple, round, leafy, very smooth, straight, and rigid, scarcely tapering. *Leaves* somewhat erect, lanceolate, acuminate, rather rigid, striated, nerved, rough, often naked, rarely hairy on the upper surface. *Sheaths* smooth and polished, (Dr. Smith.) generally hairy (La Marck and Knapp, with whom our own specimens agree.) *Stipule* short, obtuse, ciliated. *Spikelets* from six to ten, downy, often curved. *Calyx-glumes* rather elliptical, somewhat awned, many-nerved. *Florets* twelve or more, closely imbricated, nerved, and hairy, chiefly towards the summit; awn terminal, shorter than the glume, sometimes very short, rough; inner glume ciliated with great bristles. Native of a dry, calcareous soil in many parts of Europe. In England, not uncommon in Yorkshire, Oxfordshire, and Kent. 31. *B. sylvaticus*, Pollich; *gracilis*, Weigel and Willdenow. "Spike simple, drooping, leaning one way; spikelets sessile, roundish; awn longer than the glume; leaves hairy." *Root* fibrous, tufted, perennial. *Stems* two feet high, round, leafy, tapering, very slender, and a little drooping in the upper part. *Leaves* spreading, flat, pointed, a little rigid, rough, ribbed, more or less hairy, bright green. *Sheaths* straight, close, hairy. *Stipule* short, blunt, torn. *Spike* simple, drooping, zig-zag. *Spikelets* six or seven, alternate, sessile, cylindrical, linear-lanceolate, generally downy. *Glumes of the calyx* unequal, with short awns. *Florets* from six to nine, imbricated, in the upper part strongly ribbed and rough; awn terminal, rough, generally much longer than the glume: inner glume fringed like the preceding; supposed by some to be only a variety of *B. pinnatus*; but they cannot be confounded by any one who is acquainted with their native habits and places of growth. Frequent in copses and thickets, especially in a gravelly soil. 32. *B. cristatus*, Linn. "Spikelets imbricated in two rows, sessile, depressed." *Root* perennial. *Stem* about half a foot high, downy, leafy, lower sheaths villous. *Spikelets* about 20, downy, four-flowered. *Awn* terminal. La Marck. A native of Siberia and Tartary. 33. *B. distachyos*, Linn.; *platystachyos*, La Marck. Illust. "Spikelets three or four, erect, compressed, rigid, sessile; glumes ciliated." *Root* annual. *Stem* from six to ten inches high, leafy, a little bent at the knots. *Leaves* rather short, soft, and ciliated at their edges. *Spikelets* large, alternate, from two to five. *Florets* eight or nine. *Awns* long, straight, terminal; the external glume ciliated. La Marck. A native of the southern provinces of France.

The last six species have the terminal awn of *festuca*. Hudson and Knapp have accordingly referred the *pinnatus*, and *sylvaticus* to that genus, in their arrangement of British grasses; but Dr. Smith, partly on account of their general habit, but chiefly of their ciliated interior coroll glume, has continued them among the bromi. The last five have the inflorescence of *triticeum*.

BROMUS glomeratus, Scopoli. See DACTYLIS.

BROMUS capillaris. See CYNOSURUS.

BROMUS, in *Entomology*, a species of *SPHINX* (*Zygaena*), described by Fabricius as a native of Surinam. It is ferruginous, with hyaline wings, and the margin entirely black.

BROMYARD, in *Geography*, is a market town of Herefordshire, England, situated in a valley, in a part of the county which abounds with orchards. It is irregularly built, and badly paved. Many of the houses are small timber structures, and the market house is in a very shattered state. The church, an ancient edifice, is now undergoing considerable

able repairs. Bromyard contains 242 houses, and 983 inhabitants. It has a small weekly market on Tuesdays, and four annual fairs. It is 125 miles W. from London.

BRON, a town in France, in the department of the Eure and Loire, and chief place of a canton, in the district of Chateaudun, $2\frac{1}{2}$ leagues N.W. of Chateaudun; the place contains 1918, and the canton 10,611 inhabitants; the territory includes 267 kilometres, and 121 communes.

BRONCHANT, in *Heraldry*, a term used by the French heralds to denote the situation of any beast, when placed on a field strewn with fleur-de-lis.

BRONCHIA, or BRONCHIE, in *Anatomy*, the two primary divisions of the trachea or wind-pipe, which convey the air to the lungs. See LUNGS.

BRONCHIAL Arteries arise from the descending aorta, and accompany the bronchie into the lungs. See the description of the ARTERIES and LUNGS.

BRONCHIAL glands, absorbent glands situated at the root of the lungs. See the description of the ABSORBENT vessels and lungs.

BRONCHIAL Veins are those which accompany the bronchial arteries. See the description of the VEINS and LUNGS.

BRONCHOCELE, in *Surgery*, an appellation usually given to a swelling seated on the fore-part of the throat, and well known in England by the popular name of a *Derbyshire neck*, or monstrous craw. The word *bronchocele* is derived from *βρογχος*, the wind-pipe, and *κελη*, a tumour. This disease was familiar to some of the ancients, and is described by Celsus (*De Re Medica*, lib. vii. cap. 13.), although his account of its nature and treatment is very imperfect. The most common situation of this swelling is the sides of the thyroid gland, and in a great many cases it seems to consist of a general enlargement of that organ; but not unfrequently the gland becomes sub-divided into various distinct fleshy portions, connected closely to each other by cellular membranes.

The form and contents of this tumour will be found very different in different subjects; for the most part, however, it is roundish during the first years of its existence, and moderately compressible, endowed with little sensibility, highly vascular in its texture, not readily going into suppuration, and leaving the external skin of its natural colour. Some authors have said, that the bronchocele consists of a honey-like matter; others, that it contains little portions of bone and hair; others, that it is inflated by air; and some, that it is distended by a watery, serous, or puriform fluid, &c. Probably most of these opinions may be occasionally true; but our own experience inclines us to believe, that in the greater number of cases the swelling is truly sarcomatous, or fleshy. This disease should be distinguished from aneurism of the carotid or thyroid artery; from scrofulous enlargements of the lymphatic glands; and from an extension of the membrane lining the trachea, which sometimes forms a real hernia, by protruding between its annular cartilages. See ANEURISM, SCROFULA and HERNIA.

Although bronchocele is found in many countries, it exists with peculiar frequency at the bottom of mountains, where much wet and heat prevail; from which circumstance, it has been supposed by some people to be chiefly confined to the sub-alpine regions. "Le goître est une tumeur indolente de la glande thyroïde, qui survient principalement aux habitans des vallées placées au pied des Alpes secondaires; et que je nommées, pour cette raison, *sub-sub-alpines*." *Traité du Goître et du Crétinisme* par F. E. Fodéré, Paris, An. viii.

Who has not heard of the swelled throat of the Alps? an ancient poet inquires.

"Quis tumidum guttur miratur in Alpibus?"

The French name, *goître*, or *gouëtre*, is evidently a corruption of the Latin word *guttur*, the throat; and although M. Louis has maintained, that the bronchocele and the goître ought not to be mistaken for each other; these two names are now so universally applied to a similar affection, that it would be vain to attempt any correction of the supposed error. Vide *Encyclopedie*, Art. *Goître*, composed by M. Louis. In another place he says again, "Il ne faut pas confondre, comme on fait assez communément, la *bronchocele* avec une autre tumeur du cou qu'on nomme *goître*." Art. *Bronchocele*, *ibid*. He would confine the term bronchocele to an hernia of the wind-pipe, which, in his opinion, may be cured by compressing the tumour with a suitable bandage and cushion.

Upon the disorder which constitutes the subject of the present article, we know not any author who has written so amply and experimentally as M. Fodéré, who had many opportunities of observing the bronchocele in all its stages, where it prevailed as an endemic disease.

This affection more frequently attacks females than males, children than adults, and relaxed or delicate constitutions than those which are rigid and vigorous; but it will sometimes affect persons of apparently good constitutions, and of either sex, on their going to reside in the low valleys beneath the Alps, the Pyrenées, the Apennines, &c. where it is endemic and hereditary. Scrofula and rickets seem to make the greatest ravages among people who are liable to bronchocele: but M. Fodéré is positive that the latter disease, nevertheless, differs materially from the two former; and that the *goître* is purely a local complaint of the neck, unattended with the least danger, except it occasion violent mechanical pressure by the enormous bulk of the swelling. Vide chap. v. § 19, to 24. *Traité du Goître et du Crétinisme*.

The remote physical causes which have been assigned for this disease, are various and unsatisfactory: viz. the drinking of hard, cold, or snow-water; the use of alimentary substances not sufficiently nutritious; the repulsion of some cutaneous disorder; the abuse of vinous or spirituous liquors, &c. Theories, which have been founded on any of these supposed causes, are too hypothetical, and are contradicted by numerous facts; besides which, the bronchocele will be found to prevail where none of these causes exist in a striking degree, as several writers have sufficiently proved. The disease, however, is known to predominate most in countries affected by great humidity of the atmosphere, joined with excessive heat; it augments in the spring-time, and diminishes in the autumn; it is less prevalent in a cold and dry winter, than during a season of dampness and moderate warmth; it is even said to be influenced in its progress, wherever it is endemic, in exact proportion to the degree of moisture indicated by the hygrometer. These facts are established by the observation of Messrs. Fodéré and Villars, after numerous and varied experiments.

We cannot, moreover, acquiesce in the explanation which has been offered respecting the proximate cause of this disease, or the phenomena of which it consists. The thyroid gland, some writers tell us, contains a viscid humour, which continually lubricates the larynx and trachea by its exudation; and it is the stagnation or detention of this mucus in the capsules of the gland, say they, which forms the disorder in question. But, we ask, have the uses of the thyroid gland been ascertained? Has its minute structure been developed? Has there been any muciferous ducts or outlets detected? Is it really a secreting organ? Further, we are told, that the humid air is imbibed by the cellular texture of this gland; that it thereby becomes expanded, or tumefied; that its se-

BRONCHOCELE.

cretory ducts are thus obstructed; and that bronchocele consists altogether in this laxity or atonic state of the organ. But, surely, all this is hypothetical; for, even supposing the imbibition of moist air to take place (which, however, remains to be proved), would it not be received into the absorbent vessels, and transmitted to the thoracic duct? And, why should it be imagined, that the thyroid gland imbibes the moist atmospherical air, more than other parts of the body which are equally exposed?

Upon the whole, we see no reason for adopting the above opinion, however respectably it has been supported; and we do not feel competent to offer any explanation ourselves of the proximate cause of this disease. Perhaps some light will be thrown on the inquiry when we are better informed as to the economy and natural use of the thyroid gland; but, for the present, we are without *data*, or suitable analogies, to afford a legitimate conclusion. We proceed, therefore, to the means which have been employed for the prevention and cure of this complaint: a subject on which much has been said and written, although not to the entire satisfaction of practitioners or patients in general.

As to preventive measures, they must chiefly consist of such as tend to meliorate the soil and air of those places wherein the bronchocele is endemial. If it be a fact that marshy lands, an humid atmosphere, deep and woody vales, surrounded by lofty hills which intercept the salubrious breezes, are among the physical causes of this disease, the prevention must partly depend upon the removal or avoidance of such causes; and this should be especially attended to by persons who are naturally of a delicate or soft fibre, and are therefore predisposed to debilitating complaints.

The curative means are either medical or surgical. The internal remedies, which have acquired the greatest reputation, are burnt sponge, soap, sulphurated kali, prepared nitron, and artificial soda-water. It has been advised to exhibit a dose of calomel and neutral salts once a week, during the use of the other medicines; likewise to keep the neck warm; to reside in a dry pure atmosphere; and to swallow the above-named remedies very slowly, which is particularly insisted on if the patient take these medicines in a solid form. Authors have also alleged, that benefit is sometimes derived from the external application of mercurial ointment, blistering plaster, soap liniment, camphorated oil, dry frictions, moderate compression, and electrical sparks. But of all these means, the burnt sponge made into lozenges, has received the highest encomiums. For our own part, we have been disappointed in our expectations from these lozenges; although many practitioners consider them as almost infallible, if properly administered and persevered in. The following is the formula recommended by Mr. Ring:

Take of Burnt sponge, two ounces;

Powdered gum Arabic, two drams;

Powdered cinnamon, half a dram;

Simple syrup, enough to form the whole into

a mass, which is to be divided into forty-eight troches. Care must be taken that no more syrup be used than is absolutely necessary to make the dry ingredients properly cohere; for which reason, it must be added slowly, and the mass must be well beaten. The lozenges are to be dried before a fire, on a plate which has been slightly oiled, to prevent them from sticking; and they must be kept in a bottle or gallipot, tied over with a bladder.

One of these tablets is to be exhibited three times a day, for a considerable time. Some practitioners, indeed, have given so much as six or eight drams of the burnt sponge daily, without any inconvenience; and, too often, without any benefit to their patients. It would be deservng the at-

tention of surgeons, to ascertain, if possible, the cause of this diversity in their success; and whether the nature of the affliction, in the cases said to have been cured by the use of the sponge, does not essentially differ from those in which this remedy has been taken largely to no good purpose.

Dr. Herrenscharward, of Berne, thinking that the burnt sponge has a tendency to injure the stomach, and produce a leucorrhœa, advises that it should not be calcined, but employed in decoction; and this, he says, is equally efficacious. Whereas, M. Foderé prefers it to be only half-burnt, and mixed with honey and canella alba; of which the bulk of a large nut is to be taken three times a day, for several weeks.

This last author tells us, he has seen an extremely large swelling of the neck dispersed by the daily use of thirty grains of the sulphate of potash, dissolved in a pint of water: and he considers the cure as more easily effected, by requiring the patient to take a cathartic every week, during the whole time of the medicinal course; by keeping the neck very warmly covered; by swallowing the burnt sponge, &c. insensibly, or holding it a considerable while in the mouth; by beginning the remedy at the decline of the moon; and by changing the air to a dry or open situation, which, indeed, he regards as indispensably necessary.

The success will also much depend on the patient's being young, and otherwise healthy; but if the swelling be of a scirrhus or indurated nature, there is very little hope of relief, except by a manual operation, such as Cornelius Celsus long ago recommended. However, the extirpation of the tumour can hardly be undertaken, unless it be detached, encysted, and seated at the fore part of the neck.

The swelling being situated in the vicinity of so many important organs, will deter a surgeon from hastily proposing its entire excision; besides, there are cases related, in which the mere opening of the cyst has effected a cure; and, in these cases, the contents were either evacuated at once, or gradually lessened by suppuration. When there is an evident fluctuation of matter, a seton drawn through the tumour might perhaps be advantageous; or, as Celsus and others have suggested, the application of a caustic might be partially useful: but, if the life of a patient be not endangered by this disease, it would be prudent to avoid such irritating means. Although the ulcer which remains after the use of a caustic will sometimes be exceedingly distressing and difficult to heal, we are not of opinion, with Mr. Benjamin Bell, that it ever "degenerates into a cancer."

We ought not to conclude this article without alluding to a celebrated remedy prepared and sold at Coventry, for the cure of bronchocele. It is generally supposed to be less efficacious than burnt sponge alone, and to consist of equal parts of sponge, cork, and pumice stone, calcined; which is formed into a bolus, with sugar or syrup, to be laid under the tongue every night. Mr. Prosser, who published an account of the bronchocele and its treatment in 1771, recommends the following powders, in preference to the Coventry medicine:

R. Cinnab. Antimon. opt. levig. ʒj.

Milleped, pp. & pulv.

Spong. calcin. ʒiij gr. xv. m. f. pulvis.

One of these is to be taken an hour or two before breakfast, for two or three weeks; and after the interval of about a fortnight, they are to be again renewed; and three of the following pills are to be taken at bed-time, during the second course of the powders.

R. Pil. Mercurial ph. nov. ʒ ss.

F. Pil. N^o 48. æqualea.

The dose is to be adjusted to the age and constitution of the patient, who should be prepared for this course by two

or three previous purges, and avoid taking cold. If these means be used for about a month or six weeks, without any external application, Mr. Proffer has no doubt of success. However, the patient should be under twenty-five years of age. At this age the cure is uncertain; but at a more advanced period of life it is much more improbable, and seldom or ever succeeds. Mr. Gooch, in his "Medical Observations," mentions an *aqueous BRONCHOCELE*; and so does Mr. Davies in the Med. and Phys. Journal, N° 71, Jan. 1805.

BRONCHORST, PETER, in *Biography*, a painter of perspective and history, was born in 1588 at Delft, where he learned the art of painting. His subjects were views of ancient and modern churches, which he executed with great success. In the council chamber at Delft are his "Judgment of Solomon," and "Christ driving the money-changers out of the Temple;" described as performances in which the architecture is elegant, and the figures carefully finished. He died in 1661. Pilkington.

BRONCHORST, JOHN-VAN, a painter of history and landscape, was born at Utrecht in 1603; and as he discovered an extraordinary genius before he was 11 years of age, he was placed under the direction of John Verburg. He was afterwards for some time assistant to Peter Mattys, a painter on glass, at Brabant. After his return to his own country, he entered the school of Cornelius Poolemburg, and being charmed with his taste of design, pencilling, and colour, imitated his style with great success. Till his 36th year he painted on glass; but after that time in oil, after the manner of Poolemburg, and obtained a lasting reputation. In the choir of the new church at Amsterdam, there are three of his paintings on glass, which are exhibited as curiosities; and in the same church, on the folding doors of the organ, are three historical paintings in oil, "The Triumph of David over Goliath;" "The anointing of Saul;" and "The attempt of Saul to kill David while he was playing on the harp," which are excellent performances. He also amused himself with the point; and some landscapes from Poolemburg, and other subjects from his own composition, are attributed to him. Pilkington and Strutt.

BRONCHORST, PETER, was born at Leyden in 1648, and, from an obscure original, arrived, by the power of his own genius and incessant application, without any master, at distinguished excellence as a painter in water-colours. His subjects were birds and animals of all kinds, which he copied after nature with uncommon life, exactness, and expression. He died in 1723. Pilkington.

BRONCHORST, or BRONHORST, in *Geography*, a town of the United Dutch States, in the county of Zutphen; 5 miles N of Doesburg.

BRONCHOTOMY, in *Surgery*, is the operation of cutting into the trachea or wind-pipe; from *βρογχος* and *τεμνω*. It has been also named **LARYNGOTOMY**, and **TRACHEOTOMY**; although there can be no reason whatever for employing the latter terms in preference to the usual appellation. Mr. Benjamin Bell, however, has said, that as bronchotomy "consists in an opening made into the trachea, and not into the bronchiæ, it ought more properly to be named *tracheotomy*;" but to such hypercriticisms, we can only reply, in the language of M. Petit-Radel: "Quelques nomenclateurs, peu instruits dans la langue Grecque, et ignorant que les anciens désignaient le trachée sous le nom de *βρογχος*, qu'ils ont confondu avec *βρογχια*, qui sont les anneaux des subdivisions de ce canal, ont mieux aimé désigner cette opération sous le nom de *trachéotomie* ou *laryngotomie*; mais ses dénominations n'ont pu généralement prevaloir." Encyclop. Méthod. Art. *Bronchotomie*.

The operation of *bronchotomy* may be practised, with

greater or less probability of success, in cases where a patient is in danger of suffocation, from an obstacle in the trachea, or a constriction of the glottis. There may be likewise a necessity for our resorting to this operation, where the trachea is compressed by a tumour externally, or where the tonsils and parts adjacent become so enlarged as to impede respiration considerably. In short, should any mechanical cause be supposed to exist, of threatening suffocation and impending death, the surgeon's duty will be too plain and imperious to admit of hesitation: an incision must be made into the trachea without a moment's delay, unless some other obvious remedy can be suggested for the patient's restoration. The cases to which we here allude are so various, that they cannot be all enumerated; but no well instructed practitioner will suffer any person to lose his life for want of an operation so easily performed, so little attended with bad consequences in itself, and so certainly efficacious in a multitude of examples which frequently occur.

Perhaps few, if any surgical means can be proposed for the relief of a patient in extreme danger, so revolting to mankind, as this of bronchotomy. A general and long established prejudice prevails against it, arising from an erroneous opinion, that "wounds of the wind-pipe are always mortal." Although this opinion is refuted by almost daily observation, and numbers of people have recovered after cutting their own throats (i. e. dividing their trachea) in the most horrid manner; yet still, the popular notion exists, and must be encountered. It is therefore advisable, prior to the performance of this operation, that all the reasons which influence the surgeon's decision, should be stated fairly, and the probable or certain consequences of a different procedure be judiciously represented to the patient or the bystanders, to prevent any groundless blame in the event of ill-success.

As the cause of interrupted respiration may be different, on different occasions, so must there be a variety in the manner of performing this operation, according to the existing circumstances: in some cases, a simple incision into the wind-pipe, about half an inch below the cricoid cartilage, will effect the relief we wish for; but, in other cases, the wound must either be kept open by a canula; or a portion of one or two of the cartilaginous rings must be cut out, in order that the patient may continue to breathe with facility through the artificial orifice. Sometimes, again, it may be requisite to make a second opening, with a view to assist us in the extraction of a foreign substance; and when that object shall have been attained, probably there will be no further necessity for an artificial air-hole remaining open in the trachea, so that the external as well as the internal wound may be healed with all convenient speed.

When it is required that the patient should breathe for some time through the wound, it would, we think, be generally preferable to cut out a portion of the cartilage, (which has been often done with safety,) rather than to harass the patient by keeping a metallic canula in the wound, between the divided cartilages. An incessant coughing and sense of uneasiness will be likely to ensue from the presence of a canula, which might, therefore, be a source of greater mischief than could possibly arise from the removal of a small piece of cartilage. Every person knows what distressing consequences immediately follow on the admission of only a crumb of bread into the glottis: and how aggravated must the sensations of a man be, who has a silver tube remaining in his larynx or trachea for several days, especially if it happen to touch the opposite parietes! Should an extraneous body be lodged in the trachea, it is not always capable of being removed without making an incision across three or four of the carti-

laneous

lagicous rings, (i. e. in the direction of the wind pipe itself,) exactly opposite, or a little below the foreign substance.

Several kinds of instruments have been proposed for executing this simple operation; such as concealed lancets, trocars and canulae, guarded scalpels, &c. But, we cannot conceive what hazard or difficulty should occur to a surgeon who is at all used to handle a common dissecting knife, in making a longitudinal incision through the fore-part of the neck and trachea. We are very much inclined to simplify all chirurgical operations and instruments; rather than to make a parade, which sometimes tends to magnify real difficulties, or to create imaginary ones in the eyes of a young practitioner. Besides, the operation of which we are now treating is among the number of those which usually call for prompt and definitive measures; wherein the surgeon has no opportunity, (except in large cities,) to search for curious instruments, and, therefore, should feel confident, that his business may be well performed without them. The apparatus essentially necessary, on this and many other important occasions, will, doubtless, be in the possession of every surgeon, or may be easily obtained when called for.

The following has been recommended as one of the best modes of performing the operation of bronchotomy:

The patient is placed upon a low stool, or in that posture in which he finds it most easy to breathe; his head is held upright, but by no means bent backwards, and secured by an assistant. Opposite the third or fourth cartilaginous ring of the trachea, the skin is now drawn up into a high cross fold; and it is cut through exactly at the middle of the trachea, to such a depth, that when the fold is let go, the incision extends itself longitudinally from the first cartilaginous ring down to near the upper extremity of the sternum. By making the incision of a proper length, the operation will be greatly facilitated, as its edges can then be drawn farther from each other.

As soon as the hæmorrhage has been entirely stopped, that part of the trachea, where the incision is finally to be made, must be laid bare, by dissecting away the cellular substance and muscular fibres situated about the membranous interstice between the third and fourth ring, and by either entirely removing them or pressing them sideways. The operator then places the nail of the fore-finger of his left hand upon this interstice; and applying the thumb and middle finger of the same hand to both sides of the trachea, he pushes the point of his instrument, which must previously be dipped in some fresh oil of almonds, along the nail of his fore-finger, through the above-mentioned membranous interstice, between the third and fourth cartilaginous ring, into the trachea. He then applies the fore-finger of his left hand to one or the other of the cartilaginous rings, close to the tube or canula, in order to hold it back whilst he withdraws the blade of his instrument. If we make use of Richter's curved instrument, we must move the hand upwards in pushing it in, in order that we may turn the point of the instrument downwards, and prevent its touching the back part of the trachea.

But in order that we may prevent the tube from slipping out of the wound, and also to prevent its moving to and fro in the trachea, several dissepiments are introduced above and below into the wound, so as to keep the lips asunder. To the rings, on both sides of the external opening of the tube, two narrow slips of linen are applied, which press the rings down upon the trachea; and the whole is covered and secured with adhesive plaster. And that none of the fluids which are collected in the wound may make their way into the canula and wind-pipe, the patient must lie or sit inclined on one side, and the wound must, from time to time, be wiped

dry with a sponge. When the tube fills with mucus, it must be cleaned with a small feather; or two such tubes may be employed, one enclosing the other, and either of them removed, when necessary, for the purpose of clearing it of mucus.

As an improvement upon the instruments heretofore employed, Mr. Benjamin Bell proposes one which has nearly the form of a flat straight trocar, and ought never to be less than two inches in length. Before it is pushed between the two cartilages, it must first be thrust through several linen compresses, which not only serve to cover the pledget of ointment intended to protect the wound, but also produces the advantage that (by removing one or more of the compresses, which may be done by cutting them open at the sides with a pair of scissors,) we are able to increase the length of the tube at pleasure. In order to secure the tube in the situation where it is left after the operation, he passes it through an opening in a plate of polished steel, which is curved so as to fit to the shape of the fore-part of the neck, and fastened behind with straps and a buckle. To prevent any foreign substance from getting through the orifice of the canula into the trachea, it may be covered with a piece of fine gauze, which should previously be wetted, that the dull may not penetrate through it, but stick to the outside.

When the cause which gave rise to the operation has been removed, and the patient can again breathe through his mouth, the tube is withdrawn, and the orifice healed up like any other wound of the wind-pipe; in doing which great caution should be used, lest any thing should get into the trachea, which might produce dangerous consequences.

Messrs. Chopart and Desault propose, that the incision into the trachea should be made between the thyroid and cricoid cartilages, and through the ligamentum crico-thyroidæum; which, however, we cannot recommend, on account of the far greater sensibility and irritability of the larynx, whereby the most violent symptoms, threatening immediate suffocation, might be excited.

When this operation becomes necessary on account of any foreign substance lodging in the trachea, it may be performed in the following manner. The integuments are first divided as above described; and a longitudinal incision is made at the anterior part of the trachea, from above, downwards, through three or more of the cartilaginous rings. An assistant then draws asunder the sides of the wounded trachea with a blunt hook, upon which the operator introduces a crooked forceps, with which, he carefully seeks for, and extracts the foreign body.

In this case, it is also indispensably necessary, that the hæmorrhage from the external wound should be entirely stopped before any incision is made into the trachea, as otherwise a very violent cough would be excited.

If an extraneous substance should stick in the larynx, it might perhaps be dangerous, (as some have advised) to cut the thyroid cartilage longitudinally, since this operation would excite very violent coughing; and might likewise be superfluous, if it were possible to lay hold of the foreign substance with a crooked forceps, introduced through an incision made at the usual place, below the cricoid cartilage.

BRONCHUS, in *Anatomy*, properly denotes the lower part of the *aspera arteria*, dividing into bronchiæ, or branches. In which sense bronchus stands contradistinguished from larynx.

The name bronchus is also extended to the whole *aspera arteria*, or trachea.

BRONCHUS also denotes a person afflicted with a bronchocoele, or tumour of the throat, called by Ulpian *gutturæfusa*.

BRONCOLI, THOMAS, in *Biography*, a Neapolitan physician, who published in 1622, 4to. "De populari horribili et pestilenti Gutturis et annexarum Partium Affectione, Neapolin et totum fere Regnum vexante, Consilium." This is an early account of the *scarlatina anginosa*, which seems not to have made its appearance in this country until about the middle of the last century, when Dr. John Fothergill published an accurate account of the disease, with the method he had found most successful in treating it. He is very earnest in advising his brethren to be careful in distinguishing it from the common quinsy, as it requires a mode of treatment very opposite to that disease. The *scarlatina anginosa* has of late years become one of the most frequent, as well as most infectious and dangerous epidemics that visit this country.

BRONE, in *Geography*, a river of Switzerland, in the Valais, which joins the Rhone near Sion.

BRONGUS, in *Ancient Geography*, a river of Moesia, which, according to Herodotus, discharged itself into the Ister.

BRONI, or **BRONNO**, in *Geography*, a town of Italy, in the Milanese, where the French were defeated by the Imperialists in 1793; 10 miles S.W. of Pavia. N. lat. $41^{\circ} 50'$. E. long. $10^{\circ} 0'$.

BRONITZA, a village of Russia, seated on the Maissa, within 20 miles of the Novogorod. In this village an excellent caviare is prepared of the roe extracted from large quantities of fish caught in the Maissa. At the distance of about 2 miles is an insulated well of sand and clay, of a circular form, the lower parts of which are thickly strewed with detached pieces of red and grey granite. This eminence was remarkable in the times of idolatry for an oracular temple, the site of which is now occupied by a brick white-washed church.

BRONNIKOO, a town of Siberia, on the Irkutsch, 28 miles N. of Tobolsk.

BRONTES, in *Entomology*, a species of *PAPILIO* (*P. Urb.*) of a small size, that inhabits Africa. The wings are subcaudated, above and beneath fuscous, with a band on the first pair, and margin of the second snowy white. Fabricius. Obs. In *Spec. Inf.* of that writer, it is described under the specific name of *Annus*.

BRONTES, is also the name of *PAPILIO PANISCUS*, in some German writers.

BRONTEUM, in *Antiquity*, that part of the theatre underneath its floor, wherein brazen vessels, full of stones and other materials, to imitate the noise of thunder, were kept. Potter. Arch. Græc. lib. ii. cap. 8.

BRONTI, in *Geography*, a town of the island of Sicily, 28 miles W. of Taormina.

BRONTIÆ, among *Naturalists*, a kind of figured stones, commonly hemispherical, and divided by five pointed zones.

The word is formed from *βρονν*, *thunder*; alluding to the popular tradition that those stones fall in thunder showers: whence they are also denominated thunder-stones, sometimes polar-stones, fairy-stones, and also *ombrie*, by naturalists.

Some take the *brontia* for the petrified shells of the *echinus spatagus*, or *briscus*, of Aristotle. Dr. Woodward rather supposes them to have been formed, and received their shape, in the shell of the *echinus spatagus*; on which footing they are also ranked in the number of *ECHINITES*. Dr. Plott contests both.

BRONTIÆ are sometimes also used in England for a kind of figured stones, shaped like arrow-heads, less properly called *BELEMNITES*, and popularly *thunder-bolts*.

Dr. Woodward takes not these for natural stones, but supposes them to have been fashioned thus by art, to serve as weapons before the invention of iron.

Some also give the denomination *brontia* to the *BATRACHITES* and *CHELONITES*.

BRONTOLOGY, books containing the doctrine of thunder, and of the presages drawn therefrom. See *THUNDER*.

BRONZE, **BRONZO**, *Italian*, a mixed metal for casting statues and other ornaments; Vafari says, the Egyptians mixed two-thirds of brass and one of copper. Pliny l. 34. c. 10. says, one-tenth of lead, and one-twentieth of silver should be added to the brass, and the mixture of these three, he calls *Grecian*; among the moderns two-thirds of copper and one of brass are found to be a good mixture. The ancients formed most instruments of brass, which the moderns make of iron and steel; Homer describes most of the arms in his poems, offensive and defensive, as brazen; he calls the Greeks by the general epithet of brass-coated; and seldom mentions steel; most of the arms and instruments found in Herculaneum, Pompeia, Stabea, &c. were of brass or bronze, whether agricultural, mechanical, mathematical, architectural, or culinary; the remains of very few iron instruments having been discovered, and a complete set of surgical instruments of bronze found in Pompeia, shew the great prevalence of this metal among the ancients.

BRONZE, *casting*, is performed in the following manner: the figure or pattern to be cast in bronze, must have a mould made on it in a mixture of plaster of Paris and brick-dust, not more than one third of the former, and two-thirds of the latter; the mould should be sufficiently thick for strength, according to its size; in its joints little channels should be cut from different parts of the internal hollow tending upwards, to give vent to the air, which the metal will force out, as it runs into the mould. When the mould is made, a thin layer of clay should be neatly and smoothly spread over the inside, the same thickness the bronze is intended to be; then the mould must be closed, and the hollow within the layer of clay filled with two thirds of brick-dust, and one-third of plaster mixed with water; this will make the core; and if the figure to be cast should be large, before the plaster and brick-dust are poured into the mould which is to form the core, strong bars of iron forming a skeleton of support for the metal figure, when cast, must be laid in the mould, and round this the core must be cast; when this is done, the mould must be opened again, and the layer of clay taken out; the mould and core must then be thoroughly dried and even burned with charcoal or lighted straw, for if the least particle of wet or damp remains, the cast will be blown to pieces, and the persons engaged in the work will most likely be maimed or killed by the dispersion and force of the hot metal. After they are perfectly dried, the core should be laid in the mould again, and supported in its place by short bars of bronze, which run through the mould into the core; the mould may now be closed and bound round with bars of iron strong in proportion to the size of the work; the mould should then be laid in a situation for casting, and well supported with dry materials, as sand, stones, &c.: great care must be taken that these also are d.y., to avoid fatal consequences. A channel must be continued from the reservoir of metal to the mouth of the mould, with a sufficient slant or inclination for the liquid bronze to run easily; it is a necessary caution that no person should engage in bronze casting without the assistance of experienced workmen, on account of the danger attending it. Many particulars relating to this article may be found in Pliny's Natural History; in the Life of Benvenuto Cellini, and Vafari's Lives, in the chapter upon bronze-casting. The form of the furnace for this purpose, as well as the manner of running the metal, are the same as employed in casting bells.

BRONZE,

BRONZE, in *Painting*, denotes a colour prepared by the colourmen of Paris, in imitation of bronze. There are two sorts of it, the red and the yellow, or golden: the latter, the yellow, is made solely of the finest and brightest copper-dust that can be had; and in the former there is only added a small quantity of red ochre, well pulverised. They are both applied with varnish, and, to prevent its turning greenish, the work is dried over a chaffing-dish, as soon as bronzed.

BRONZERIUS, JOHN-JEROM, in *Biography*, was born of wealthy parents, in a small town in the Venetian territory, in 1577. After making great progress in the study of the belles lettres, philosophy, and astronomy, he was sent to Padua, where he was initiated into the knowledge of medicine and anatomy, and in 1597, was made doctor. He now went to Venice, where he practised medicine to the time of his death, in 1630. His publications are, "De innato calido, et naturali spiritu, in quo pro veritate rei Galeni doctrina defenditur," 1626, 4to.; "Disputatio de Principatu Hepatis ex Anatome Lampetræ," Patav. 4to. Though from dissecting the liver of this animal he was satisfied the blood did not acquire its red colour there, yet he did not chuse to oppose the doctrine of Galen. His observation, however, was probably not lost, but led the way to a more complete discovery of the fact, by subsequent anatomists. "De Principio Effectivo Semini Infito." Haller. Bib. Anat.

BRONZES. Thus *Antiquarians* denominate figures of men or beasts, urns, and every piece of sculpture, which the ancients made of the above metal. Statues, busts, &c. cast of this metal, are called by this name, whether they be originals or copies.

BRONZING is the art of imitating bronze. See **BRONZE**, in *Painting*.

BRONZINO, in *Biography*. See **ALLORI**.

BRONZINO, AGNOLO, a painter of history and portraits, was born at Florence, in 1511, and became the disciple of Puntormo, with whom he continued for several years, and whose style he acquired to such a degree that the paintings of one and of the other could not be readily distinguished. His extraordinary abilities are sufficiently evinced in all his performances. Among others, at Florence, a "Nativity" is mentioned as incomparable; and also a "Venus," embracing Cupid, attended on one side by mirthful loves, and on the other by jealousy, fraud, and other passions, allegorically represented. The composition and finishing in both these are highly extolled. As his master, Puntormo, died before he had finished the chapel of St. Lorenzo, at Florence, the duke appointed Bronzino to complete it. Bronzino also distinguished himself in the painting of portraits; particularly those of Andrea Doria, Dante, Boccaccio, and Petrarch, and of all the illustrious persons of the house of Medici. His works at Florence, Petaro, and Pisa, bear lasting testimony to his merit; nor was he less respected and esteemed for his amiable qualities than for his professional talents. His taste of design was grand; his pencil neat, but free; his colouring resembled that of Puntormo; and in his draperies he imitated the manner of Michael Angelo Buonroti. He died in 1580. Pilkington.

BRONZOLO, in *Geography*, a town of Germany, in the country of Tyrol, seated on the Adige; 5 miles S. of Bolzano.

BROOD, the young of fish and fowls.

The word is derived from the Saxon *Ureclan*, to breed; which alludes to *spring* to be big with young. The word is also used for a set of any young. In which sense we say, a brood of vipers, a brood of oysters. A brood of pheasants is more properly called an eye. Phil. Trans. N° 369.

VOL. V.

BROOD of sea-fish is spawned, and lies in still waters, where it may have rest to receive nourishment, and grow to perfection. And here it is often destroyed by weirs, draw-nets, and nets with canvas, or like engines in the bottoms of them; in harbours, havens, and creeks.—Every weir near the main sea takes, in twelve hours, sometimes five bushels, sometimes ten, sometimes twenty or thirty. For the preventing hereof, by 3 Jac. I. cap. 12. it is enacted, that none shall erect a weir, or weirs, along the sea-shore, or in any haven, or creek, or within five miles of the mouth of any haven or creek, or shall willingly destroy the spawn or fry of fish, on pain of 10l. to be divided betwixt the king and the prosecutor. Neither shall any one fish in any of the said places, with any net of a less mesh than three inches and a half betwixt knot and knot (except for the taking smoulds in Norfolk only), or with a canvas net, or other engine, whereby the spawn or fry of fish may be destroyed; on pain to forfeit the said engine or net, and 10s. in money, to be divided betwixt the poor of the parish and the prosecutor.

BROOD, or **BROOD comb**, called by the French *couvain*, is that part of the comb of a bee-hive, which contains in its cells the future progeny of the hive, in the three different states of eggs, worms, and nymphs. See **BEE**, and **QUEEN bee**.

BROODING, the act of a hen, or other bird, sitting on a number of eggs, to keep them warm, till they hatch, or produce young ones. See **HATCHING**.

BROOK, a little river or small current of water. A brook is sometimes distinguished from a river by the latter flowing continually, and the former only occasionally.

BROOK, in *Geography*, a county of Virginia, in America, 305 miles from Washington; containing 4418 white inhabitants and 288 blacks.

BROOKE, Sir ROBERT, in *Biography*, an eminent lawyer of the 16th century, was born at Claverly, in Shropshire, educated at Oxford, and from thence removed to the Middle-Temple. In 1552, he was called to be serjeant at law; and in 1553, appointed lord chief justice of the common pleas; about which time he was knighted. He died in 1558, leaving behind him the reputation of great skill in his profession, and of integrity in the exercise of it, both at the bar and on the bench. His works are "An Abridgment, containing an Abstract of the Year-books, till the time of Queen Mary;" "Certain Cases adjudged in the times of Henry VIII., Edward VI., and queen Mary, from the 6th of Henry VIII. to the 4th of queen Mary," and "Reading on the Statute of Limitations, made 32 Henry VIII. cap. 2."

BROOKE, HENRY, an ingenious author in polite literature, was the son of a clergyman, and born in Ireland in 1706. Having commenced his education under Dr. Sheridan, and prosecuted it in Dublin college, he removed to the Temple; where his lively genius and agreeable temper conciliated the esteem and attachment of many friends. After his return to Ireland, he privately married his cousin, an amiable young lady, at a very early age, of whom he was appointed guardian, and lived for some time in domestic retirement; but his increasing family obliged him to exert his abilities for their support. With this view he came over to London, and, as it is said, under the eye of Pope, wrote his philosophical poem of "Universal Beauty," in 1735. He returned again to Ireland, and engaged in the practice of the law; but his predominant desire of acquiring distinction in poetry and elegant literature induced him again to visit London, where he produced a tragedy, entitled "Gustavus Vasa," and containing sentiments of liberty so strongly expressed, that government prohibited its public exhibition at the theatres. This opposition excited an enthusiastic ardour among his friends

friends and party, at the head of whom was Frederick prince of Wales; and the play was published by subscription in 1739, much more to his advantage than if it had been acted. Warmly attached to his royal highness, Brooke took a house at Twickenham, near Mr. Pope's, and sent for his wife, who was proposed by the prince as wet-nurse to a child, of whom the prince was then pregnant. But his expences exceeding his income, he was prevailed upon by his wife to part with his house, to dismiss his servants, and to retire to privacy in his native country. His attachment to the muses, however, continued; and in 1745 his tragedy, entitled "The Earl of Westmoreland," was acted at Dublin; and in the same year he published his "Farmer's Letters," which were addressed to the people of Ireland, and designed to promote the principles of liberty and patriotism. At this time he was patronized by the earl of Chesterfield, then the lord-lieutenant, and appointed barrack-master. As a poet he afterwards distinguished himself by three pieces, communicated to the public in Moore's "Fables for the Female Sex," 1747. His piece, entitled "The Female Seducers," has been peculiarly admired, not only for tenderness and pathos, as well as sublime poetry, but for the devotional spirit which always characterized the author. Disappointed in his views of farther advancement, he retired into the country, in company with an only brother; where they reared together their numerous families, with mutual harmony and affection. His intervals of leisure were employed in writing dramatic pieces and novels, the former of which he hoped to have introduced on the London stage. But though Mr. Garrick would at one time have engaged him as a writer; his proposals were not duly regarded by Mr. Brooke, who flattered himself with more encouraging prospects; and they were, therefore, never renewed. His tragedy of the "Earl of Essex," however, which had been acted at Dublin, in 1749, was also performed at Drury-lane in 1760; but as to his other tragedies and comedies, it does not appear whether they were exhibited in any theatre. In 1762 he published a treatise in 8vo. entitled "The Trial of the Roman Catholics," favourable to that class of Irish subjects; and in 1766, his novel, called "The Fool of Quality," which attracted considerable attention, though its general plan was wild and incoherent, and the latter volumes were strongly tinged with methodism, in which the religious fervour of his mind at length terminated. Generous and sympathizing in his disposition, and destitute of economy, he was reduced to the necessity of first mortgaging, and, at length, of selling his patrimony; in consequence of which he resided for some years in a rented house at Kildare, which he afterwards quitted for a farm near his former habitation. The affliction of losing his wife, after an union of nearly 50 years, and also of a favourite child, depressed his spirits and deranged his understanding to such a degree as to terminate in almost total imbecility. His novel entitled "Juliet Grenville," published in 1774, indicated still more sensibly than the last volumes of the Fool of Quality, the decline of his faculties. His two poems, viz. "Redemption," and the "Fox chase," are among his later works, and little known or read. He died in October 1783, leaving only two survivors of his seventeen children. His dramatic and other works (the novels excepted) were printed in 4 vols. 8vo. 1780. Life prefixed to his works. Gen. Biog.

BROOKE, FRANCES, the daughter of a clergyman, whose name was Moore, and the wife of the Rev. John Brooke, of Norfolk, was distinguished both by her literary talents and the gentleness and suavity of her manners. Her death, which happened at Sleaford, in Lincolnshire, Sept. 26th 1789, was occasioned by a spasmodic complaint. Her first

literary performance was a periodical work, entitled "The Old Maid," continued from November 15th, 1755, until July 1756, and published in one volume 12mo. In the latter year she published "Virginia," a tragedy, with odes, pastorals, and translations, 8vo. In 1763, she published her novel, entitled "The History of Lady Julia Mandeville," which was read with general approbation, although not without a wish that the catastrophe had been less melancholy. In the same year she also published "Letters from Juliet Lady Catesby to her Friend Lady Henrietta Campley," 12mo.; a translation from the French. She soon afterwards accompanied her husband, who was chaplain of the garrison at Quebec, to Canada; and there witnessed those romantic scenes that are so admirably described in her "History of Emily Montague," 4 vols. 12mo. 1769. In the following year appeared "Memoirs of the Marquis of St. Forlais," 4 vols. 12mo. Soon after her return from Canada, she formed an intimate acquaintance with Mrs. Yates, and had, as some have said, a share with her in the Opera-house. As Mr. Garrick had rejected her first play, which was the tragedy of Virginia, she made a second attempt to obtain his favour, but without success. This conduct, on the part of the manager, excited her resentment, which she expressed with a severity, afterwards lamented and retracted, in a novel, entitled "The Excursion," and published in 2 vols. 12mo. 1777. Her "Siege of Sinope," was acted at Covent-Garden, in 1781, and met with temporary approbation, probably from the support that was given to it by the theatrical talents of Mr. Henderfon and Mrs. Yates; but her most popular performance was "Rosina," presented to Mr. Harris, the manager of Covent-Garden, and acted at that theatre in 1782. Her last work was "Marian," which appeared in 1788, and was acted with some success, though it was much inferior to her Rosina. She was also the translator of the "Abbé Millot's Elements of the History of England, from the Invasion of the Romans to the Reign of George II." in 4 vols. 12mo. Biog. Dict.

BROOKFIELD, in *Geography*, one of the most ancient, wealthy, and populous towns of Worcester county, in the state of Massachusetts, situate in the south-western part of the county, and containing 3284 inhabitants; 64 miles W. of Boston, on the post road leading from Boston to New York, and 18 miles W. of Worcester. Its Indian name was "Quaboag." In the vicinity of this town are iron ore, and large quantities of stone, which yield coppers. It was settled by people from Ipswich, in 1660, and incorporated in 1673.—Also, a township in Orange county, Vermont, 20 miles W. S. W. of Newbury.—Also, a township of Lincoln county, in the district of Maine, 14 miles above Norridgewalk, on Kennebeck river; formerly called "Seven Mile Brook."—Also, a town in Chenango county, New York, having 1973 inhabitants; 25 miles S. of Whitestown.—Also, a town in Essex county, New York, on the west bank of lake Champlain.—Also, a post-town in Fairfield county, Connecticut; 6 miles N.N.E. from Danbury.

BROOKHAVEN, a township in Suffolk county, Long-island, New York, containing 4122 inhabitants. The town includes about 40 houses, together with an episcopalian and a presbyterian church; 60 miles E. of New York.

BROOKINGTON, a post-town in Amelia county, Virginia, 182 miles S.S.W. from Washington.

BROOKLIME, in *Botany*. See VERONICA BECCABUNGA.

BROOKLYN, in *Geography*, a pleasant town of America, in Norfolk county and state of Massachusetts, containing about 60 or 70 families; situate between Cambridge and Roxbury, and separated from Boston on the east by a narrow bay,

which sets up south from Charles river, and forms a peninsula of Boston. This town supplies Boston with vegetables, and it is the place whither persons of fortune retire from public life.—Also a post-town in King's county, New York, on the west end of Long island, containing 2378 inhabitants. In this place are an episcopalian church, a Dutch reformed church, and one belonging to the Methodists, a powder magazine, and some elegant houses lying chiefly in one street. It is separated from New York by East river, which is nearly a mile broad: and forms an agreeable object from the city.—Also, a township in Windham county, Connecticut, about 20 miles N. of Norwich.—Also, a town in Hillsborough county, New Hampshire; 6½ miles W. by S. from Portsmouth.

BROOKVILLE, a post-town in Montgomery county, Maryland, 20 miles N. W. from Washington.

BROOM, in *Botany*. See *GENISTA* and *SPARTIUM*.

BROOM, *African*. See *ASPALATHUS*.

BROOM, *Butchers*. See *RUSCUS ACULEATUS*.

BROOM-flower, in *Heraldry*, the denomination of an order, instituted by St. Louis king of France, in the year 1234, on occasion of the coronation of his queen Margaret, eldest daughter of Raymond Berengarius, count of Provence. The *habit* of the knights was a cloak of white damask, with a violet-coloured hood. The *collar* was a gold chain of broom flowers, enamelled proper, interlaced with lozenges of gold and flower de-lis, pendent therefrom, a cross flory, with this inscription "Exaltat Humiles;" the founder accounting the broom the symbol of humility. Their number was at the sovereign's pleasure, and this order continued till the death of king Charles V.

BROOM-gall, in *Entomology*. See *GALLS of the Broom*.

BROOM-lake, or *lake*, in *Geography*, an extensive salt-water lake, or arm of the sea, on the north-west side of the county of Ross in Scotland, famous for its excellent herrings. On this lake is the village of Ullapool.

BROOM-rape, in *Botany*. See *OROBANCHE*.

BROOM also denotes a well known household besom, or implement wherewith to sweep away dirt, dust, and the like: thus we say, a birch-broom, a hair-broom, a rush-broom, a leath-broom. The primitive kind of brooms, from whence the denomination is given to all the rest, was made of the *genista*, or wild broom, growing on commons.

BROOME, WILLIAM, in *Biography*, a native of Cheshire, was educated upon the foundation at Eton, but failing of a vacancy in a scholarship at King's college, though he was captain of the school for a whole year, he was superannuated, and sent to St. John's college by the assistance of friends, where he obtained a small exhibition. He appeared in the world at an early period as a translator of the Iliads into prose, in conjunction with Ozell and Oldisworth, a translation, which, though now forgotten, was, in Toland's opinion, superior to that of Pope. After his introduction to Mr. Pope, he was employed by him to make extracts from Eustathius for the notes to the translation of the Iliad; and in Pope's Miscellanies, many of his early pieces were inserted. When the success of the Iliad gave encouragement to a version of the Odyssey, Pope called Fenton and Broome to his assistance; taking half the work upon himself, and assigning the other half to his coadjutors, four books being allotted to Fenton, and eight to Broome. To the lot of Broome fell the 2d, 6th, 8th, 11th, 12th, 16th, 18th, and 23d; together with all the notes. The stipulated pecuniary recompence of Broome was 500*l.* together with copies amounting to the value of about 100*l.* more. Fenton, it is said, was to receive 300*l.* for his four books. This disproportionate distribution of recompence offended Broome, and produced a misunderstanding between him and his employer. He re-

presented Pope as avaricious, and Pope pursued him with avowed hostility. Among other disrespectful reflections in the Dunciad and the Bathos, he reckons Broome among "the parrots who repeat another's words, in such a hoarse odd tone, as makes them seem their own." It is said that they were afterwards reconciled; but they never became friends. Mr. Broome published a miscellany of poems, but never acquired any very high dignity in the church. Whilst he was rector of Sturton in Suffolk, he married a rich widow; and in 1728, on the king's visit to Cambridge, he obtained the title of LL.D. In 1773, he was presented by the crown to the rectory of Pulham in Norfolk, which he held with Oakley Magna, in Suffolk, given to him by lord Cornwallis, together with the vicarage of Eye in Suffolk: he then resigned Pulham, and retained the other two preferments. Towards the close of his life, he amused himself with translating odes of Anacreon, which he published in the Gentleman's Magazine, under the name of Chesser. He died at Bath, Nov. 16th 1745, and was buried in the abbey church. Johnson's Lives.

BROOMING, or *BREAMING of a ship*, the burning off the filth she has contracted on her sides with straw, reeds, broom, or the like, when she is on a careen, or on the ground. See *CAREENING*.

BROONS, in *Geography*, a town of France, in the department of the Northern cots, and chief place of a canton, in the district of Dinan; 3½ leagues S. W. of Dinan. The place contains 2,001, and the canton 11,823 inhabitants; the territory includes 220 kilometres and 10 communes.

BROOTZI, a town of Siberia; 48 miles N. W. of Tomsk.

BROOZENKOWA, a town of Poland, in the palatinate of Podolia; 32 miles N. E. of Kamienec.

BROQUIES, a town of France, in the department of the Aveyron, and district of St. Afrique, seated on the Tarn; 7 leagues S. of Rhodéz.

BRORA, a sea-port town on the east coast of Scotland, in the county of Sutherland; near it is a coal-mine, the coals of which are said to take fire on being exposed to the air; here is likewise a quarry of lime-stones, interspersed with a variety of shells; 10 miles N. N. E. of Dornock.

BRORA, a river of Scotland, which passes through a lake of the same name, in the county of Sutherland, and runs into the sea at the town of Brora.

BRORE, a river of Germany, which discharges itself into the Meuse, about a league below Maeltricht.

BROS, a royal free town of Transylvania, seated on the Maros; the capital of a tribunal of the same name, in a fertile country, the inhabitants of which distinguish themselves by their skill in agriculture. By an inscription on one of the gates, addressed to the emperor Trajan, it appears to have been a Roman colony.

BROSCAN, a town of Bohemia, in the circle of Leitmeritz; 4 miles S. of Leitmeritz.

BROSCI, in *Biography*. See *FAVINELLO*.

BROSELEY, in *Geography*, a large, populous village of Shropshire, England, is rendered remarkable from a phenomenon which occurred here at the beginning of the last century. Beneath the surface of the earth is a continued bed of coal, which is dug, and appropriated on the spot to various iron forges, potteries, &c. and great quantities of it are sent to different towns by means of the Severn which divides this parish from Colebrook dale. In the year 1771, it was discovered that a vapour which arose from a well or pit, would take fire upon being condensed in a tube, and ignited by flame. This circumstance excited great curiosity, and many persons came from different parts of the country to

witness the burning well, as it was called. A gentleman wrote an account of it for the Philosophical Transactions, and further particulars were published in the Gentleman's Magazine, vol. xxv. p. 303. It continued to burn for some time, till the proprietor of the land having sunk a coal pit in the immediate vicinity, thereby destroyed the operating cause. The parish of Broseley contains 1031 houses, and 4832 inhabitants. It is 146 miles N. W. from London.

BROSIMUM, in *Botany*. (from *βρωσιμος*, eatable). Swartz. Prod. 12. Schreb. 1486. Gmelin Syst. Nat. Martyn's Miller. Bosc. Class, *diœcia monandria*. Gen. Char. 1. Stameniferous flowers. Cal. ament common, globular, covered on all sides with imbricated, circular, peltate, membranaceous, deciduous scales; three larger, surrounding the base of the ament; the other smaller, of an irregular form, between each of which the stamens break out. Cor. none. Stam. filaments solitary, very short, round; anthers bilamellate; lamellas circular, peltate, the lower dehiscent from the upper; pollen globular. Pist. germ at the top, included in a spongy ament, very small, ovate, abortive. Style one, erect, bifid at the summit. Stigmas reflexed, simple. 2. Pistilliferous flowers on a different tree. Cal. ament like the former. Cor. none. Pist. germ globular, (the scaly body of the ament itself). Style rising from the middle of the germ at top, long, bifid. Stigmas simple, acute, a little reflexed. Pericarp, berry pedicelled, spherical, one-celled. Seed solitary, with a two-lobed kernel, surrounded by a thin membrane and bipartite.

Eff. Char. Ament globular, covered all round with circular peltate scales. Cor. none. Filam. solitary, between the scales. Style bifid. Berry one-seeded.

Sp. 1. *B. Alicastrum*. Brown, Jam. "Leaves ovate, lanceolate, perennial; aments solitary; fruit corticose." A tree making about one-third part of the woods in some parts of Jamaica. Its wood is not despicable, and its leaves and younger branches are a fattening fodder for all sorts of cattle. Its fruit, when roasted, eats like a chestnut, and is called bread-nut; and when boiled with salt-fish, pork, beef, or pickle, is a wholesome and not unpleasant food. Its leaves and younger branches are full of gum, which renders them disagreeable to cattle at first, but of which they soon become fond. 2. *B. spurium*. Brown, Jam. "Leaves lanceolate-ovate, acuminate; aments ovate, in pairs; fruit soft." A timber tree in Jamaica, called milk-wood, but not much valued.

Obs. Swartz's description of the germ and fruit is very obscure; that given by Bosc, though not easily reconciled with it, is more intelligible. "Flowers united in a globular ament, composed of peltate scales, each of which, in the barren plants, covers a stamen, and in the fertile ones, a germ with a bifid style, without either calyx or corolla." Fruit a one-seeded drupe.

BROSME, in *Ichthyology*, a species of *Gadus*, that inhabits the southern seas of Greenland. The mouth is bearded; tail oval, and pointed. Müll.

BROSME is also a synonymous name of *coryphæna rupestris*. *Egde Greenl.*

BROSNA, in *Geography*, a river of Ireland, which issues from Lough-Boyle in the county of Westmeath; and soon after passes through Lough-Ennel; on leaving which it runs southward into the King's county, and joins the Shannon, about three miles above Banagher.

BROSNA, *Little*, a river which forms, for many miles, the southern boundary of the King's county, and flows into the Shannon, about four miles below Banagher.

BROSSAC, a town of France, in the department of the Charente, and chief place of a canton, in the district of Barbezieux; 10 miles S.S.E. of Barbezieux. The place con-

tains 1017, and the canton 4887 inhabitants: the territory comprehends 150 kilometres, and 13 communes.

BROSSÆA, in *Botany, (from Guy de la Brosse, formerly intendant of the royal garden at Paris). Linn. ger. 1229. Spec. Plant. Sup. Reich. 261. Schreb. 330. Juss. 161. Willd. 375. La Marck Ill. 316. Nat. Ord. *bicornes*? *Erica*, Juss. Class, *pentandria monogynia*. Gen. Char. Cal. one-leaved, five-parted; segments oblong, acuminate, erect, the length of the corolla. Cor. monopetalous, truncated at the end, entire, or crenulate. Stam. five, included in the corolla. Pist. germ superior? pentagonal; style awl-shaped, shorter than the corolla; stigma simple. Pericarp, capsule roundish, five-furrowed, five-celled, covered with the calyx, which is now enlarged, converging, and fleshy, opening at the sides. Seeds numerous, very small.*

Eff. Char. Calyx fleshy, five-parted. Cor. truncated. Caps. five-celled, many-seeded.

Sp. *B. coccinea*, Linn. "Shrubby, with a scarlet flower and black fruit." Plum. A shrub three or four feet high. Root branched; leaves alternate, petioled, sharply ovate, slightly toothed, smooth, pale green; flowers in racemes at the end of the branches, alternate, peduncled, with two bracts about the middle of the peduncles.

BROSSARD, in *Biography*, practised surgery many years at Chatre, in the early part of the last century. He had the merit of reviving the practice of using agaric in stopping hemorrhages, after amputations, which had been discontinued. Though that fungus does not possess the powers he attributed to it, and must not be depended on, in stopping the bleeding of large vessels, yet in preventing the effusion of blood, from the smaller arteries, it is of acknowledged utility. He was rewarded by Lewis XV. with a pension, for divulging the secret, in a short memoir, published on the subject, in 1757. Haller. Bib. Chirur. Eloy. Dict. Hist.

BROSSARD, SEBASTIAN, author of the first musical dictionary published in a modern language, and which has been of singular use to subsequent musical lexicographers, particularly to Grassineau, and Jean Jaques Rousseau. Indeed musical historians would be ungrateful not to acknowledge, that the numerous list of writers on the subject of music, ancient and modern, whence he drew his materials, and which he has inserted at the end of his work, has not opened to them subjects of inquiry, and sources of information. And we think with M. Framery, that Rousseau has treated this intelligent and zealous writer unworthily, in accusing him of publishing an Italian dictionary, with a French title. When the second edition of Brossard was published in 1702, the French musical technica was insufficient, alone, to furnish a book: nor could their explanation be much wanted, while taken from the current language of the country. Brossard must be allowed to have marked out the road for Rousseau to pursue, which, with his impressive eloquence, he has certainly rendered more flowery and pleasant.

Honest Walther, in 1732, has been more just to his prototype in his German musical lexicon; where there is a greater extent of musical information than in any book of the size that we have met with.

The French biographers inform us that Brossard, born 1660, was a canon of the cathedral of Meaux, who excelled in knowledge of the theory of music. The writings which he published on the subject were all well received; particularly a musical dictionary, which was of great service to J. J. Rousseau, in furnishing him with the greatest part of the materials for his musical articles in the Encyclopédie, which he afterwards collected, and formed into a volume.

Mr. Grassineau might, without excessive humility, have called his musical dictionary a translation. We know the pains,

paids, expeace, and perfeverance neceffary to collect and read fuch a number of books in all languages, few of which are either amufing or inftitutive, to which the firft compiler of a dictionary or a hiftory is condemned. Johnson calls our language a "multiform and chaotic dialect;" and the technical language of mufic certainly merits thefe titles more than the terms of any other art or fcience. Broffard died in 1730, at 70.

BROSSE, GUY DE LA, great uncle to the celebrated ftateman M. Fagon, was born at Rouen, towards the end of the fixteenth century. Being much attached to botany, he gave a piece of ground, in which the rudiments of the jardin royal des plantes medicinales, at Paris, was laid. This was, after much follicitation, enlarged, endowed, and an eftablifhment for the improvement of botany formed by cardinal Richlieu, and de Brosse was appointed phyfician to the king, Lewis XIII., and curator of the garden. This was about the year 1626. He had been twelve years folliciting the eftablifhment, and feems to have fpent the remainder of his life, which was extended to the year 1641, in improving it. His works, which all relate to his favourite fubject, are, "Deffin du Jardin Royal pour la Culture des Plantes Medicinales, à Paris, avec l'Edit du Roy touchant l'Etabliflement de ce Jardin en 1626." 8vo. "De la Nature, Vertu et Utilité des Plantes, et Deffin du Jardin Royal de Medicine, Paris, 1628" this was afterwards, viz. in 1640, published in folio, with 50 plates, which are much commended. "Description du Jardin, &c. contenant la Catalogue des Plantes, et le Plan du Jardin, 1636." Haller. Bib. Botan. Eloy. Dict. Hift.

BROSSE, or DE BROCHE, PETER LA, was born at a town in Touraine, and educated to the practice of furgery, in which he acquired fo much celebrity, as to be called to attend Philip III. of France; to whom, by his artful management, he made himfelf fo ufeul, that he made him his chamberlain, and entrusted to him the government of the kingdom. Elated with this extraordinary fuccefs, he became infolent to the peers, none of whom could get accefs to the king but through him. Finding the queen was become his enemy, as well as moft of the principal perfons in the kingdom, with the view of ruining her with the king, he took the horrid refolution of poisoning prince Lewis, the eldeft fon of the king, by his former queen. This he effected in the year 1276, and then accused the queen of having committed the murder, in order to raife her fon to the throne, but the villainy of the man was difcovered by the means, it is faid, of a nun; and he was executed, to the great joy of the country. The ftory is told by Henault, in his Abregé Chronologique de l'Histoire de France.

BROSSÈS, CHARLES DE, an eminent mathematician, and man of letters, was born at Dijon, in 1709; and purfuing the line of profeffion for which his family had been diftinguifhed, he became a counfellor of parliament in 1730, and a prefident à mortier in 1741. As he was eminent for his zeal and integrity, as well as for his talents, he was entrusted with the conduct of many interefting tranfactions, and in confequence of prefenting the remontrances of the people to the throne, he fhared the honourable difgrace incurred by many other worthy perfons in the reign of Louis XV. However, he afterwards obtained diftinguifhing marks of court approbation, by being appointed prefident of the parliament of Burgundy in 1774. His intervals of leifure were devoted to the purfuits of literature and fcience; and in thefe his range was fo extenfive as to comprehend hiftory, geography, mythology, antiquities, metaphyfics, and languages. He was alfo acquainted with a great number of learned men, both at home and abroad, and was a member of

various literary focieties. Buffon had been his fchool-fellow, and regarded him from his youth as a genius of a fuperior order. Befides being the author of feveral memoirs in the collections of the academies of Paris and Dijon, the journal des Scavans, and the Dictionnaire Encyclopedique, he wrote the following feparate works: "Letters on the Difcovery of Herculanum," 1750, 8vo.; "History of Voyages to the Southern Regions," 2 vols. 4to. 1756; in which he maintains the exiftence of a fouthern continent, difproved by the fubfequent voyages of the French and Englifh, at leaft within any acceffible latitudes; "On the Worfhip of Fetiches, or a Parallel between Ancient Idolatry, and that of the People of Negroland," 1760, 12mo.; a curious philofophical and mythological performance: "Treatife on the mechanical Formation of Languages," 2 vols. 12mo. 1765; in which he attempts to eftablifh a general etymological fyftem deduced from the fuppofition of a primitive language, founded on the mechanical formation of articulate founds; "History of the Roman Republic in the Courfe of the feventh Age of Rome, by Salluft, partly tranflated from the Original of that Author, and partly compofed and reftored from the fattered Fragments of his laft Works." 3 vols. 4to. 1777. and "Lettres Hiftoriques et Critiques fur l'Italie," &c. 3 vols. 8vo. Paris, 1799. In private and focial life he was no lefs amiable than refpectable in his public and literary character. He died at Paris, May 7. 1777. Eloge par M. Muret. Nouv. Dict. Hift.

BROSSETTE, CLAUDE DE, was born at Lyons in 1671, firft entered among the Jefuits, and afterwards became a lawyer. He was a member of the academy of Lyons, and keeper of the public library in that city. His works befides fome professional performances, were "A brief History of the Town of Lyons," and "A New Hiftorical Eulogy of the Town of Lyons," 4to. 1711, both elegantly written, "Historical Elucidations of the Satires, and other Works of Boileau Despreaux," 2 vols. 4to. 1716, often reprinted in various fizes; and "A Commentary on the Satires and other Works of Regnier," 8vo. 1729. Brossette corresponded with feveral literary perfons, particularly with Rouffeau and Voltaire. He died at Lyons in 1746. Nouv. Dict. Hift.

BROTCHET, in *Ichthyology*, one of the French fynonyms of the garlfifh or fea-pike. See *Esox Lucius*.

BROTERA, in *Botany*, a genus in the clafs *monadelphía dodecandria*, formed by Cavanilles for a plant found in New Spain, which differs from his genus *Dombeya*, only in the ftructure of the capfule: but, as Bosc obferves, it agrees in generic character, and ought to be united with *Pentapetes Phœnicea*, the only fpecies for which Willdenow has preferred that Linnæan genus, the other two original fpecies having been feparated from it to form a new genus, which from their winged feeds is called *Pterospermum*. La Marel not thinking the difference in the ftructure of the capfule a fufficient generic diftinction, has abolifhed the genus *Dombeya* of Cavanilles, Juffieu, Ventenat and Willdenow, and has placed all its fpecies under the genus *Pentapetes*, with the original *Pentapetes Phœnicea*, ftill retaining *Pterospermum* as a diftinct genus. See *PENTAPETES*, where the *Protera* of Cavanilles will be defcribed.

BROTEROD, in *Geography*, a town of Germany in the circle of Franconia, and county of Henneburg, belonging to the landgrave of Hefle Caffel; 3 miles N. of Schmalkalden.

BROTHER. See *Bawdy-house* and *Strew*.

BROTHER, *Frater*, a term of relation between two male children, fprung from the fame father or mother, or both. Scaliger and Voffius derive *frater* from *εφατρειν*, for *εφατρεν*, which properly fignifies a perfon who draws water in the

BROTHER.

the same well; *φρῆξ*, in Greek, signifying well, and *φρῆγες*, a company of people who have a right to draw water out of the same well.—The word, it is said, came originally from the city Argos, where there were only a few wells distributed in certain quarters of the city, to which those of the same neighbourhood alone repaired.

By the civil law, brothers and sisters stand in the second degree of consanguinity; by the canon law, they are in the first degree. By the Mosaic law, the brother of a man who died without issue, was obliged to marry the widow of the deceased. Deuter. xxv. 7. See *LEVIRATE*.

The ancients applied the term brother indifferently to almost all who stood related in the collateral line, as uncles and nephews, cousin Germans, &c.—This we learn not only from a great many passages in the Old Testament, but also from profane authors: Cicero, in his Philippics, says, “Antonina was both wife and sister of Mark Antony; because she was daughter of his brother C. Antonius.” And as to cousins, Tullius Hostilius, in Dionysius Halicarnassus, calls the Horatii and Curatii, brothers, because they were sister’s children.

The language of the Jews, bishop Pearson observes, included in the name of brethren not only the strict relation of fraternity, but also the larger of consanguinity. We are brethren, says Abraham to Lot, Gen. xiii. 8. whereas Lot was only his nephew.—So Jacob told Rachel that he was her father’s brother, Gen. xxix. 12, whereas he was only her father’s nephew.—This consideration has been urged with good advantage against the Antidicomarianites, who, from the mention made of the “brethren of Jesus,” (John ii. 12. Matth. xii. 46.) have impugned the perpetual virginity of the mother of Christ, for which, however, there seems to be no sufficient foundation.

Among us, it is customary for kings to give the title “brother” to each other; the unctio in coronation being esteemed to create a kind of “brotherhood.” Nor is the custom modern: Menander mentions a letter of Cosroes, king of Persia, to the Emperor Justinian, beginning thus: Cosroes, king of kings, &c. to the emperor Justinian “my brother.”

Kings now also give the same appellation to the electors of the empire; and the like was given, by the king of France to the king of Sardinia, while only duke of Savoy.

In the civil law, brothers, *fratres*, in the plural, sometimes comprehend sisters: as *Lucius and Titia, fratres; tres fratres, Titius, Mævius, & Seia*.

BROTHERS, *foster*, those which sucked the same nurse. The French call them “*fratres du lait*,” or brothers by milk; which is most properly used in respect of a person who sucked a nurse at the same time with the nurse’s own child.

BROTHERS, *German, Fratres Germani*. See *GERMAN*.

BROTHER was also used in *Middle Age Writers*, for a *comes* or governor of a province.

BROTHER is applied in a less proper sense, to denote a person of the same profession. In which sense, judges, bishops, priests, &c. call each other brothers.

BROTHER in *Christ, frater in Christo*, the same with *spiritual brother*, a person admitted into a monastic society or fraternity.

BROTHER is more particularly used to denote the relation between monks of the same convent; as brother Zachary, brother Bonaventure, &c. In English we more usually say, friar Zachary, &c. from the French word *frère*, brother.

This appellation is borrowed from the primitive Christians, who all called each other “brothers:” but it is prin-

cipally used for such of the religious as are not priests; those in orders are generally honoured with the title of *fathers, patres, pères*; whereas the rest are only simply *brothers*.

The monks of St. Dominic are particularly called *preaching brothers*, or *friars predicants*; those of St. Francis, *minor brothers*; those of charity, *ignorant brothers*, &c. *Conscript brothers, fratres conscripti*, denote laymen and others entered in the catalogue of the brothers of a monastery, or rather possessed of the fraternity thereof. *Outer brother, frater exterior*, sometimes denotes a lay-brother. *Strange brother, frater adveniens*, a host or guest belonging to another monastery. *Foreign brother, frater externus*, either a monk, priest, or canon of some other monastery, to whom the prayers of the society are granted. *Mature brother, frater maturus*, one distinguished by his age, gravity, or probity, above the rest.

BROTHERS, *spiritual*, denote laymen admitted into a monastic fraternity. The name was also given to those otherwise called mature brothers, and sometimes also to a sort of adopted brothers, or persons who commenced a kind of brotherhood, with the ceremony of breaking bread together in the church before the priest.

BROTHER, *lay, frater laicus, or conversus*. See *LAY Brother*.

BROTHER, *given, frater donatus*, among the Carthusians, denotes a young person dressed in minim cloth, and wearing a hat, whose office is to serve in the house, answering to what in other orders is called an offered brother, *frater oblatus*.

BROTHER is also an appellation more peculiarly given to certain orders of religious; thus the

BROTHERS of *St. Alexis*, in the Low Countries, were an order of persons who attended on those who lay dying, and took care of the burial of the dead.

BROTHERS of *Ave Maria*. See *SERVITES*.

BROTHERS of *Charity*, a sort of religious Hospitaliers, founded about the year 1297, since denominated *Billelins*. They took the third order of St. Francis, and the scapulary, making three usual vows, but without begging.

BROTHERS of *Charity*, also denote an order of Hospitaliers still subsisting in Romish countries, whose business is to attend the sick poor, and minister to them both spiritual and temporal succour. They are all laymen, except a few priests, for administering the sacrament to the sick in their hospitals. The Brothers of Charity usually cultivate botany, pharmacy, surgery, and chemistry, which they practise with success.

They were first founded at Granada, by St. John de Dieu; and a second establishment was made at Madrid, in the year 1553: the order was confirmed by Gregory XIII. in 1572. Gregory XIV. forbade them to take holy orders: but by leave of Paul V. in 1609 a few of the brothers might be admitted to orders. In 1619 they were exempted from the jurisdiction of the bishop. Those of Spain are separated from the rest, and they, as well as the brothers of France, Germany, Poland, and Italy, have their distinct generals, who reside at Rome. They were first introduced into France by Mary of Medicis, in 1601, and have since built a fine hospital in the Faubourg St. Germain.

BROTHERS of *Charity of St. Hippolytus*, a religious congregation, first set on foot by Alvarez, a citizen of Mexico, in 1585, who associated with him several other pious persons to attend on the sick, and founded an hospital without the walls of that city: which being approved of by the pope, and the number of like hospitals increasing, a congregation was formed under the title of “The Charity of St. Hippolytus.”

lytus," because the first hospital had been dedicated to that saint, on whose feast-day the city first fell into the hands of the Christians. Clement VIII. in 1594, granted them all the privileges of the Brothers of the Charity of St. John de Dieu.

BROTHERS of Death, a denomination usually given to the religious of the order of St. Paul, the first hermit.

They are called "Brothers of Death," *fratres a morte*, on account of the figure of a death's head, which they were always to have with them, in order to keep perpetually in their minds the thoughts of death. This order, by its constitutions, made in 1620, does not seem to have been established long before pope Paul V. Lewis XIII. in 1621, permitted them to settle in France. It was probably suppressed by pope Urban VIII.

BROTHERS of Penitence, or of the Penitence of Jesus Christ, a name given at Thoulouse to the religious of the third order of St. Francis; called also *Beguini*; and to a fraternity of Penitents held in the chapel of the church of the third order, under the direction of the Beguini. See BEGUINS.

BROTHERS, Pyed, *fratres pii*, a denomination given to all monks, whose habit was partly white, partly black; they were otherwise called *Agashes*.

BROTHERS of St. Gregory the Illuminator, a religious order established in Armenia, in the fourteenth century, which being much reduced and decayed by the conquests of the Turks and Persians, was, in 1356, united to the order of St. Dominic.

BROTHERS, Joyful, *fratres gaudentes*, in Italy, denote the knights of the order of the Virgin Mary, first instituted at Bologna in 1261, for whom a rule was prescribed by pope Urban IV.

BROTHERS, poor, in the Charter-house, a denomination given to decayed gentlemen, to the number of eighty, who are subsisted with diet, cloathing, and lodging on the establishment. The poor brothers are to be gentlemen by descent, reduced to poverty, or decayed merchants, soldiers, or officers of the king's household. The conditions of admission are that they have no estate for life worth 200l. nor coming in, *vis & modis*, 24l. per annum; and that they be fifty years old, unless they have been maimed in the public service; in which case the age of forty suffices. They wear a livery-gown within doors.

BROTHERS, White, the name of a sect which appeared in Russia towards the beginning of the fourteenth century; so called from their white cloaks on which was a St. Andrew's cross of a green colour. See BRETHREN.

BROTHERS of Arms, an appellation given to those who contract a kind of fraternity in war, obliging themselves to the mutual service and assistance of each other. In the military orders, the knights are also called brothers.—In the order of Malta, there is a particular class, who are called "serving brothers;" consisting of such as cannot give proof of their nobility. In Latin they are denominated *fratres clientis*.

BROTHERS by adoption. See ADOPTION.

Two brothers who have only the same father, are called *fratres consanguinei*; and those who are only descended from the same mother, *fratres uterini*.

BROTHERS of the Cross. See FLAGELLANTES.

BROTHERS of the rosy Cross. See ROSYCRUSIANS.

BROTHERS, sworn, *fratres conjurati*. See FRATRES.

BROTHERS, in Alchemy, *lame*, or *maimed*, denote the imperfect metals, which are to be cured of their lameness by the perfect elixir; i. e. are to be purified and separated from their dross, &c. by the philosopher's stone.

BROTHERS, in *Geography*, islands in the Indian sea, on the north side of the entrance into the straits of Malacca. N. lat. $7^{\circ} 18'$. E. long. $78^{\circ} 10'$, to $78^{\circ} 15'$.

BROTHERS, Seven, islands in the Indian sea. S. lat. $3^{\circ} 24'$. E. long. $60^{\circ} 25'$.

BROTHERS, Three, islands in the Indian sea. S. lat. $3^{\circ} 45'$. E. long. $62^{\circ} 25'$.—Also, islands in the East Indian sea. N. lat. $10^{\circ} 32'$. E. long. $107^{\circ} 59'$.—Also, islands in the same sea. S. lat. $5^{\circ} 20'$. E. long. $117^{\circ} 30'$. The most northerly, which is about 5 or 6 leagues somewhat southerly from Thumb shoal, is called by the Dutch "North Brother." Between these and Celebes, lies Tonakeke island, which is larger than any of them.—Also, three remarkable hills on the east coast of New Holland, which may be seen 14 or 16 leagues off at sea. S. lat. $31^{\circ} 40'$. W. long. $207^{\circ} 10'$.

BROTHERS, Two, lie on the east coast of New Holland, off cape Manifold; one of them is low and flat, and the other high and round; near the shore is a third island.—Also two islands of New Zealand, near queen Charlotte's sound.

BROTHERHOOD. See FRATERNITY.

BROTHERHOOD of God, in the *Middle Ages*, a denomination given to an association formed for restraining and abolishing the right and exercise of private war. The people, eager to obtain relief from the sufferings that were thus occasioned, among other expedients, had recourse to a pretended revelation. Towards the end of the 12th century, a carpenter in Guienne gave out, that Jesus Christ, together with the blessed Virgin, had appeared to him, and having commanded him to exhort mankind to peace, had given him, as a proof of his mission, an image of the Virgin holding her son in her arms, with this inscription: "Lamb of God, who takest away the sins of the world, give us peace." This low fanatic addressed himself to an ignorant age, prone to credit what was marvellous. He was received as an inspired messenger of God. Many prelates and barons assembled at Puy, and took an oath, not only to make peace with all their own enemies, but to attack such as refused to lay down their arms, and to be reconciled to their enemies. Thus they formed the above-mentioned association. But the influence of this superstitious terror or devotion was not of long continuance.

BROTHERTON, in *Geography*, an Indian village of North America, adjoining New Stockbridge in the state of New York, inhabited by about 150 Indians, who migrated from different parts of Connecticut, under the care of the Rev. Mr. Occom. These Indians receive an annuity of 2160 dollars, which sum is partly appropriated to the purpose of maintaining a school, and partly to compensate a superintendent for transacting their business, and disposing the remainder of their money for their benefit.

BROTIER, GABRIEL, Allé, in *Biography*, a distinguished scholar, and member of the French Academy of Belles Lettres, was born at Tonnay in the Nivernois, in 1723, and educated in the Jesuits college of Louis-le-Grand, of which he was for several years librarian. Accustomed through life to write notes in the margins of all the books which he read, and distinguished also by a retentive memory and singular penetration, he had thus collected materials for several volumes; and as he applied to study for 10 or 12 hours a day, he had acquired an immense fund and variety of knowledge. With the exception of the mathematics, his knowledge comprehended every branch of science, natural history, chemistry, and even medicine. It was his custom every year to read Hippocrates, and the books of Solomon, in the original languages; for these, he said, were the best remedies for all bodily and mental diseases. But he was principally

principally devoted to the belles lettres: and had acquired an accurate acquaintance with all the dead languages, particularly the Latin, and with most of the modern languages of Europe. He was also well versed in ancient and modern history, chronology, coins, medals, inscriptions, and the usages of antiquity; and he had collected a great mass of materials for a new history of France, which he was prevented from undertaking. On the dissolution of the order of Jesuits, he found a pleasant asylum in the house of M. de la Tour, an eminent printer, and in this retreat he spent the last 26 years of his life. Here he published his edition of "Tacitus," enriched with notes and learned dissertations, and supplements; and also a new edition of "Pliny the Naturalist," to which he has added notes and illustrations, being merely a concise abridgment of what he had prepared with a view of correcting and enlarging the edition of Hardouin, and of giving an historical account of all the new discoveries made since the beginning of the 18th century. His other works of inferior importance were a beautiful edition of "Phædrus," an edition of Rapin's poem, "De Hortis," to which he subjoined a "History of Gardens," written in Latin with great elegance, and abounding in the most beautiful imagery. Besides a lively imagination, Brotier possessed a sound and discriminating judgment, and an elegant taste. His conceptions were clear, and his mode of communicating knowledge perspicuous. From the abbé Fontenay's further delineation of his character, we shall select the following particulars. "Humble and unassuming, and of such delicate modesty, as caused him to blush when the least encomium was passed upon him; good tempered, plain in his manners, and giving himself up to society with the smiles and simplicity of a child; his conversation was engaging, and always instructive when it turned on subjects of literature and science. Widely differing in this respect from those men of letters, who, if we may be allowed the expression, are misers of their knowledge, and seem to hoard it up for themselves, or that they may make an ostentatious display of it in some publication, the abbé Brotier answered with great readiness the questions of every person who applied to him for information, and instructed those around him with the utmost affability and condescension." "That intimate friendship which united me to the abbé Brotier," says Fontenay, "gratitude for the services he did me, his talents, and his virtues, will always endear his memory to me; and I may justly say with the Roman poet:

"Multis ille bonis flebilis occidit,
Nulli flebilius quam mihi."

This accomplished and elegant scholar died at Paris, Feb. 12th 1789, at the age of 67.

The following is a list of the abbé Brotier's works, as given in *La France Littéraire*, by J. S. Ersch, published at Hamburg in 1797, and cited in Aikin's *General Biography*: "Examen de l'Apologie de M. l'Abbé de Prades," 1753, 8vo.; "Conclusions ex universa Theologia," 1754, 4to.; "Traité des monnoies Romaines, Grecques, et Hebr. comparées avec les monnoies de France, pour l'intelligence de l'Ecriture Sainte et de tous les auteurs Grecs et Romains," 1760, 4to.; "Prospectus d'une edit. Lat. de Tacite, en 5 vols., 4to.," 1761; "C. Corn. Taciti Opera, recognovit, emend. suppl. explevit, notis, dissert. tabulis geogr. illustravit," 1771, 4 vols. 4to.; "Supplementa, lib. 7. 10 Annal. Taciti," 1755, 8vo.; "Cl. viri de la Caille vita," 1763, 4to.; "C. Plinii Historia naturalis," 1779, 6 vols. 12mo.; "Renati Rapini Hortorum, lib. iv. et cultura hortensis, historiam hortorum addidit," 1778, 8vo.; "Phædri Fabularum, lib. v. cum notis et suppl. access. Paralela J. de la Fontaine Fabulæ," 1785, 12mo. A. C. Brotier, the ab-

bé's nephew, who was arrested in February 1797, as being the chief of a conspiracy, published, in 1790, "Paroles mémorables recueillies par Gabr. Brotier," 12mo.

BROTO, in *Geography*, a town of Spain in Arragon; 6 leagues from Jaca.

BROUAGE, a maritime town of France, in the department of the Lower Charente, 2 leagues S.W. of Rochefort; it consists of 5 or 6 streets, which terminate in a large square, and is famous for its salt-works. N. lat. 45° 50'. W. long. 1° 0'.

BROUCA, a town of Sicily, on the south side of the gulf of Catania, and 5 leagues S. of it. N. lat. 37° 25'. E. long. 15° 30'.

BROUCK. See BRUGG.

BROUGH, or BROUGH UNDER STAINMOR, a small town of Westmoreland, in England, consists chiefly of one long street, and is seated on the great road between York and Carlisle. The surrounding country, though bleak and naked, contains some good soil. Here the long chain of mountains, which bound the eastern side of Westmoreland, is interrupted by another range of hills, which crosses it from the east to the west. A charter was obtained for a market and fair in the time of Edward III.; but the greater markets at Kirkby Stephen and Appleby have entirely superseded this at Brough. Here are the remains of a castle, which bears marks of great antiquity; and its keep is called in old records, "Cæsar's Tower." Antiquaries are agreed in placing the Roman station, "Verteris," at this place; and this appears extremely probable from the various Roman coins, &c. that have been found here, from the character of the calcimetrement, and its distance from the stations "Lavatis" (Bowes), and "Voreda" (Old Penrith). The remains of the castle occupy an eminence, which rises rather abruptly on the north and west from a plain; and on the south and east, where not so steep, it is additionally fortified with a ditch and vallum. Soon after the Norman conquest, this was a place of meeting and consultation with some of the borderers, who conspired against the conqueror.

Near Brough is a large cotton-spinning manufactory, belonging to John Carlton, esq. who has a beautiful seat near the town called Hillbeck hall. Brough has three fairs annually; one of which, in September, is noted in the north of England for the great quantity of cattle, horses, &c. which are brought to it. This town is 261 miles N. W. from London; and contains 117 houses, with 694 inhabitants. Hausman's Topograph. Descript. of Cumberland, &c. 8vo.

BROUGHTON, HUGH, in *Biography*, a learned divine was born in 1549 at Oldbury, in Staffordshire. Of his early education nothing is now known; but it is said by the biographers of Bernard Gilpin, that he was met by this excellent person in his journey to Oxford, whither he was travelling on foot for the purpose of becoming a scholar there, and taken to his own school at Houghton, whence he was sent to Cambridge. At that university he became one of the fellows of Christ's College, and here he so distinguished himself by his application and proficiency, and particularly by his knowledge of the Greek and Hebrew languages, as to attract the notice and obtain the patronage of the earl of Huntingdon, who encouraged and assisted him in his studies. From the university he removed to London, and there became a celebrated preacher. His mode of preaching, according to Dr. Lightfoot, was to select two parallel texts, one from the Old Testament, and the other from the New, and to discourse upon them in their mutual connection; indulging many fanciful and over-strained interpretations. Notwithstanding his popularity as a preacher, he pursued his studies without intermission; and he is said to have frequently

quently spent 16 hours out of the 24 at his books. In 1588, he published a work, the result of much previous labour, entitled, "The consent of Scriptures;" which is a kind of scripture chronology and genealogies. In this work he zealously maintains the incorruptness of the sacred text, both of the Old and New Testament; and he contends, that the original tongue of Adam and Eve continued unchanged till the Babylonish captivity, that the characters and points are the same with those written by God on the two tables, and that the sacred tongues were changed in the time of the prophet Daniel; but that the sense of the original tongue is preserved by the LXX. and the New Testament. The chief of the Masorites, according to this writer, was Ezra; and they have kept the letters and words with such care, that none of them can perish. This work, which excited great attention, was warmly opposed by Dr. Reynolds of Oxford; and the author thought the controversy of such importance, that he wished to have it settled by public authority. For explaining his doctrine, Mr. Broughton instituted weekly lectures in London; and they were conducted for some time at St. Paul's, with the permission of the queen and council, on condition of his returning the names, abodes, and occupations of all his auditors; but by the opposition of the bishops, this indulgence was discontinued, and he was obliged to deliver his lectures in private rooms engaged for the purpose in different parts of the town. Such was the extravagance of his attachment to the Hebrew language, that, having taught the son of a friend to read and speak it at the age of 7 or 8 years, he rigorously prohibited his talking even to his mother in English. In 1589 he went to Germany, and resided for some time at Frankfort, where he held a long dispute in the Jewish synagogue with a rabbi concerning the truth of the Christian religion. But in his various disputations with the Jews, and also with the papists, he paid no great regard to the rules of prudence and politeness. After his return to England, in 1591, he published "An Explication of the Article of Christ's Descent to Hell," maintaining with great learning that the word *hades* no where, either among the Greeks, or in the Scriptures, properly denoted hell, or a place of torment, but only the place of souls, the state of the dead, or the invisible world. This opinion, though now generally received, was, upon his first avowal of it, violently opposed, and particularly by archbishop Whitgift and bishop Blon. During a great part of queen Elizabeth's reign he passed much of his time abroad; conversing with learned men, and propagating his peculiar opinions. To the archbishop of Mentz, who treated him with particular distinction, he dedicated his translation of the Hebrew prophets into Greek; and it has been said, though not with great probability of truth, that he was offered a cardinal's hat if he conformed to the church of Rome. On the subject of Christ's descent, he addressed an epistle in Greek to the Genevans, which was printed at Mentz in 1601; and in this epistle he reproved that church for its unbecoming heat and violence with regard to some points, and spoke with great severity of the celebrated Beza, to whom he also addressed some rude letters, giving to the Jesuit Serrarius, to whom he sent copies, full permission to publish them. In 1607 the new translation of the bible was begun, and it was thought surprising, that Broughton had no concern in it; but his peculiar notions, and the dislike of the episcopal bench, prevented his being employed. Finding no encouragement at home, he removed again to the continent, and became for some time preacher to the English at Middleburg in Zealand. But when his health began to decline, he determined to return to England, and to die in his own country. Accordingly he embarked in November 1611; and in the following year he lodged in the house

of a friend at Tottenham High Cross, where he died of a pulmonary consumption in August, 1612. His funeral was attended by a great concourse of friends; and his remains were interred in St. Antholin's church-yard. As a scholar, and controversial divine, Mr. Broughton was self-opinionated, choleric, rude, and dogmatical; but for the heinous charge of ingratitude to his first friend and patron, Bernard Gilpin, against whom he is said to have incensed the bishop of Durham, there seems to be no sufficient foundation. His works are for the most part printed together in one large folio volume, at London, in 1662, with this singular title, "The Works of the great Albionean Divine, renowned in every nation for great skill in Salem's and Athens' tongue, and familiar acquaintance with all rabbinical learning, Mr. Hugh Broughton." Dr. Lightfoot, addicted to similar kind of literature, highly extols them; but they are now forgotten. During his life, Broughton was not only a subject of angry controversy but of ridicule; an instance of which occurs in Ben Jonson's "Alchymist." But this contemptuous reflection was more than counterbalanced by an elegy, possessing great poetical beauties, written by an obscure author, called "W. Primrose," and annexed to his works. In this elegy, theology is personified, and represented as lamenting the loss of him. What he says of him as a linguist, is as follows:

"Who, tuneful as the silver-pinion'd swan,
Canaan's rich language in perfection sang."
"He knew the Greek, plenteous in words and sense,
The Chaldee wise, the Arabic profound,
The Latin pleasing with its eloquence,
The braving Spanish with its lofty sound,
The Tuscan grave with many a laurel crown'd,
The hisping French, that fits a lady vain,
The German, like the people, rough and plain,
The English, full and rich, his native country's strain."

Biog. Brit.

BROUGHTON, THOMAS, a learned episcopalian divine, and one of the first writers in the Biographia Britannica, was born in London, July 5, 1704, educated at Eton, and removed to Cambridge about the year 1722, where he entered himself of Gonville and Caius college. At school he had distinguished himself by the acuteness of his genius, and the studiousness of his disposition; and at the university he directed his chief attention to the modern languages, and to the mathematics, which he studied under the famous professor Saunderson. In 1727, he took both deacon's and priest's orders, and left the university, to supply the curacy of Otley in Hertfordshire. In 1739 he was presented to the rectory of Stevington or Stibington in the county of Huntingdon; and soon after he was chosen reader to the Temple, and thus introduced to an acquaintance with bishop Sherlock, who, in 1744, preferred him to the valuable vicarage of Bedminster, near Bristol, together with the annexed chapels of St. Mary Redcliff, St. Thomas, and Abbot's Leigh. Upon receiving this presentation he removed to Bristol, where he married a wife, by whom he had seven children, of whom six survived him. He resided on his living till his death, which happened Dec. 21st 1774; and his remains were interred in the church of St. Mary Redcliff.

Mr. Broughton, during his residence in London, associated with the principal literary men of his time, and as he was a great lover of music, he was introduced to the acquaintance of Mr. Handel, whom he furnished with the words for many of his compositions. In his public character he united moderation of temper with a zealous attachment to the Christian cause, and in his private life, his disposition was mild, cheerful, and liberal, and he devoted his time and

attention to the interests and happiness of his family. From the time of his quitting the university till he was considerably advanced in life, he engaged in a variety of publications, of which the following list is taken from a paper in his own hand-writing: "Christianity distinguished from the religion of Nature, in three parts, in answer to Christianity as old as the Creation;" "Translation of Voltaire's *Temple of Taste*;" "Preface to his Father's Letters to a Roman Catholic;" "Alteration of Dorrel on the Epistles and Gospels, from a Popish to a Protestant Book," 2 vo's. 8vo.; "Part of the new Edition of Bayle's Dictionary in English, corrected, with a Translation of the Latin, and other Quotations;" "Jarvis's Don Quixote, the Language thoroughly altered and corrected, and the poetical parts new translated;" "Translation of the mottoes of the Spectator, Guardian, and Freeholder;" "Original Poems and Translations by John Dryden, esq. now first collected and published together," 2 vols.; "Translations of the quotations in Addison's Travels, by him left untranslated;" "The first and third Olinthiacs, and the four Philippics of Demosthenes (by several hands), revised and corrected, with a new Translation of the second Olinthiac, the Oration de Pace, and that de Chersoneso, to which are added all the Arguments of Libanius, and select notes from Ulpian," 8vo.; "Lives in the Biog. Brit.;" "The Bishops of London and Winchester on the Sacrament, compared;" "Hercules, a musical Drama;" "Bibliotheca historico-sacra, an historical Dictionary of all Religions from the Creation of the World to the present time," 1756, 2 vols. folio; "A Defence of the commonly received Doctrine of the human Soul;" and "A Prospect of Futurity, in 4 Dissertations, with a preliminary Discourse of the natural and moral evidence of a future State." He also left in manuscript "A short View of the Principles upon which Christian Churches require of their respective Clergy, Subscription to established Articles of Religion," which was composed not long before his death. From several fugitive pieces found in manuscript among his papers, and two unfinished tragedies written at the age of 17, it is inferred that he possessed no inconsiderable talents for poetry. Biog. Brit.

BROUGHTON Island, in *Geography*, an island of America, lying at the mouth of Alatomaha river, in Georgia, which belonged to the late Henry Laurens, esq. The south channel, after its separation from the north, descends gently, winding by McIntosh and Broughton islands, in its way to the ocean through St. Simon's sound.

BROUKHUSIUS, in *Biography*. See BROECKHUYSE.

BROUNCKER, or **BROUNKER**, WILLIAM, lord viscount of Castle Lyons in Ireland, and first president of the Royal Society, after its incorporation, was the son of sir William Brouncker, made viscount in 1645, and born about the year 1620. At an early period he manifested a genius for those mathematical sciences in which he afterwards excelled. The place and course of his education are not known; but in June, 1646, he was created doctor of physic at Oxford; and in 1657, and 1658, he corresponded on mathematical subjects with Dr. John Wallis, who published his letters in the "*Commercium epistolicum*," printed at Oxford in 1658, 4to. In April 1660, he united with the nobility and gentry in subscribing a declaration, acknowledging general Monk to be the restorer of the laws and privileges of these nations. After the restoration, he was made chancellor to queen Catharine, and keeper of her great seal, a commissioner of the admiralty, and master of St. Catharine's hospital near the Tower of London. He was also an active and useful member of the Royal Society at its first establishment, and held the office of president with honour

to himself, and advantage to the institution, for 15 years viz. from July 1662 till November 1677. Of his works, notwithstanding his activity in promoting literature and science, there are few extant. These are "Experiments on the recoiling of Guns," published in Dr. Spratt's History of the Royal Society; "An algebraical Paper upon the squaring of the Hyperbole," published in the Philosophical Transactions (See Lowthorp's Abr. vol. i. p. 10, &c.); "Several Letters to Dr. James Usher, archbishop of Armagh," annexed to that primate's life by Dr. Parr; and "A Translation of the Treatise of Des Cartes, entitled *Musicae Compendium*," published without his name, but enriched with a variety of observations, which shew that he was deeply skilled in the theory of the science of music.

Lord Brouncker died at his house in St. James's street, Westminster, April 5, 1684, and was buried in a vault in the middle of the choir belonging to the hospital of St. Catharine. Biog. Brit.

BROUSONNETRA, in *Botany*. See PAPIRIUS.

BROUSSE, in *Geography*, a town of France, in the department of Puy le Dôme; 6 leagues E. of Clermont,

BROUSSON, CLAUDE, in *Biography*, a French protestant, who was a zealous partizan, and at length a martyr of the reformed religion, was born at Nîmes in 1647, and educated to the law. He exercised the profession of an advocate for 20 years, first at Castres and afterwards at Toulouse, with singular reputation for generosity and disinterestedness, as well as firmness and ability. As he took part in his pleadings with the protestant ministers and churches, an attempt was made to corrupt his integrity by the office of a counsellor's place, which he rejected with contempt. It was at his house that the deputies of the protestant churches assembled in 1683, and here they concurred in the resolution of continuing to assemble for public worship though their churches were demolished. The execution of this purpose was productive of many tumults, seditions, and massacres; and though they were terminated by an amnesty issued from the court of Louis XIV. this was accompanied by an order for arresting seven or eight persons who had been principally concerned in framing the resolution. Brousson was one of these; and apprehending the consequence, he had previously retired to Nîmes; and as soon as he received the intelligence of the proposed arrest, he fled to Geneva, and afterwards to Lausanne. At this latter place he published his "State of the Reformed in France," 1684; and his "Letters to the French Clergy in favour of the Reformed religion," 1685. About this time he was appointed one of the deputies from the principal refugees in Switzerland, for engaging the protestant powers to interest themselves in favour of the French reformed that were dispersed through Europe. At Berlin, he composed, by desire of the elector of Brandenburg, his "Letters from the Protestants in France to all other Protestants." From Berlin he went to Holland, and had several conferences with the prince of Orange and pensioner Fagel. Afterwards returning to Switzerland, he printed "Letters to the Roman Catholics;" and, with a view to the more effectual distribution of them in France, he ventured, in 1689, to visit that country. On his arrival in the Cevennes, he accepted the office of minister to a congregation of protestants, which assembled on the top of a high mountain, and, notwithstanding the various persecutions with which he encountered, he continued the exercise of his ministerial functions in these parts for 4 years. In 1698, he returned to Lausanne, and from thence removed to Holland, where he printed "A summary Relation of the Wonders wrought by God in the Cevennes and Lower Languedoc,

Languedoc, for the consolation and instruction of his desolated Church," to which his enemies would naturally ascribe the character of fanaticism. He also published a volume of sermons, and received from the States of Holland a pension, as a minister. Towards the close of the year 1695, he again visited France, travelling through most of its provinces and employing his pen in various writings. During the negotiation for the peace of Ryswick, he exerted himself in exciting the protestant powers to treat for the re-establishment of the French reformed churches. Failing of success in this object, he made another tour through France, and, after encountering a variety of hazards, he was at length apprehended at Oleron in September, 1698, and carried for trial to Montpellier. Having been convicted of preaching in defiance of the royal edict, and of having held correspondence with the enemies of the state, he was condemned to be broken alive upon the wheel, and he endured the execution of this dreadful sentence with all the firmness appropriate to his character. His eloquence and zeal were universally acknowledged, and by his own party he was regarded as a martyr. The States of Holland did honour to his memory, by adding 600 florins, as a pension to his widow, to the 400 which had been allowed to himself. *Newt. Dict. Hist.*

BROUVELIEURES, in *Geography*, a town of France, in the department of the Vosges, and chief place of a canton, in the district of St. D  ; one league north of Bruy  res. The place contains 414, and the canton 3574 inhabitants; the territory comprehends 130 kilometres and 10 communes.

BROUWER, in *Biography*. See **BRAUWER**.

BROUZET, **NICHOLAS**, was born in the neighbourhood of Montpellier, where he took his degree of doctor in medicine in the year 1736, whence he went to Paris, and was admitted corresponding member of the Royal Academy of Sciences, and soon after was made physician to the hospital at Fontainebleau. He published, in 1754, "*Essai sur l'Education m  dicinale des Enfants, et sur leurs Maladies*;" a popular work, by which he obtained much credit. In his chapter on Generation, he follows the system of Buffon, and supposes the organized particles to attract each other, as the particles of salt do in forming crystals. He also contends for the power of the imagination of pregnant women, in marking and deforming the f  tus; but though there are these, and other blemishes, the work contains many useful practical rules for the management of infants, and for the cure of their diseases. It was translated into English and published in London, in 1755. *Haller Bib. Chir. Eloy. Dict. Hist.*

BROW-antler, the first branch of the horn of a hart or buck, shooting out from the beam, or main horn, next the head.

Brow-peg, in *Carpentry*, a beam which goes across or overthwart a building.

BROWALLA *Heide*, or **BROWELLA** *heath*, in *Geography*, a plain of Sweden, in the province of Smaland, lying about two Swedish miles from Wexio, and famous for being the place where the Danes were totally routed by the heroine Blenda, who commanded the Smaland women, in the defence of their husbands, who were engaged in another expedition. As a recompence of their bravery, the women of Smaland were honoured with extraordinary privileges, and wore a kind of martial head-dress; and they have still an equal share of inheritance with the men.

BROWALLIA, in *Botany*, (named by Linn  us in honour of Browallius, bishop of Abo, who defended the sexual

system against Seigelbeck). Linn. gen. 773. Reich. 834. Schreb. 1036. Juss. 123. G  rt. 304. Pl. 53. Willd. 1175. La Marek. Pl. 535. Cl  ss, *Didynamia Angiospermia*. Nat. Ord. *Luride*—*Scrophulari  *, Juss. Gen. Char. Cal. perianth one-leafed, tubular, short, five-toothed, permanent; teeth rather unequal. Cor. monopetalous, funnel-shaped; tube cylindric, as long again as the calyx; border flat, five-cleft; segments rounded, emarginate, the upper one a little larger than the rest, and constituting the upper lip. Stam. filaments four, included in the tube; the two longest with larger anthers, which close the throat of the corolla. Anthers simple, incurved, converging; the inner ones twin, the outer ones opening at the top with a small hole. Pisl. gerin ovate, retuse; style thread-shaped, the length of the tube of the corolla; stigma thick, four-lobed. Peric. capsule ovate, obtuse, clothed with the calyx, two-celled, many-seeded, two-valved; valves bifid at the top; partition flat, thin, parallel to the valves, and separating from the sides of the capsule as it advances to maturity, whence Linn  us judged it to be one-celled. (G  rt. and Juss.) Seeds numerous, small.

Ess. Ch. Cal. five-toothed. Cor. border five-cleft, nearly equal, spreading; throat closed by the two larger anthers.

Sp. 1. *B. demissi*, Linn. (La Marek Pl. 535.) "Downy; peduncles alternate, one-flowered." Root annual. Stem herbaceous, about a foot high, branched. Leaves alternate, petioled, ovate-pointed, with short hairs on their petioles and nerves. Flowers axillary and terminating, solitary, shorter than the leaves. Corolla of a bright, but pale blue colour. Seeds sent to Mr. M  ler from Panama, in 1735, who named the Plant Dalea, in honour of Mr. Dale, an eminent English botanist, and sent the seeds under that name to Linn  us, who thought proper to change the name to Browallia. 2. *B. elata*, Linn. (Curt. Bot. Mag. 34.) "Rather smooth, flowers one or more, terminating." Root annual. Stem about two feet high, cylindric, stiff, much branched. Leaves lanceolate. Flowers of a beautiful violet-blue. Native of Peru. Both these species must be raised on a hot-bed in the spring, and may afterwards be transplanted into a warm flower border, where, if the weather be favourable, they will flower and ripen their seeds. 3. *B. alienata*, Linn. "Upper leaves opposite, two Stamens the length of the corolla." Taken up by Linn  us solely on the authority of Miller's figure; and as Miller himself did not insert it in the later editions of his Dictionary, it is a dubious plant. 4. *B. humifusa*, Forsk. "Hispid, prostrate; flowers axillary, nearly sessile, white." Stems slender, branched, hispid. Leaves opposite, oblong, sessile, narrowed at their base. Peduncles axillary, solitary, very short. Calyx hispid, cylindric, with five thread-shaped divisions. Tube of the corolla straight, half an inch long; border open, almost regular, with four oval divisions. Capsule compressed, one-celled? many-seeded, enveloped by the calyx.

BROWERSHAVEN, in *Geography, so called from *port des Brasseurs*, the port or haven of brewers, a sea-port town of Zealand, on the north side of the island of Schouwen, opposite to Goree. In 1426, a bloody battle was fought near this town between Philip, duke of Burgundy, and Humphry, duke of Gloucester, brother to Henry V. king of England, who came with 3000 English to the assistance of Mary de Jacqueline, countess of Holland, in which the duke of Gloucester was defeated; 5 miles S. of Goree and S. S. W. of Helvoetsluys. N. lat. 51   40'. E. long. 4   15'.*

BROWHEAD, a cape of Ireland, at the eastern extremity of Barley Cove, in the south-western part of the county of Cork. N. lat. 51   23' 30". W. long. 9   40'.

BROWN, a dusky kind of colour, inclining somewhat towards redness. Dyers distinguish divers shades and gradations of brown, a sad brown, London brown, clove brown, purple brown, walnut-tree brown, &c.

The brown colours are bistre, brown ochre, Cologne earth, ombre and brown pink; which see.

Spanish brown is a dull red colour, used by house-painters chiefly for priming, and by colourmen in preparing cloths for pictures and other coarse work, as being cheap and easy to work. It is obtained from a native earth, which is found in the state and of the colour in which it is used. The name seems to import that it was formerly brought from abroad; but that which is now used is dug up in several parts of England.

For the method of dyeing browns, see DYEING.

BROWN, ROBERT, in *Biography*, the founder of the sect denominated BROWNISTS, was the son of Anthony Brown, esq. of Tolthorp, in Rutlandshire, and the grandson of Francis Brown, whom king Henry VIII., in the 18th year of his reign, privileged by charter to wear his cap in the presence of himself, his heirs, or any of his nobles; and not to uncover but at his own pleasure; which charter was confirmed by act of parliament. Thus descended of an ancient and respectable family, nearly allied to the lord treasurer Burleigh, he was born at Northampton, towards the middle of the 16th century, studied divinity in the university of Cambridge, and afterwards became a school-master in Southwark. Adopting the opinions of Cartwright (see CARTWRIGHT), he determined to form from them what he conceived to be a more perfect system of doctrine and practice; and, about the year 1580, he began to inveigh with intemperate vehemence and ardour against the discipline and ceremonies of the church of England, representing her government as Antichristian, her sacraments as superstitious, her liturgy as a mixture of popery and paganism, and the mission of her clergy as no better than that of Baal's priests in the Old Testament. In the following year he preached at Norwich to a Dutch congregation, in which were several persons inclined to Anabaptism; and having in this situation gained some profelytes to his opinions, and established a character for sanctity and zeal, he formed a connection with a schoolmaster, whose name was Richard Harrison; and, with his assistance, he collected a number of disciples, partly Dutch and partly English, who, disapproving the forms and service of the established church, were formed into a separate society under the denomination of BROWNISTS. Upon this, Brown was convened before Dr. Freake, bishop of Norwich, and other ecclesiastical commissioners; but as he persisted in maintaining his opinions, and behaved in an unbecoming manner before the court, he was committed to the custody of the sheriff, from which, however, he was released by the interposition of his relation, the lord-treasurer Burleigh, who candidly imputed his error and obstinacy to zeal rather than malice, and recommended reasoning rather than harsh treatment, as the most likely means of reclaiming him. The lord-treasurer's letter to the bishop produced the desired effect. His lordship afterwards requested archbishop Whitgift to give his kinsman necessary instruction and counsel; but Brown left the kingdom, and settled at Middleburg in Zealand, where he and his followers obtained leave of the States to worship God in their own way, and to form a church according to their own model; a sketch of which was drawn up by Brown, in a treatise printed at Middleburg, in 1582. This consists of three tracts; the *first* entitled "A Treatise of Reformation, without tarrying for any, &c.;" the object of which is to excite the people to withdraw from the church, and unite with him, and to exclude

the civil magistrate from any authority over ecclesiastical persons and concerns: the *second* is, "A Treatise upon the 23d chapter of St. Matthew, &c.;" in which the author exclaims against the abuse of tongues in preaching, that is, against the use of Hebrew, Greek, or Latin, in sermons: also, against the use of logic and rhetoric, &c.; against disorderly preaching at St. Paul's cross, &c.; and against parish-preachers and hired lecturers: and the *third* is entitled, "A Book which sheweth the Life and Manners of all true Christians, and how unlike they are unto Turks and Papists, and Heathen folk, &c.;" Some time before the year 1585, Brown left Middleburg, and came over to England; for in this year he was cited to appear before archbishop Whitgift, to answer to certain matters contained in a book published by him; and when he had been brought, by the prelate's reasoning, to a tolerable compliance with the church of England, he was sent to his father in the country, and recommended by the lord treasurer to his favour and affection. Brown's opinions, however, were too deeply fixed to be easily eradicated; and therefore his father, with a severity very different from the conduct of the lord treasurer, disowned him for his son, and expelled him from his house. Brown had now no settled habitation, and encountered various hardships; but at length he settled in Northamptonshire, and persisted in zealously propagating his tenets. Being cited to appear before the bishop of Peterborough, he refused to obey, and was excommunicated for contempt. This censure alarmed and humbled him; and having made his submission, he obtained absolution. Accordingly, about the year 1590, he renounced his principles of separation, from that time continued in the communion of the church, and was soon after preferred to the rectory of a church in Northamptonshire. Fuller, however, is of opinion, that Brown never formally recanted his opinions with regard to the main points of his doctrine; but that his promise of a general compliance with the church of England, improved by the countenance of his patron and kinsman, the earl of Exeter, prevailed upon the archbishop, and procured this extraordinary favour for him. He adds, that Brown allowed a salary for one to discharge his cure; and though he opposed his parishioners in judgment, yet agreed in taking their tythes. His sect, however, long survived his revolt; and of its peculiar tenets an account is given under the article BROWNISTS. Brown is represented as a man of good parts and some learning; but his temper was imperious and uncontrollable; nor was his conduct agreeable to the Sabbatarian strictness which was afterwards professed by his followers. Fuller says of him, that he had a wife with whom he never lived, and a church in which he never preached, though he received the profits of it; and as all the other scenes of his life were stormy and turbulent, so was his end; for the constable of his parish requiring somewhat roughly the payment of certain rates, his passion moved him to blows; of which the constable complained to justice St. John, who inclined to pity rather than to punish him; but Brown behaved with such insolence, that he was sent to Northampton gaol, on a feather-bed in a cart, being very infirm, and aged above 80 years, where he soon after sickened and died, in the year 1630; after boasting of his persecutions, and "that he had been committed to 32 prisons, in some of which he could not see his hand at noon day." *Biog. Brit.*

BROWN, THOMAS, an ingenious writer, who lived towards the close of the 17th century, was the son of a farmer in Shropshire, and educated at Newport school in that county, where he acquired a considerable acquaintance with the Latin, Greek, French, Italian, and Spanish languages; which

which was farther improved at Christ-church, in the university of Oxford. But notwithstanding his literary attainments, his conduct was so irregular, that he was under a necessity of quitting the university; and, instead of returning to his father, he removed to London, where he was in danger of starving. In these circumstances of penury and distress, he was relieved, by being appointed school master at Kingdon-upon-Tames; a profession, however, which, being very unsuitable to his disposition, he soon abandoned. Returning to London, he commenced author; and employed himself in writing for the booksellers. His publications were very numerous, and consisted of dialogues, letters, poems, &c. in which his erudition was enlivened by his humour; for in his writings, as well as in his conversation, he was always sprightly and facetious. But though he had the reputation of a scholar, he was destitute of prudence; and, as he indulged his genius for satire to an extravagant degree, he was more likely to forfeit than to conciliate the friendship of those who were able to assist him; and it was said of him, that he rather chose to lose his friend than his joke. He took pleasure in libelling both the clergy and laity, and his indecorous treatment of religion laid the foundation for remorse, which is said to have embittered the last moments of his life. Mr. Jacob informs us, that towards the close of his career, he was favoured by the earl of Dorset; that being invited to dine with him in company with Dryden, and some other gentlemen of similar description, he found, to his agreeable surprise, a bank note of 50l. under his plate, at which time Dryden was presented with another of 100l. Brown died in 1704, and was interred in the cloister of Westminster abbey, near the remains of Mrs. Benn, with whom he had been intimate. His works, consisting of dialogues, essays, declamations, satires, letters from the dead to the living, translations, &c. were printed in 4 vols. 12mo. in 1707. They are not destitute of learning, and abound with humour, which is justly charged with want of delicacy. Biog. D. &.

BROWN, MOSES, vicar of Olney, Berks, and chaplain of Morden college, was born in 1703, and was originally a pen-cutter. In 1723, he published two dramatic pieces, called "Polidus, or distressed Love," a tragedy, and "All bedeviled," a farce, both acted at a private theatre in St. Alban's street. On the institution of the Gentleman's Magazine, he became a contributor to it; and obtained some of the prizes offered by Mr. Cave, for the best poems; and, in 1739, he published a volume of poems in 8vo., and, in 1749, "Sunday Thoughts," a poem, 12mo. In 1756, he published "Percy Lodge," a descriptive poem; he also edited "Walton's Complete Angler;" and, in 1773, republished his "Piscatory Eclogues." He also translated Zimmermann, and was the author of some sermons. He died Sep. 13th, 1787. Biog. D. &.

BROWN, JOHN, a clergyman of the church of England, and an ingenious writer, was born in 1715 at Rothbury, in Northumberland, and educated, first at Wigton, and afterwards at St John's college, Cambridge, where he acquired great reputation. Upon his quitting the university in 1735, he took orders, and first settled as minor canon and lecturer in the city of Carlisle. In 1739, he took his degree of master of arts at Cambridge; and in the year of the rebellion, 1745, he distinguished himself by his zeal for government, and by the intrepidity with which he entered as a volunteer at the siege of Carlisle. In the following year, he preached, on occasion of the trial of some of the rebels, two admirable discourses on the connection between religious truth and civil liberty, and between superstition, tyranny, irreligion, and licentiousness; and his avowed attachment

to the principles of whiggism recommended him to the patronage of Dr. Osbaldeston, bishop of Carlisle, who obtained for him a living in Westmoreland. About this time, his talents for correct and elegant versification were evinced, in a poem on "Honour," inscribed to lord Londale, and in an "Essay on Satire," addressed to Dr. Warburton, and prefixed to this eminent critic's edition of Pope's works. The friendship of Warburton was soon followed by that of Mr. Ralph Allen of Prior park, who entertained Mr. Brown at his house, and offered him pecuniary assistance. During his visit at Prior-Park, he preached two sermons at the abbey-church of Bath; one of which, exposing the mischiefs of immoderate gaming, is said to have induced the magistrates to issue an order for the suppression of the public gaming tables. In 1751, he published a work which may be still regarded as one of his most capital productions: viz. "Essays on the characteristics of the earl of Shaftsbury," comprehending one "On Ridicule, considered as a Test of Truth;" another, "On the Motives to Virtue, and the Necessity of religious Principle;" and a third, "On revealed Religion and Christianity." These essays are written with elegance and spirit, and, at the same time, with candour and politeness. They were of course much read, and frequently re-published, so that a fifth edition of them appeared in 1764. In 1755, Mr. Brown was honoured with the title of doctor of divinity at Cambridge; and, in the same year, he ventured to appear before the public under the new character of a dramatic writer. With the assistance of Mr. Garrick, his tragedy of "Barbarossa," was exhibited on the stage with advantage; and this was succeeded in the ensuing year by "Arhelstan." Both these performances were published without his name.

The next publication which we shall mention, forms a kind of era in the author's life; it appeared in 1757, and was entitled "An Estimate of the Manners and Principles of the Times." This work was published at a time, when the spirits of the people were extremely depressed by some unprosperous events that had occurred at the commencement, and during the progress of the war, in which the nation was engaged; and it was designed to shew, that a vain, luxurious, and selfish effeminacy, in the higher ranks of life, marked the character of the age, and to point out the causes and the effects of this effeminacy. The "Estimate," adapted to the circumstances and disposition of the people, at the time when it appeared, was read with avidity, and seven editions of it were called for in little more than a year. It did not pass, however, unnoticed; it was attacked in a variety of publications; but the most effectual reply to it was, as Voltaire observes, that the English, from that period, began to beat their enemies in every quarter of the globe. In 1758, Dr. Brown published a second volume of the "Estimate," and afterwards, "An explanatory Defence of the Estimate, by way of Appendix;" but the circumstances of the country were changed, and the public attention drooped, so that these pieces, though well written, were much less popular. Besides, the vanity and superior confidence of the author, which had not escaped notice in his first publication, became now more conspicuous, and disgusted even many of his admirers; nor could the avowal of the integrity of his intentions, and the greater modesty with which he vindicated himself, in the "Explanatory Defence," avail to remove the prejudices that had been conceived against him. Dr. Brown manifested an irritability of temper, and a propensity to quarrel with his friends and patrons, which prevented him from obtaining those ecclesiastical preferments, to which his literary reputation entitled him; so that the vicarage of St. Nicholas, in Newcastle upon

upon Tyne, with the office of one of the king's chaplains in ordinary, constituted the final sum of his church promotions. In 1760, he published "An Additional Dialogue of the Dead, between Pericles and Cosmo," which was supposed to be a vindication of Mr. Pitt's political conduct against some reflections of lord Lyttelton: and this was followed in 1763, by "The Cure of Saul, a sacred Ode," which was set to music, and performed as an oratorio; and by an ingenious and elegant performance, entitled, "A Dissertation on the Rise, Union, and Power, the Progressions, Separations, and Corruptions of Poetry and Music." This dissertation, though ingenious and critical, advanced fanciful principles, and manifested a degree of credulity, with respect to the supposed effect of certain public institutions among the ancients, which gave rise to a variety of strictures. In 1764, Dr. Brown detached from his "Dissertation" the substance of that part which related to poetry, and published it separately in an octavo treatise, entitled "The History of the Rise and Progress of Poetry through its several Species;" and in the same year he published a volume of "Sermons," being chiefly a collection of those which had before been printed singly. Of the new are those excellent discourses on education, in which the author has unanswerably refuted some of the positions of Rousseau in his *Emilius*, and other speculatists, and satisfactorily evinced the necessity and importance of forming the minds of children to early habits of piety and virtue. The author's attention was again directed towards politics, and in 1765, appeared his "Thoughts on civil Liberty, Licentiousness, and Faction," containing censures on those persons, who, at that time, opposed the measures of administration, and closing with a prescribed code of education. As he proposed that this code should be adopted and enforced by government, it produced the animadversions of Dr. Priestley, in his "Essay on the Course of a liberal Education, for civil and active Life." The author's discourses on education in general, were followed by a sermon "On the Female character and education," to which is annexed an appendix, in which he states, in a very liberal manner, the moral and political principles which should be inculcated on the attention of young persons; and, in his opinion, these are such as are evidently founded on the precepts of christianity, and the laws of freedom. He proceeds further to discuss the question, "whether there be any opinions or principles which ought not to be tolerated (or suffered to be taught) in a well ordered, free community?" and to this question, he replies, that, in his judgment, there are many opinions or principles, tending evidently to the destruction of society or freedom, and which, therefore, ought not to be tolerated in such a community. Accordingly, he alleges instances in the three principal kinds, religious, moral, and political, taken from Mr. Locke, and supported by his authority. In 1766, appeared Dr. Brown's last publication, which was "A Letter to the Rev. Dr. Lowth, occasioned by his late Letter to the right Rev. Author of the divine Legation of Moses," and repelling insinuations, unjustly supposed to have been aimed at his moral character, on account of his adulation and defence of Dr. Warburton. Besides the works already mentioned, Dr. Brown published a "Poem on Liberty," and some anonymous pamphlets. He had also announced an intention of publishing "Principles of Christian Legislation;" but his design was frustrated by his death. In his will, however, he gave orders, among other particulars relating to the arrangement and publication of his works, that this treatise should be finished; but this part of his will was never executed.

At the time when Dr. Brown's discourses on education

were published, Dr. Dumarsq had been invited to reside in Russia, and was employed by the empress in suggesting regulations for the establishment and conduct of several schools, which she was about to erect in various parts of her dominions. On this occasion, a correspondence was proposed by a lady of England, between him and Dr. Brown, who entered largely into the subject, sketched the outline of a grand scheme of education, and also of legislation, for the Russian empire, and voluntarily offered to remove to Russia for the purpose of aiding in the execution of it. Dr. Dumarsq, after some previous deliberation and conference with Mons. Muller, his associate in the business, translated Dr. Brown's paper into French, and presented it to M. de Panin, who laid it before the empress. She was impressed by the communication; and Dr. Dumarsq was commissioned to invite Dr. Brown to the Russian court. He accepted the invitation; and received a remittance of 1000*l.* which the empress had ordered towards defraying the expences of his journey. The length of the journey, the changes of climate, and various other circumstances alarmed his friends, who observed, that his constitution was enfeebled by repeated attacks of the gout: and they dissuaded him from the undertaking, which, after various preparations, he at length determined to renounce. As he had received only 200*l.* of the money that had been ordered, and returned above one half of it, after deducting the expences which he had unavoidably incurred; his honour and integrity in the whole transaction were unimpeachable; more especially as he continued to transmit to the empress such observations as might serve to facilitate the execution of her plans, and render them effectual to the purpose for which they were adopted. This negotiation agitated the spirits of Dr. Brown; and its issue, in which, however, he thought it prudent to acquiesce, disappointed and mortified him. The pride of his temper, and the sense he entertained of his own importance, contributed, in no small degree, to that dejection of mind, which, concurring with a constitutional tendency to insanity, led him to put an end to his life with a razor, Sept. 23d, 1766, in the 51st year of his age. *Biog. Brit.*

BROWN, SIR WILLIAM, M.D. of a respectable family in the county of Norfolk, was born in the year 1692. His father, who was a physician, first inspired him with a taste for the study of medicine. In 1707, when he was only 15 years of age, he was admitted of Peterhouse in Cambridge; and having passed through the preliminary degrees, he was, in 1721, admitted doctor in medicine. Of the respect he retained for his alma mater, and of his fondness for literature, he gave evidence, by leaving to the university of Cambridge a sum of money, the interest of which he directed to be laid out every year, in furnishing three gold medals, to be given to the three most successful candidates in Greek, and Latin poetry. Of the books left him by his father, he says, he kept for his pocket companions, *Bleau's Greek Testament*, *Hippocrates' Aphorisms*, and an *Elzevir's Horace*; "from the first to draw divinity, from the second physic, and from the last good sense and vivacity." Soon after leaving college, he went to Lynn in Norfolk, where he practised physic nearly thirty years, and as it appears, with reputation and profit; for speaking of his leaving that town to come to London, he says, "The manly age and inclination, with conformable studies, I diligently applied to the practice of physic, in the country, where, as that age adviseth, I sought riches and friendships. But being at length satiated with friends, whom truth, not flattery, had procured; satiated with riches which Galen, not fortune, had presented; I resorted to this college (of physicians) where I might addict myself totally to the service of honour."

This

This was about the year 1750. He did not, however, decline practice when he came to London, going wherever he was sent for; but as he was a humourist, and had many singularities in his dress, manners, and conversation, he never became very popular as a physician in this place. This did not prevent his receiving all the honours the college could bestow upon him. They gratified his vanity, his ruling passion, by electing him president two succeeding years. It was the custom, sir William tells us, in his farewell oration, "to continue the president, an entire lustum, five years. But two years, he adds, more than satisfy me; that each of the elects may, in his turn, hold the sceptre of prudence, no tenure pleasing longer than a year." He felt, however, this deviation from their custom, and the college probably lost a legacy; but they were obliged to pass him by, as his singularities had attracted the notice of Mr. Foot, the Aristophanes of the age, who appeared in the Devil upon Two Sticks, one of his farces, in the costume of the doctor; the wig, the coat, the glass, and every action so exactly imitated, that no one could doubt who was intended to be represented. At one of the exhibitions of this piece the doctor was present, and the next day he sent a card to Mr. Foot, complimenting him on having so happily represented him; but finding he had forgot the muff, he had sent him his own. This good-natured reproof disarmed Foot, and the imitation was discontinued. About the same time he became the subject of a print, in which he was caricatured not by distorting, but by giving an exact delineation of his person, dress, and gesture: the inscription is *Fuscus, eques, medicus, rhetor, dux, atque poeta. Ecce!* 1771. The doctor, however, took all in good part, and continued rather to follow his own humour, than the manners and fashions of the world. As proofs of his good nature, and proofs of his being perfectly at peace with himself, we may mention that when he was at Lynn, a pamphlet being published to ridicule him, he nailed it to the outside of his door, that it might be read by all who passed by; and when he was in the 86th year of his age, he went to Batson's coffee-house, on St. Luke's day, in his laced coat and band, with fringed white gloves, to shew himself to Mr. Crosby, then lord-mayor. A gentleman present observing how well he looked, the doctor observed, "He had neither wife nor debts." He had, however, been married, and left one daughter, who became the wife of Martin Folkes, and mother to sir Martin Browne Folkes, bart. From the time of his coming to London he lived in Queen Square, Great Ormond Street, where he ended his days on the 10th of March, 1774, in the 82d year of his age. He had always been fond of scribbling, and in the early part of his life printed (for they could hardly be said to be published, the circulation of them being nearly confined to his friends) "Translations, or Imitations, of certain Odes of Horace;" and afterwards, when in London, his "*Harveian Oration*," and "*A Vindication of the College of Physicians against the Licentiates, and their Advocate, solicitor-general Murray*." These he collected together, and, in 1765, printed under the title of "*Opuscula Varia, &c.*" He also published a farewell oration, on quitting the presidency of the college, from which the principal traits of his life here given have been taken. *New and General Bog. Dict.*

Brown, John, a surgeon of eminence in London, published, in 1678, "*A Treatise of Glanders, and Strumas, the King's Evil, &c.*" 4to.; and, in 1681, "*A complete Treatise of the Muscles, as they appear in the Human Body*," folio, London. This has been translated into Latin, and printed at Leyden, Amsterdam, Berlin, &c. though now superseded by more accurate descriptions. The plates are

principally taken from Julius Cassarius. He also communicated to the Royal Society an account of a diseased liver, which is published in their Transactions. Haller. Bib. Anat.

Brown, Patrick, M.D. practised medicine at Jamaica, and published in 1756, folio, "The civil and natural History of Jamaica, containing an Account of its natural Productions, Fossils, Vegetables, and Animals." He describes the manner practised there, of cultivating the sugar-cane, coffee-tree, cotton, ginger, and indigo, and of collecting aloes from incisions made in the leaves of the plant. Haller. Bib. Bot.

Brown, John, a celebrated teacher of medicine, born in the parish of Buncle, in the county of Berwick, in the year 1735, of parents in a mean situation in life. In common with the children of other villagers in Scotland, he received his education at a grammar-school. As his mind was much above the rank he was born in, his progress in literature was proportionably superior to the rest of his school-fellows. He there imbibed a taste for letters; so that when he was afterwards put apprentice to a weaver, instead of attending to his business, his whole mind was bent on procuring books, which he read with great eagerness. Finding this disposition could not be conquered, his father took him from the loom, and sent him to the grammar-school at Dunfermline, where the famous Duns Scotus had been educated. Here, under the tuition of Mr. Cruickshanks, he made such progress, that he was soon regarded as a prodigy. He read all the Latin classics with the greatest facility, and was no mean proficient in the knowledge of the Greek language. "His habits," we are told, "were sober; he was of a religious turn, and was so strongly attached to the sect of Seceders, or whigs, as they are called in Scotland, in which he had been bred, that he would have thought his salvation hazarded, if he had attended the meetings of the established church. He aspired to be a preacher of a purer religion." An accident, however, disgusted him with this society, before he was of an age to be chosen a pastor, for which it appears he was intended. Having been prevailed on, by some of his school-fellows, to attend divine service at the parish church at Dunfermline, he was summoned before the session of the seceding congregation, to answer for this offence; but his high spirit not brooking to make an apology, to avoid the censures of his brethren, and the ignominy of being expelled their community, he abdicated his principles, and professed himself a member of the established church. As his talents for literature were well known, he was taken, at the age of twenty, to the house of a gentleman in the neighbourhood of Dunfermline, as tutor to his son. Here he did not long reside, for what cause is not known, but went the same year, 1755, to Edinburgh, where he applied to the study of theology, in which he proceeded so far as to deliver, in the public hall, a discourse upon a prescribed portion of scripture, the usual step preliminary to ordination. But here his theological studies appear to have ended, and he suddenly left Edinburgh, and returned to Dunfermline, and officiated as an usher in the school where he had been educated. He now exhibited himself as a free-liver and free-thinker, his discourse and manners being equally licentious and irregular; which accounts for his dereliction of the study of theology. At Dunfermline he continued twelve months, from Michaelmas 1758, to the same time in the year 1759. During this time, a vacancy happening in one of the classes in the high school at Edinburgh, Brown appeared as a candidate, but was not successful. Soon after he was applied to by a student in medicine, at Edinburgh, to put his inaugural thesis into Latin. This task he performed in so superior a manner, that it gained him great reputation: it opened to him a path, which he

had not probably before thought of, for turning his erudition to profit. On the strength of the character procured him by this performance, he returned to Edinburgh, and determined to apply to the study of medicine. "He had now," he said, "discovered his strength, and was ambitious of riding in his carriage as a physician." At the opening of the session, he addressed Latin letters to each of the professors, who readily gave him tickets of admission to their lectures, which he attended diligently for several years; in the interim, teaching Latin to such of the pupils as applied, and assisting them in writing their theses, or turning them into Latin. The price, when he composed the thesis, was ten guineas; when he translated their compositions into Latin, five. If he had been now prudent, or had not indulged in the most destructive excesses, he might, it is probable, in a few years, have attained the eminence he promised himself; but he marred all by his intemperance. In no long time after this, his constitution, which had been hardy and robust, became debilitated, and he had the face and appearance of a worn-out debauchee. His bad habits had not, however, prevented his getting the friendship or assistance of Dr. Cullen, who, desirous of availing himself of his talents, employed him as a tutor to his sons, and made use of him as an assistant in his lectures; Brown repeating to his pupils, in the evening, the lecture they had heard in the morning, and explaining to them such parts as were abstruse and difficult. In 1765 he married, and took a house, which was soon filled with boarders; but continuing his improvident course, he became a bankrupt at the end of three or four years. He now became a candidate for one of the medical chairs, but failed; and as he attributed his missing this promotion to Dr. Cullen, he very unwisely broke off his connection with him, and became the declared enemy to him, and his system; which he had always before strenuously defended. This probably determined him to form a new system of medicine, doubtless meaning to annihilate that of his former patron. As he had read but few medical books, and was but little versed in practice, his theory must have been rather the result of contemplation, than of experience. That in forming it, he was influenced by his attachment to spirituous liquors, seems probable from internal evidence, and from the effects he attributed to them of diminishing the number, as well as the severity of the fits of the gout, under which he suffered. He always found them more severe and frequent, he says, when he lived abstemiously. One of his pupils informed Dr. Beddoes, "that he was used, before he began to read his lecture, to take fifty drops of laudanum in a glass of whisky; repeating the dose four or five times during the lecture. Between the effects of these stimulants, and voluntary exertions, he soon waxed warm, and by degrees his imagination was exalted into phrenzy." His intention seems to have been to simplify medicine, and to render the knowledge of it easily attainable, without the labour of studying other authors. All general, or universal diseases, were therefore reduced by him to two great families or classes, the sthenic and the asthenic; the former depending upon excess, the latter upon deficiency of exciting power. The former were to be removed by debilitating, the latter by stimulant medicines, of which the most valuable and powerful are wine, brandy, and opium." As asthenic diseases are more numerous, and occur much more frequently than those from an opposite cause, his opportunities of calling in the aid of these powerful stimuli were proportionately numerous. "Spasmodic and convulsive disorders, and even hemorrhages," he says, "were found to proceed from debility; and wine, and brandy, which had been thought hurtful in these diseases, he found the most

powerful of all remedies in removing them." When he had completed his plan, he published his theory, or system, under the title of "*Elementa Medicinæ*," from his preface to which the preceding quotations have been principally taken. Though he had been eleven or twelve years at Edinburgh, he had not taken his degree of doctor; and as he was now at variance with all the medical professors, not thinking it prudent to offer himself there, he went to St. Andrew's, where he was readily admitted to that honour. He now commenced public teacher of medicine, making his *Elementa* his text book; and convinced, as it seems, of the soundness of his doctrine, he exultingly demands (preface to a new edition of the translation of his *Elementa*, by Dr. Beddoes) whether the medical art hitherto conjectural, incoherent, and in the great body of its doctrines false, was not at last reduced to a science of demonstration, which might be called the science of life." His method in giving his lectures was, first to translate the text book, sentence by sentence, and then to expatiate upon the passage. The novelty of the doctrine procured him at first a pretty numerous class of pupils; but as he was irregular in his attendance, and his habits of drinking increased upon him, they were soon reduced in number, and he became so involved in his circumstances, that it became necessary for him to quit Edinburgh; he therefore came to London in the autumn of the year 1786. Here, for a time, he was received with favour, but his irregularities in living increasing upon him, he came to his lodgings, in the evening of the 8th of October in 1788, intoxicated, and taking, as it was his custom, a large dose of laudanum, he died in the course of the night, before he had entered on his career of lecturing, for which he was making preparations. He had the preceding year published "*Observations on the old Systems of Physic*," as a prelude to the introduction of his own; but it was little noticed. His opinions have, however, met with patrons in Germany and Italy, as well as in this country, and several volumes have been written on the subject of them; but they are now pretty generally, and deservedly, abandoned. Beddoes' edition of John Brown's translation of his *Elementa Medicinæ*, 1795.

BROWN, JOHN, an ingenious artist and elegant scholar, was born at Edinburgh in 1752, and destined to the profession of a painter. Whilst he was at Rome, he became acquainted with sir William Young and Mr. Townley, and accompanied them, as a draftsman, into Sicily. In this island he was employed in taking several fine views of its antiquities, which were exquisitely finished, and preserved the appropriate character of the buildings which he intended to represent. Upon his return to his native town, after a residence in Italy of more than ten years, he gained the esteem of many literary persons by his elegant manners and instructive conversation on various subjects of art, and particularly on music, of which his knowledge was very extensive and accurate. He was particularly distinguished by the attention of lord Monboddo, who, in the fourth volume of the "*Origin and Progress of Language*," represents him as eminently skilled in the arts of painting, sculpture, music, and poetry: nor was he less deserving of respect for his moral qualities than for his literary attainments. In 1786 he visited London, where he was much employed as a painter of small portraits with black lead pencil, which, besides being correctly drawn, faithfully exhibited the features and character of the persons whom they represented. Death, however, deprived the public of this ingenious artist in 1787, by the progress of a disease, which he bore with a firmness of mind that had marked his character through life. Soon after his death, his "*Letters on the Poetry and Music of the*"

the Italian Opera," were published in 12mo., together with an introduction, by lord Monboddo, in one volume, 12mo., 1789, for the benefit of his widow. Mr. Brown left behind him several very highly finished portraits in pencil, and many exquisite sketches in pencil, and in pen and ink, which he had taken of persons and places in Italy. The peculiar characteristics of his hand were delicacy, correctness, and taste; and the leading features of his mind were acuteness, liberality, and sensibility, joined to a character firm, vigorous, and energetic. His last performances were two exquisite drawings, one from Mr. Townley's celebrated bust of Homer, and the other from a fine original bust of Mr. Pope, generally supposed to have been the work of Rysbrack. From these two drawings, two very beautiful engravings have been made by Mr. Bartolozzi, and his pupil, Mr. Bovi. Biog. Dict.

BROWN, ABRAHAM, one of the principal performers on the violin, before the arrival of Gardini, in this country. After the death of Felting, in 1752, he succeeded him at Ranelagh, as leader of the king's band, and at several concerts. But this performer, who had a clear, sprightly, and loud tone, with a strong hand, and had travelled through Italy, was ignorant of music, and the pieces he played consisted of *notes, et rien que des notes*: for he had no soul or sense of expression. He brought over a favourite solo of Tartini (the second in the second set, published by Walsh), with which alone he figured at all concerts, for at least six or seven years, without ever entering into Tartini's true style of playing it, or that of any performer of his school. Mr. Brown, however, had not the mortification either to feel or know his defects; but, on the contrary, was comforted with a full conviction of his superiority.

BROWNE, GEORGE, an Irish prelate, and the first bishop that espoused and promoted the reformation in that country; was originally an Augustine friar of London, and educated in the house of his order, near Holywell, in Oxfordshire. He afterwards became provincial of the Augustine monks in England. Having taken the degree of doctor of divinity at some foreign university, he was admitted to the same degree at Oxford in 1534, and soon after at Cambridge. Upon the perusal of some of Luther's writings, he entertained a favourable opinion of his doctrine, and recommended to the people to make their supplications solely to Christ, and not to the Virgin Mary, or the Saints. These sentiments procured for him the favour of Henry VIII., who promoted him in March, 1535, to the archbishopric of Dublin, and soon after appointed him one of the commissioners for executing the royal mandate, that obliged the Irish to renounce the papal supremacy. In the conduct of this business he encountered many difficulties; as he also did in carrying through the parliament, which met in Dublin, May 1, 1536, the bill for establishing the king's supremacy over the church of Ireland. During the progress of the reformation, when Henry began to suppress the monasteries in England and Ireland, archbishop Browne completed the design which he had formed of removing all superstitious relics and images out of the two cathedrals of St. Patrick's and the Holy Trinity, in Dublin, and out of the other churches in his diocese; and he placed, in their room, the creed, the Lord's prayer, and the ten commandments, in gold letters. In 1541, the king converted the priory of the Holy Trinity into a cathedral church, consisting of a dean and chapter; and the archbishop, three years after, founded in it three prebends, from which time it has been denominated Christ-Church. The order of king Edward VI. for introducing into all the churches of Ireland the English liturgy, and the Bible in the vulgar tongue, though warmly

opposed by the papish party, was readily received by archbishop Browne; and on the Easter-day following, the liturgy was read at Christ-Church in the presence of the mayor and bailiffs of the city, and the lord deputy St. Leger; on which occasion the archbishop preached a sermon against keeping the scriptures in the Latin tongue, and against the worship of images. This sermon is annexed to the archbishop's life. When Dowdall, the primate, was deprived of this dignity, on account of his opposition to the royal order, it was conferred, in October 1551, on archbishop Browne; but upon the accession of queen Mary, he also was deprived both of the primacy and archbishopric in 1554, under pretence that he was married; but in reality, because he had been zealous in promoting the reformation. He died about the year 1556, leaving behind him the character of a faithful subject, a zealous promoter of religion, and a pattern of meekness, cheerfulness, and benevolence. Biog. Brit.

BROWNE, WILLIAM, an English poet, was born at Tavistock in Devonshire, in 1590, and admitted into Exeter college, Oxford, about the beginning of the reign of king James I. Having made very considerable proficiency in classical learning and polite literature, he left the college, and removed to the Inner Temple, London, where he devoted himself to the muses, and probably paid little attention to the study of the law. In 1613, he published the first part of his "Britannia's Pastorals," fol.; a great part of which he seems to have written before he had attained his 20th year. In the following year he published "The Shepherd's Pipe, in Seven Eclogues," 8vo.; and in 1616, the second part of his "Britannia's Pastorals," which were well received, and gained him great reputation. He also wrote the "Inner Temple Masque," and some other small poems, which are included in the edition of his works published by Mr. Davies in 1772, in three small volumes. In his Pastorals there is much poetical imagery, and sometimes beautiful description, and his versification is often very harmonious; but though he knew how to move the heart by strokes of genuine nature and passion, his writings abound with point and conceit, and other frivolous ornaments, which indicate a vitiated taste; with a fertile imagination and a vigorous mind, his judgment was perverted by those Italian models, which it was the fashion of his time to imitate. His descriptions, though picturesque, are extravagant; his conceptions, though strong, have marks of deformity; and his language never flows in a strain of continued purity. He could not plan with precision and delicacy, and was unable to join correctness with spirit. Such is the account given of his writings by an anonymous critic. In 1624, he returned to his college; became tutor to that earl of Carnarvon, who was killed at the battle of Newbury, and who is highly extolled by Clarendon; was created M.A. in that year; and was styled in the university-register "Vir omni humanâ literatura et bonarum artium cognitione instructus." He was afterwards taken into the family of the earl of Pembroke; and, as Wood says, "got wealth, and purchased an estate." Towards the close of his life, he is supposed to have retired into his own country, and to have died there about the year 1645. Biog. Brit.

BROWNE, Sir THOMAS, more known now as an antiquary, than as a doctor of physic, was born in the parish of St. Michael, in Cheapside, the 19th of November, 1605. Being left by his father, who died when he was young, an ample fortune, he was sent to Winchester school, and having passed through the usual exercises there in 1623, he was admitted a gentleman commoner in Pembroke college, Oxford. In 1627, he took his degree of bachelor, and three years after of master of arts. During this time, besides apply-

ing with assiduity to classical literature, in which he made great progress, he had attended to the study of medicine, which he practised for a small time at Oxford. With a view of improving himself in that art, he determined on visiting the schools on the continent; but he went first to Ireland, where his mother then was with her husband, sir Thomas Dutton, who held a post in that kingdom. With him he travelled over the greatest part of Ireland; and having collected what might be gathered there, in furtherance of his design, he went to France, and spent some time at Montpellier. He then visited Padua, and thence proceeded to Leyden, where he continued, until he took his degree of doctor in medicine. This was about the year 1633. In 1634, he came to London, and soon rendered his name famous, by the publication of his "*Religio Medici*," a work of deep reflection, and evidently the fruit of much study and attention. It was no sooner published, we are told, than it excited the attention of the world, by the novelty of paradoxes, the dignity of sentiment, the quick succession of images, the multitude of abstruse allusions, the subtlety of disquisition, and the strength of language with which it was written. He begins with declaring himself a Christian, though he has been classed among the free-thinkers. Whatever might be his inconsistency on some points, he favoured the notion of guardian angels, allowed the reality of apparitions, and of diabolical illusions; and affirms from his own knowledge, the certainty of witchcraft. This latter opinion is said to have had no small influence in occasioning the condemnation of some unhappy victims, the execution of whom was one of the latest instances of the kind that disgrace the English annals. His natural disposition, however, was averse from severity and intolerance; he declares himself to be an enemy to persecution, and he was almost tempted by his benevolence, to doubt of the eternity of future punishments, and the absolute condemnation of virtuous heathens. His sentiments were those of philanthropy, and he inclined to a favourable opinion of mankind in general. In his moral compositions, however, he seems to have been more influenced by vanity, than by a real desire of improving mankind. Sir Kenelm Digby published observations upon the "*Religio Medici*," which are now generally bound up with the work. The remarks are acute and ingenious, but what seems most wonderful is, that it cost the writer only twenty-four hours in procuring, reading, and making his annotations on the book. It was soon after translated into Latin by Mr. Merryweather, a gentleman of Cambridge, and from his version it was again translated into Italian, German, Dutch, and French. An edition of the Latin version was published at Strasburgh, with large notes by L. Nicolaus Moltfarius. The peculiarities of this book raised the author, as is usual, Dr. Johnson observes, many admirers, and many enemies; it was only, however, professedly answered, by one writer, Alexander Ross, in a work, entitled "*Medicus Medicatus*," which was never much noticed. In 1637, he was incorporated in the university of Oxford, and then went and settled at Norwich, where he was much resorted to, and attained high reputation, Anthony Wood says, for his skill in his profession, which, in a few years, procured his admission as honorary member of the Royal College of Physicians in London. In 1641, he married Mrs. Dorothy Micham, a lady of a good family in Norfolk, and of great personal as well as mental endowments. These excellent qualities of the lady did not free him from the sarcasms of the wits who remembered the Dr. had expressed a wish, in his famed works, that procreation or population might go on without the cohabitation of the sexes; which he called "the foolishlest thing a wife man did." The doctor and his

lady, however, lived together in great harmony for more than forty years, and left a son, who was educated to medicine, and three daughters. In 1646, he published his treatise on vulgar errors, "*Pseudodoxia Epidemica*." In this he combats, with great learning and ingenuity, numerous notions or opinions on natural and other objects, which had obtained general credit, not only among the common people, but among physicians and other literary persons. The work is, of course, miscellaneous, and occupies as many chapters as there are errors he wished to reform; but as it is in general circulation, and has been frequently reprinted, it is unnecessary to say more of it, than that it added considerably to the fame the author had obtained by his former work. In this work, however, he opposed the Copernican system of astronomy, and contended for the immobility of the earth. In 1671, he was knighted by king Charles II. in his passage through Norwich, and with particular marks of esteem. He had before, viz. in 1658, published "*Hydriothaphia*, or Discourse on Urn-burial, together with the Garden of Cyrus, or the Quincunxial Lozenge, or Net-work Plantation of the Ancients, &c." In these he treats, Dr. Johnson says, with his usual learning, on the funeral rites of the ancient nations; exhibits their various treatment of the dead; and examines the substances found in his Norfolkian urns. There is not, perhaps, any one of his works which better exemplifies his reading or memory. It is scarcely to be imagined how many particulars he has amassed together, in a treatise which seems to have been occasionally written; and for which, therefore, no materials could have been previously collected. This is the last work our author published; but he continued to live esteemed for his virtues, as well as for his literary attainments, until he had completed his 77th year, when he was seized with an affection in his bowels, which put an end to his life at Norwich, on his birth-day, the 19th of Nov. 1682. "Dr. Browne left several tracts in his closet, which, Whitefoot says, he designed for the press." Of these two collections have been published, one by Dr. Tennison, in 1686; the other in 1732, by a nameless editor. "It is not on the praises of others, but on his own writings, that he is to depend for the esteem of posterity, of which he will not easily be deprived, while learning shall have any reverence among men; for there is no science in which he does not discover some skill; and scarce any kind of knowledge, profane or sacred, abstruse or elegant, which he does not appear to have cultivated with success. His style is vigorous, but rugged; learned, but pedantic; deep, but obscure; it strikes, but does not please. His tropes are harsh, and his combinations uncouth. In defence, however, of his uncommon words and expressions, it should be considered, that his sentiments were uncommon, and that he was not content to express, in many words, that idea for which any language could supply a single term." Life of Sir Thomas Browne, by Dr. Samuel Johnson. Gen. Biog.

BROWNE, EDWARD, son of sir Thomas, was born at Norwich, in 1642, where he received the rudiments of his education. In 1657, when he was fifteen years of age, he was sent to Cambridge, and there continued his studies with diligence until 1665, when he took his degree of bachelor in medicine. He now went to Merton college in Oxford; and at the end of two years proceeded doctor. To perfect himself in natural philosophy, he went to the continent, and travelled over great part of Bohemia, Hungary, and Friuli, countries abounding with mineral productions, which he examined with particular care. On his return, he settled in London, and there published, in 1673, in 4to. the observations he had collected during his travels. This was so well received, as to induce him to revise, correct, and, at length, in

in 1685, to enlarge it to two volumes in 4to. In London he became soon distinguished for his superior learning and abilities, and was made fellow of the Royal College of Physicians, and of the Royal Society, physician to Bartholomew's hospital, and first physician to king Charles II. He assisted Dryden with a translation of the lives of Themistocles and Sertorius, toward his version of Plutarch's lives, and is said to have given some communications to the Royal Society, on the subject of chemistry, in which we have the testimony of Mr. Boyle, he was more than commonly skilled. But his manners were as polite as his learning was various and profound, which made king Charles II., no ill judge of the characters of men, say, "he was as learned as any of the college, and as well bred as any at court." He was, however, left out of the list of court physicians by James II. but was afterwards consulted by his successor, king William. In 1705, he was chosen president of the college of physicians, which office he continued to fill until 1708, the time of his death, which happened in the month of August in that year, at his seat at Northfleet, near Greenhithe, in Kent. Gen. Biog.

BROWNE, SIMON, a learned minister, and writer among the Protestant dissenters, was born at Shepton-Mallet, in Somersetshire, about the year 1680, and received his academical education at Bridgewater under the instruction of the Rev. Mr. Moor. Distinguished by his talents and proficiency, he commenced the exercise of his ministry before he had attained the age of 20 years, and was settled for a considerable time with a respectable congregation at Portsmouth. During his residence in this town, he published, in 1706, his "Caveat against evil Company," and, in 1709, "The true Character of the real Christian," in one volume 8vo. In 1716, he removed to London, and took the charge of the congregation in the Old Jewry, which was one of the most respectable and considerable in the kingdom. In 1720, he published a volume of "Hymns and Spiritual Songs, in Three Books," 12mo.; and, in 1722, a volume of "Sermons." In his address to the congregation, prefixed to this volume, he avows it to have been his "design to promote pure, peaceable, and practical religion, without rage or bitterness against any, and to spread the spirit of Christianity, not that of a party." He adds, that, "to raise the passions, without first setting the judgment right, is to carry the man into all the wilds and wanton freaks of enthusiasm."—"But, on the other hand, it will signify little to the advancement of real religion to set the head right, if we cannot also warm and engage the heart. For though the affections should not have the supreme direction, they must be the immediate springs of human action." Such were the principles and views with which he conducted his ministerial services, and which rendered the congregation at the Old Jewry so numerous and so respectable. The publication of his sermons was soon followed by "A Letter to the Rev. Mr. Thomas Reynolds," in which he reproaches those dissenters, whose zeal for orthodoxy made them anxious to compel their brethren, inconsistently with their principles as dissenters, to make very particular and explicit declarations of their belief in the doctrine of the Trinity, and in which he also pointed out the unreasonableness and inefficacy of requiring any subscription to human articles of faith.

Mr. Browne, having continued in the exercise of the pastoral office with great reputation on his own part, and very much to the satisfaction and improvement of his congregation for about 7 years, was visited, in 1723, with a very complicated and severe affliction, occasioned by the loss of his wife and an only son, which distressed him to such a degree, that he was for some time in a state bordering upon

distraction; but his disorder at length subsided into a melancholy of a very extraordinary nature. He desisted from the duties of his functions, and could not be persuaded to join in any act of worship, either public or private. He imagined "that almighty God, by a singular instance of divine power, had, in a gradual manner, annihilated in him the thinking substance, and utterly divested him of consciousness: that though he retained the human shape, and the faculty of speaking, in a manner that appeared to others rational, he had all the while no more notion of what he said than a parrot. And, very consistently with this, he looked upon himself no longer as a moral agent, a subject of reward or punishment." In this persuasion, he continued, with little variation, to the end of his life. He seemed to be much grieved, and to think his veracity questioned, when he could not persuade others to think of him as he thought of himself. This incredulity, on the part of others, he sometimes represented as the judicial effect of the same divine power that had reduced him to his distressed state. For some time he was unwilling that any prayers should be made on his account, and he declined putting up any for himself, and refused even to say grace at table. Being once importuned to say grace at the table of a friend, he repeatedly excused himself; but the request being repeated, and the company kept standing, he manifested tokens of great distress, and, after some irresolute gestures and hesitation, expressed, with great fervour, this ejaculation: "Most merciful and Almighty God, let thy spirit, which moveth upon the face of the waters, when there was no light, descend upon me; that from this darkness there may rise up a man to praise thee!" On another occasion, when he was earnestly solicited to say grace, he at length complied, and expressed himself in the following manner: "Lord, I am nothing, I ask nothing, and I want nothing; but bless these good creatures to those who are about to receive them!" It appears, however, that after his retirement into the country, and towards the close of his life, he was less uninclined to join in acts of devotion, and that he was even desirous that prayers should be put up for himself. At the commencement of his disorder, he felt so unhappy as to be frequently inclined to destroy himself; but he afterwards became more calm and composed, and seemed to experience little or no terror of mind; and he was often not only rational and serious, but cheerful and pleasant in conversation, provided nothing was said relating to his own case. It is remarkable, that, whilst this strange phrenzy continued, his faculties appeared to be in every other respect in their full vigour; his conceptions were clear, and his powers of reasoning strong; and he pursued his studies without intermission. His congregation respected him so much, that they delayed, for a considerable time, appointing a successor; but when he was reduced to the necessity of quitting the ministry, and his place was supplied by Mr. (afterwards Dr.) Chandler, Mr. Browne retired to his native town of Shepton-Mallet. He there amused himself with translating several parts of the ancient Greek and Latin poets into English verse. He afterwards composed several little pieces for the use of children, an English grammar and spelling-book, an abstract of the scripture history, and a collection of fables; the two last being in metre. He also amassed together, in a short compass, all the themes of the Latin and Greek tongues, and compiled a dictionary to each of these, in order to render the acquisition of those languages more easy and compendious. During the two last years of his life, he was employed in defending the truth of Christianity, against some of the attacks then made against it, and in recommending mutual candour to Christians of different sentiments con-

cerning the doctrine of the Trinity. In 1732, he published, in 8vo. "A sober and charitable Disquisition concerning the Importance of the Doctrine of the Trinity; particularly with regard to Worship, and the Doctrine of Satisfaction; endeavouring to shew, that those in the different Schemes should bear with each other in their different Sentiments; nor separate Communion, and cast one another out of Christian Fellowship on this Account." He also published, in the same year, "A fit Rebuke to a ludicrous Infidel, in some Remarks on Mr. Woolston's fifth Discourse on the Miracles of our Saviour; with a Preface concerning the Prosecution of such Writers by the Civil Powers;" in which he proves, with great ability, that all such interpositions of the civil magistrate, to prevent attacks against Christianity, were extremely dishonourable to it. It was also in this year that he published his "Defence of the Religion of Nature, and of the Christian Revelation, &c." In all these treatises, written in his retirement, where he could derive little assistance from books, or the conversation of learned friends, he displays very extensive knowledge, and great powers of reasoning. To the last of the above-cited performances he had prefixed a very singular dedication to queen Caroline, expressing the unhappy delusion under which he laboured, and which his friends, at the time of the publication, prudently suppressed. A copy of it, however, was preserved. It was published in the "Adventurer," No. 88. vol. iii. p. 155; and as it exhibits a very curious display of the state of his mind, we shall here subjoin it, for the gratification of those who have not immediate access to the other publication:

'Madam,

'Of all the extraordinary things that have been tendered to your royal hands since your first happy arrival in Britain, it may be boldly said, what now bespeaks your majesty's acceptance is the chief.

'Not in itself, indeed; it is a trifle unworthy your exalted rank, and what will hardly prove an entertaining amusement to one of your majesty's deep penetration, exact judgment, and fine taste.

'But on account of the author, who is the first being of the kind, and yet without a name.

'He was once a man; and of some little name; but of no worth, as his present unparalleled case makes but too manifest; for by the immediate hand of an avenging God, his very thinking substance has for more than seven years been continually wasting away, till it is wholly perished out of him, if it be not utterly come to nothing. None, no not the least remembrance of its very ruins, remains, not the shadow of an idea is left, nor any sense that, so much as one single one, perfect or imperfect, whole or diminished, ever did appear to a mind within him, or was perceived by it.

'Such a present from such a thing, however worthless in itself, may not be wholly unacceptable to your majesty, the author being such as history cannot parallel: and if the fact, which is real and no fiction, nor wrong conceit, obtains credit, it must be recorded as the most memorable and indeed astonishing event in the reign of George II. that a tract composed by such a thing was presented to the illustrious Caroline; his royal comfort needs not be added; fame, if I am not misinformed, will tell that with pleasure to all succeeding times.

'He has been informed, that your majesty's piety is as genuine and eminent, as your excellent qualities are great and conspicuous. This can, indeed, be truly known to the great searcher of hearts only; he alone, who can look into them, can discern if they are sincere, and the main inten-

tion corresponds with the appearance; and your majesty cannot take it amiss, if such an author hints, that his secret approbation is of infinitely greater value than the commendation of men, who may be easily mistaken, and are too apt to flatter their superiors.

'But if he has been told the truth, such a case as his will certainly strike your majesty with astonishment, and may raise that commiseration in your royal breast which he has in vain endeavoured to excite in those of his friends; who, by the most unreasonable and ill-founded conceit in the world, have imagined, that a thinking being could for seven years together live a stranger to its own powers, exercises, operations, and state, and to what the great God has been doing in it and to it.

'If your majesty, in your most retired address to the king of kings, should think of so singular a case, you may, perhaps, make it your devout request, that the reign of your beloved sovereign and consort may be renowned to all posterity by the recovery of a soul now in the utmost ruin, the restoration of one utterly lost at present amongst men.

'And should this case affect your royal breast, you will recommend it to the piety and prayers of all the truly devout, who have the honour to be known to your majesty: many such doubtless there are; though courts are not usually the places where the devout resort, or where devotion reigns. And it is not improbable, that multitudes of the pious throughout the land may take a case to heart, that under your majesty's patronage comes thus recommended.

'Could such a favour as this restoration be obtained from heaven by the prayers of your majesty, with what a transport of gratitude would the recovered being throw himself at your majesty's feet, and adoring the divine power and grace, profess himself,

'Madam,

'Your majesty's most obliged

'and dutiful servant,

Simon Browne."

After his retirement into the country, the want of exercise, which he could not be persuaded to use, brought on a complication of disorders, and a mortification in his leg, which terminated his life at the close of the year 1732, in the 52d year of his age. His learning and knowledge were extensive. His theological sentiments were liberal, and he was a zealous advocate for freedom of inquiry. His piety and virtue were distinguished and exemplary; and he was animated by an ardent zeal for the interests of rational and practical religion. None who duly regard the talents he possessed and the public services of which he was capable, can forbear lamenting the malady under which he laboured. "His abilities," says one of his biographers, "made him respected, and his virtues rendered him beloved; but such was the peculiarity of his case, that he was at once an evidence of the dignity, and of the weakness of human nature." Biog. Brit.

BROWNE, ISAAC HAWKINS, an ingenious and elegant poet of the last century, was born, in 1706, at Burton-upon-Trent, of which parish his father was minister. Having received his grammatical education, first at Litchfield, and afterwards at Westminster-school, where he distinguished himself by his rapid proficiency, he was admitted, at the age of 16 years, into Trinity college, Cambridge; here he applied with singular assiduity, principally to classical literature, but without neglecting the appropriate studies of the place, or the various branches of mathematics, and the principles of the Newtonian philosophy; and such was the reputation which

he acquired, that he was one of the first scholars elected upon the foundation, established in 1724, by king George I. for the study of modern history and languages, with a view of qualifying young men for employment at court and in foreign embassies. To this circumstance he alludes in his poem on the death of the founder, which was the first of his poetical productions, and much approved. About the year 1727, he settled at Lincoln's Inn, and prosecuted the study of the law with a view to the profession of a barrister, for which he was originally designed; but though he acquired a considerable degree of knowledge, he never arrived at any great eminence in the practice of the law, and relinquished it for a long time before his death, that he might have the greater leisure for gratifying his inclination in literary pursuits. Possessed of a fortune, which was adequate to his desires, and which, by preserving the happy mean between extravagance and avarice, he neither diminished nor increased, he was the less anxious about the emoluments of his profession. Soon after his settlement at Lincoln's Inn, he addressed to his friend Mr. Highmore, the painter, a poem on "Design and Beauty," in which he adopted the elegant ideas of the Platonic philosophy. Among other pieces, composed by him, the most pleasing and popular was his "Rise of Tobacco," consisting of an imitation of the styles of six poetical writers, then living, viz. Cibber, Ambrose, Philips, Thomson, Young, Pope, and Swift. In this collection, much admired for the strain of humour and spirit of discrimination with which it was written, the imitation of A. Philips was the production of his friend Dr. Hoadly, chancellor of the diocese of Winchester.

In 1744, Mr. Browne married a lady, whose amiable temper contributed very much to his domestic felicity; and he was chosen twice, viz. in this year, and again in 1748, to serve in parliament for the borough of Wenlock, in Shropshire. For this appointment he was indebted to the interest of William Forester, esq. who recommended him to the electors from no other motive than the opinion he entertained of his abilities, and the confidence he had in his integrity and principles. As he had obtained his seat without opposition or expence, and without incurring obligation to any political party, he was an independent member; and though he supported the administration of Mr. Pelham, he never received any favour, nor desired any employment. The love of his country, and an ardent zeal for its constitution and liberties, formed a distinguishing part of his character. Although he possessed an uncommon degree of eloquence in private conversation, he was deterred, by a peculiar kind of delicacy and nervous timidity, from ever appearing as a parliamentary speaker. In 1754, he published his principal work, which was his Latin poem "De Animi Immortalitate," in 2 books, and which unites the philosophical learning and elegance of Cicero, with the numbers, and much of the poetry of Lucretius and Virgil. This poem was very much admired by the best judges at the time of its publication, and its popularity was so great, that several English translations of it soon appeared. The best of these is that of Mr. Saunderson, in his "Miscellanies." It was the author's intention to have added a third book, proposing to carry natural religion as far as it would go, and in so doing, to lay the true foundation of Christianity, of which he was a firm believer; but of this book he only left an imperfect fragment. Having passed through a life distinguished by private virtues, and graced by a variety of accomplishments, Mr. Browne died in 1760, in the 55th year of his age. His only son, Mr. Thomas Browne, to whose education he had paid particular attention, and in which he had succeeded to his wishes, published an elegant edition of his poems, in large octavo

in 1768. Several of them are also printed in Doddsley's Collection. Biog. Brit.

BROWN Bay, in the *Manege*, is understood of horses of a very dark chestnut colour.

BROWN's Bay, in *Geography*, lies on the south side of Nonuch harbour, near the east end of the island of Antigua in the West Indies.

BROWN's Point, the north-west point of the peninsula called *Island Magee*, in the county of Antrim, Ireland, at the entrance into Loch-Larne. N. lat. $54^{\circ} 51'$. W. long. $5^{\circ} 41'$. Huddart.—Also, a cape at the southern extremity of the island of Tobago, in the West Indies. N. lat. $11^{\circ} 10'$. W. long. $60^{\circ} 40'$.

BROWN's Sound, lies on the north-west coast of North America. N. lat. $55^{\circ} 18'$. W. long. $132^{\circ} 20'$. The lands on the east side of this sound are tolerably level; but on the west are mountains, which rise above the clouds, and exhibit in winter a dreary aspect. The land abounds with various sorts of pines; the animals in its vicinity are deer, wolves, sea-otters, and seals; the fish are salmon, halibut, and a species of cod, &c. in summer, ducks, brants, shags, &c. are plentiful.

BROWNÆA, in *Botany* (named from Dr. Patrick Browne, author of the history of Jamaica.) Lin. gen. 833. Reich. 898. Schreb. 1115. Juss. 366. Jacq. Amer. 366. Willd. 1272. Lamarck. Bosc. Clafs. *monadelphia endecandria* (*decandria* Schr.) Nat. Ord. *Lomentaceæ—Leguminosæ*. Juss. Nat. Char. Calyx double; outer one-leaved, conical, with two unequal segments; inner longer, one-leaved, funnel-shaped, with five divisions. Cor. petals five; claws long, inserted within the tube of the inner calyx; borders ovate, obtuse. Stam. filaments ten or eleven, awl-shaped, alternately shorter, attached to the tube of the inner calyx, and united near the bottom; anthers oblong. Pijl. germ oblong, pointed, pedicelled, adhering to the tube of the inner calyx; style awl-shaped; stigma blunt. Pericarp, legume oblong, compressed, bilocular, narrowed about the partition; partition membranaceous. Seeds solitary, ovate, compressed, rather rugged, involved in fungous fibres.

Ess. Char. Calyx double, outer bifid, inner quinquefid. Cor. five-petalled.

Obs. Linnæus, Jacquin, &c. have considered the calyx as single, and the corolla double; but from a careful consideration of Lamarck's figure of the *coccinea*, we have been induced to adopt the ideas of Jussieu, and the other French botanists.

Sp. 1. *B. coccinea*. Linn. (Jac. Amer. Pl. 121. Lamarck Pl. 575. N° 1.) "Stamens the length of the corolla; peduncles somewhat aggregate; branches smooth." Willd. A shrub from eight to ten feet high, branched. Leaves abruptly winged; leaflets in two or three pairs, ovate-lanceolate, sharply pointed, very entire, smooth, on shortest petioles. Flowers lateral, large, scarlet, pendent, from six to ten together, on very short nearly united peduncles. Stamens ten. A native of rocky woods, in South America. 2. *B. grandiceps* (Jacq. Collect. 3. Pl. 22. La Marek Illustr. Pl. 575. N° 2.) "Stamens the length of the corolla; flowers capitate-spiked; branches downy." Willd. *Folioses* not-vened. Flowers scarlet, in a spike five inches long and four broad. A native of mountainous woods in South America. 3. *B. Rosa de Monte* (Bergius in Philof. Transf. vol. 63. Pl. 8. p. 174. La Marek Plut. Pl. 575. N° 3.) "Stamens twice as long as the corolla; flowers in head." Willd. A tree. Branches swelling into scattered knobs. Branchlets, or common petioles, generally alternate, round, smooth, rugged at the base, spreading. Leaves leathery, about seven inches long, ovate-oblong, very entire, narrowing

ing abruptly towards the end, smooth on both sides, with short petioles; the lower ones gradually diminishing; the lowest ovate, a little heart-shaped at the base. *Flowers* collected into a head or fascicle, surrounded by a leafy involucre; leaflets or bracts ovate, rather sharp-pointed, somewhat membranaceous, concave, smooth, about two inches long, red, including one and sometimes two or three flowers, deciduous; the outer ones rounded, the inner smaller, and gradually becoming linear. *Filaments* constantly eleven. Gathered at Porto Bello in America, by a Mr. Pike, and sent to Bergius.

It does not appear that either of the three species has been cultivated in Europe.

BROWNÆA pauciflora. Willd. See PALOEVA.

BROWNFIELD, in *Geography*, a small settlement in York county, and district of Maine, in North America; which, together with Suncook, contains 250 inhabitants; so called in 1791 by captain Gray in honour of Sam. Brown, esq. of Boston.

BROWNISTS, in *Ecclesiastical History*, a religious sect, which sprung out of the Puritans, towards the close of the 16th century, and derived their appellation from Robert Brown.

The revolt of Brown, already mentioned under his article, was far from being followed with the dissolution of the sect. On the contrary it daily increased; inasmuch that Sir Walter Raleigh, in a speech delivered in the house of commons, in 1592, computes no less than twenty thousand followers of it.

The occasion of the separation of the Brownists was not any fault they found with the faith, but only with the discipline and form of government of the other churches in England. They equally charged corruption on the episcopal form, and on that of the presbyterians, by consistories, classes, and synods; nor would they join with any other reformed church, because they were not assured of the sanctity and regeneration of the members that composed it, and on account of the toleration of sinners, with whom they maintained it an impiety to communicate. They condemned the solemn celebration of marriages in the church, and the use of the ring in marriage, as making it a sacramental sign, which encouraged the popish heresy, that matrimony is a sacrament; and maintained, that matrimony being a political contract, the confirmation thereof ought to come from the civil magistrate. They would not allow any children to be baptized, whose parents were not members of the church, or of such as did not take sufficient care of the education of those baptized before. They rejected all forms of prayer; and held, that the Lord's prayer was not to be recited as a prayer; being only given for a rule, or model, whereon all our prayers are to be formed. They held, that the evil life of the ministry destroyed the efficacy of the sacraments; and they objected against bells in churches, because, as they pretended, they were consecrated to the service of idolatry. They urged also many other objections against the forms and ceremonies of the established church, which are recapitulated in a small 4to. pamphlet, published at Middleburgh in 1599, on occasion of a controversy between Francis Johnson, a Brownist, and H. Jacob, about some of the tenets of the Brownists, and entitled "A Defence of the Churches and Ministry of England, against the Reasons and Objections of Master Francis Johnson, and others of the Separation, commonly called Brownists; in two treatises, published especially for the benefit of those in these parts of the Low Countries."

The form of church government which they established was *democratical*. When a church was to be gathered, such as desired to be members of it made a confession of it; and signed a covenant, by which they obliged themselves to walk

together in the order of the gospel. The whole power of admitting and excluding members, with the decision of all controversies, was lodged in the brotherhood. Their church-officers were chosen from among themselves, for preaching the word, and taking care of the poor, and separated to their several offices by fasting, prayer, and imposition of hands of some of the brethren. But they did not allow the priesthood to be any distinct order, or to give any indelible character. As the vote of the brotherhood made a man a minister, and gave him authority to preach the word, and administer the sacraments among them; so the same power could discharge him from his office, and reduce him to a mere layman again. And as they maintained the bounds of a church to be no greater than what might accommodate those who could meet together in one place, and join in one communion; so the power of these officers was prescribed within the same limits. The minister or pastor of one church could not administer the Lord's supper to another, nor baptize the children of any but those of his own society. Any lay-brother was allowed the liberty of giving a word of exhortation to the people; and it was usual for some of them, after sermon, to ask questions, and reason upon the doctrines that had been preached. In a word, every church on the "Brownists" model, is a body corporate, having full power to do every thing which the good of the society requires, without being accountable to any classis, synod, convocation, or other jurisdiction whatever. It has been said, particularly by Dr Fulke, that if we compare the principles of the Brownists with those of the ancient Donatists (which see), we shall then find to be the same; and that Brown derived them from the PURITANS and SEPARATISTS. Brown, it is said, was preceded by Bolton, and followed by Barrow, a man of ingenuity and learning, but, like many others of his sect, of a warm spirit, who was condemned and executed, at the instigation of the bishops, very much to the disgrace of the reign of queen Elizabeth. Indeed the laws were executed with great severity on the Brownists; their books were prohibited by queen Elizabeth, and their persons imprisoned, and many of them were hanged. The ecclesiastical commission, and the star-chamber, in fine, distressed them to such a degree, that they resolved to quit their country. Accordingly, many families retired, and settled at Amsterdamb, where they formed a church, and chose Mr. Johnson for their pastor; and after him, Mr. Ainsworth, author of the learned commentary on the Pentateuch. This church, notwithstanding its unhappy intestine divisions, flourished under a succession of pastors for above 100 years. Other Brownists erected churches after their own model, at Arnheim, Middleburgh, Leyden, and other places. See AINSWORTH. The next person that appeared as an active supporter of Brownism was Robinson, who somewhat softened the dogmas of Brown, and endeavoured to unite the discordant members of his sect. For some time the followers of Robinson steered a middle course between the Brownists and the church of England, calling themselves "Semi-Separatists;" but at length they proceeded farther than the Brownists themselves. The Brownists, though ranged under different leaders, generally retained the name of their founder for several years after his death; for in the civil war in 1640, &c. we read of a mob of 2000 Brownists, who entered St. Paul's church in London, when the high-commission court was sitting, and making a great tumult, cried out "No Bishops," "No High Commission," &c.: and in 1642, king Charles, in a speech made at the head of his forces on their march towards Shrewsbury, mentions the Brownists, and by a strange kind of junction, connects them and the Anabaptists with *Atheists*. In the following year

he proposes to the parliament to frame a good bill for the better preservation of the book of common prayer from the scorn and violence of Brownists, Anabaptists, and other sectaries. At length, however, the appellation of Brownists was changed into that of Independents, a denomination assumed by those, who adopted many of their tenets, and conformed to their discipline. At the present enlightened period, when the principles of toleration are understood and inculcated, and a liberal spirit pervades all ranks of the community, the severity with which the Brownists were treated, will find no advocates; nor will any one attempt to justify or palliate their errors and misconduct. Their rigid and narrow sentiments in point of discipline; their denying the church of England to be a true church; their maintaining that her government was so wholly Popish and Antichristian, as to render all her ordinances and sacraments invalid; and their not only renouncing communion with her, but with all other reformed churches, excepting such as should be of their own model, are sufficient proofs that they did not come behind their persecutors in bigotry. Nor is it unlikely, but that if they had risen to power, they would have exercised it in a very unjustifiable manner. Neal's History of the Puritans, vol. i. p. 231—260—363—386—436. 4to. Neal's Hist. of New Eng. tom. i. cap. 2. p. 58. Robinson, Apologia jura, &c. Brownistarum et Barrowistarum, 1660. 1619. Biog. Brit. Art. *Robert Brown*. See INDEPENDENTS.

BROWNSBURG, in *Geography*, a town in Rockbridge county, Virginia, containing 20 or 30 houses; about 15 miles N.E. from Lexington.

BROWNSEA ISLAND, an island within the harbour of Poole, in England, containing about 800 acres of land, where the Danes landed in 1015.

BROWNSTOWN HEAD, a cape on the south coast of Ireland, which is the eastern point of Tramore bay, on the narrow channel of Rineshark. N. lat. $52^{\circ} 7'$. W. long. $7^{\circ} 7'$.

BROWNSVILLE, or RED STONE OLD FORT, a flourishing port-town of America, in the county of Fayette, and state of Pennsylvania, on the south-eastern bank of Monongahela river, between Dunlap and Red-stone creeks, and next to Pittsburg, the most considerable town in the western part of the state. The town is regularly laid out, and contains about 100 houses, an Episcopalian and Roman catholic church, a brewery, and a distillery. It is connected with Bridge-port, a small village on the opposite side of Dunlap creek, by a bridge 260 feet long. Within a few miles of the town are 4 Friends' meeting-houses, and 24 grist, saw, oil, and fulling mills. The trade and emigration to Kentucky afford a lucrative employment to boat-builders; 100 boats of 20 tons each being built here annually. Lord's fort formerly stood here, on the south side of the mouth of Red-stone creek, in N. lat. $39^{\circ} 55'$. W. long. $81^{\circ} 12' 30''$; 37 miles S. from Pittsburg; 13 S. by E from Washington; and 341 W. from Philadelphia.—Also, a port-town in Oneida county, New York, seated on Black River, near its mouth in lake Ontario; 590 miles from Washington.

BROWS, or EYE-BROWS, are two hairy arches above the orbits of the eyes, bunching out by means of some fat under the skin in this place.

That end next the nose is called the head, *caput*, the other the tail, *cauda*, of the eye-brow.

The use of the eye-brow is partly to break the rays of light descending from above, that they may not dart too strongly into the eyes; and partly to be a screen to the eyes from sweat, dust, or other matters descending from the forehead.

BROWSE, the tops of the branches of trees, whereon

beasts feed. This is sometimes also called brouce, and brute; probably from the French *brouet*, which signifies the same.

BROWSE more properly denotes the food which deer find in young copses, continually springing anew.

BROWSE, beasts of, or BROWSING-beasts, a denomination including all of the fallow kind, as the deer, roe-buck, rupicapra, &c.

BROWSE-wood, the same with spray or brushwood.

BROWTING, *Brouter*, among the French Gardeners, signifies breaking off the tips of the slender branches of trees, when too long in proportion to their strength.

BROYE, in *Geography*, a river of Switzerland, which rises in the canton of Friburg, traverses lake Morat, and issuing from thence, and winding through a marshy plain, discharges itself into the lake of Neuchatel.

BROYLE, a harbour, cap., and settlement on the east side of the island of Newfoundland; 15 miles N. E. from the settlement of Aquafort, and 30 S. W. from St. John, the capital. N. lat. $47^{\circ} 7'$. W. long. $52^{\circ} 36'$.

BROZZO, a town of Italy, in the principality of Piedmont; 25 miles N. of Turin.

BRSESKIE, or BRSESTZ. or BRZESK. See BRZESK.

BRSEST, a town of Poland, and capital of a palatinate of that name, in the province of Cujavia; 80 miles W. N. W. of Warsaw. It is situated in a marshy plain, and surrounded with a wall, rampart, and moat. N. lat. $52^{\circ} 31'$. E. long. $19^{\circ} 35'$.

BRUA, a river of Iceland, flowing from the south to the north.

BRUANT, in *Ornithology*. See **EMBERIZA CITRINELLA**.

BRUANT de l'Isle de Bourbon. See **EMBERIZA BOREONICA**.

BRUARIA TURBARIA. See **TURBARY**.

BRUCÆUS, HENRY, in *Biography*, son of Gerard, one of the magistrates of Alost, in Flanders, was born in that city in the year 1531. Having passed through the usual school-education, in which he distinguished himself, he was sent to Rome, where he taught the mathematics for some years; then turning his mind to the study of medicine, he went to Boulogne, and having completed his studies, and taken his degree of doctor, he travelled, for his further improvement, over a great part of France. At Paris, he was introduced to the acquaintance of Adrian Turney and Peter Ramus. Returning to Alost, he was made physician and principal magistrate of the city. As he had become a convert to Lutheranism, he readily accepted the invitation of John Albert, duke of Mecklenburgh, to settle at Rostock, where he might with safety profess his religion. He was here appointed professor in mathematics, and soon became popular also as a physician. After residing here 25 years, he was seized with apoplexy, of which he died, December 31st, 1593. His works are, "Propositiones de Morbo Gallico," 4to. 1569. He recommends beginning the cure with the decoction of guaiacum; that not succeeding, to have recourse to mercurial inunctions. "De Scorbuto Propositiones, de quibus publicè disputandum est," Rostock, 1589, and again 1591, 8vo. They are printed with Eugeleus, "Liber Observationum de Scorbuto," Lipsæ, 1614, &c. He attributes the origin of the disease to feeding on dried and salted meat, and to living in a cold and damp atmosphere. "Epistolæ de variis Rebus et Argumentis medicis, cum Smetii Miscellaneis," Francof. 8vo. 1618. Haller. Bib. Med. Eloy. Dict. Hist.

BRUCCA, in *Geography*, a town of Italy, in the kingdom of Naples, and Principato Citra; 13 miles W. of Policastro.

BRUCE, JAMES, in *Biography*, was among the most celebrated of our modern travellers; and it appears at present, as if the general credit of his narrative would survive those prejudices, under which it has long laboured from the

supposed improbability of certain facts altogether repugnant to European habits and opinions.

He was born at Kinnaird house, near Falkirk, in Scotland, in the year 1730. His descent was ancient and honourable; on the female side, to his own inexpressible gratification, connecting itself even with royalty. He was educated at Harrow, where his proficiency is said to have been highly creditable to his talents. He was afterwards removed to the university of Edinburgh, where he became a law student. Circumstances, not necessary to the elucidation of his public character, occasioned him to alter his views, and enter into partnership with a wine-merchant in London, whose daughter he married. His wife died in less than a twelvemonth, when he went abroad, and did not return, till recalled by the death of his father. The estate of Kinnaird devolved to him, and he now began to entertain thoughts of appearing in public life. The first overtures of political employment ended in disappointment to the adventurer; but lord Halifax procured him the consulship at Algiers; a situation which he hoped would facilitate the project he already entertained, of penetrating the interior of Africa. He went to Algiers in 1763, where he studied the oriental languages with much diligence. He likewise prepared himself for his great expedition by what may comparatively be considered as *home travels*, of which he never published any account, through Asia Minor, the islands of Rhodes and Cyprus, and other contiguous countries. Some of his drawings on this expedition are in the king's library at Kew. The ostentatious traveller has characterized this present as "the most magnificent ever made in that line by a subject to his sovereign." He seems, indeed, to have had very just ideas of his sovereign's dignity, as well as very high ones of his own; for, when the Bey of Cairo desired to see him, and, after a long conversation, ordered him a purse of sequins, covered with fruit and flowers, Mr. Bruce accepted of one orange only, but positively refused the money. The bey requested to know the reason. "I am," said Mr. Bruce, "an Englishman, and the servant of the greatest king in Europe; it is not the custom of my country to receive pecuniary gratuities from foreign princes without the approbation of our sovereign." The bey being himself a sovereign, was far from being displeased with the elevated sentiment of the excuse.

It was in June, 1768, that he commenced his great journey to the sources of the Nile. He sailed to Alexandria, and thence proceeded to Cairo, which he left in December of the same year, embarking on the Nile, and navigating as far as Syene. He passed through Arabia Deserta and Arabia Felix, making various excursions into the latter country. His embarkation on the Red sea took place in 1769, and in September he arrived at a small island on the frontiers of Abyssinia. In November he gained an entrance into the kingdom, and arrived at Gondar, the capital, in 1770. The limits of this article will not allow us to enter on his adventures, multifarious and oftentimes extraordinary as they were. For a topographical and historical account of Abyssinia, we must refer to that head in the present work. In November, 1770, he arrived at the sources of the Nile. A considerable degree of suspicion has been thrown on his whole narration by the triumph with which he congratulates himself on having made a discovery that had eluded all prior research, when it is now generally understood that the Portuguese Jesuits had been at those very fountains before him. If he was acquainted with that fact, his vanity in that instance certainly triumphed over his veracity; but it does not seem necessarily to follow that the whole must be treated as a romance. After all, though the interest of every jour-

ney should be pointed by some determinate object, the reader will probably be much more engaged by the detail of circumstances, and the delineation of manners and customs, than in a dry controversy, whether or not the traveller did really discover the sources of the Nile. In this point of view, travelling may be compared with sporting; the exercise is of much more value than the game.

On his return to Gondar, he found Abyssinia in a state of civil war. He engaged on the part of the reigning prince, whose favour was attended with the inconvenience of a positive refusal to part with him. The plea of ill health, however, procured his release, and he was permitted to set out in the beginning of 1772. The distress to which he was reduced in this journey was extreme. His camels all perished; and he was obliged to abandon his drawings, papers, and instruments, which, however, he afterwards retrieved. He arrived at Cairo with much difficulty, and the loss of nearly all his retinue. He passed some time with Buffon in France, and returned to England in 1773.

He retired to Kinnaird for the recovery of his health, and for a long time neglected the gratification of public curiosity. His time was occupied by the circumstances attending a second marriage, the improvement of the waste lands on his paternal estate, and the formation of a museum, enriched with Arabic and Abyssinian manuscripts, and various curiosities both natural and artificial. His work appeared in 1790, in 5 volumes 4to. It was eagerly read; but an air of vanity and arrogance pervading the style, seems to have inspired the public with a disposition to severe criticism and incredulity, which the confirmation of many facts by subsequent travellers has already in some measure checked. Mr. Bruce died in April, 1794, in consequence of a fall in conducting some company down stairs, which at the time did not threaten such fatal consequences.

Mr. Bruce's figure was above the common size; his limbs athletic, but well proportioned; his complexion sanguine: his countenance manly and good tempered; and his manners easy and polite. The whole outward man was such as to announce a character well calculated to contend with the many difficulties and trying occasions, which so extraordinary a journey could not but have thrown in his way. His internal characters, the features of his understanding and disposition, seem in a great measure to have corresponded with these outward lineaments. As a country gentleman, though not without a tincture of haughtiness, he exhibited the elegance of a man of fashion, and the hospitality of a Briton.

BRUCE'S *Island*, in *Geography*, an island in the Red sea, on the coast of Abyssinia. N. lat. $23^{\circ}42'$. E. long. $35^{\circ}50'$. The south of it is high and rocky, and the north low and terminating in a sloping bank. Bruce gave it his own name.

BRUCE *Hill*, a considerable mountain in the south-western part of the county of Cavan, in Ireland, from which the river Erne takes its rise; 11 miles S.S. W. of Cavan.

BRUCEA. in *Botany*, (in honour of James Bruce, who brought the seeds into England from Abyssinia). Schreb. 1508. Juss. 373. La Marek. Bolc. Clafs. *diacis tetrandria*. Nat. Ord. *Terebinthaceae*. Juss. Gen. Char. 1. Barren flowers. *Cal.* perianth four-cleft, flat, villous; segments lanceolate, acute, spreading. *Cor.* petals four, lanceolate, acute, ciliate, spreading, scarcely larger than the calyx. *Nect.* placed on the receptacle, flat, four-lobed; the lobes obsoletely emarginate, opposite to the petals. *Stam.* filaments four, upright, short, opposite to the segments of the calyx, inserted on the receptacle between the lobes of the nectary. *Anth.* roundish. 2. Fertile flowers. *Cal.* and *Cor.* as in the former. *Nect.* the inner margin of the receptacle thickened, four-lobed; lobes emarginate. *Stam.*

Stem. Filaments four, inserted into the receptacle on the outside of the divisions of the nectary, thread-shaped, thicker towards the summit, rather sharp, a little shorter than the petals; anthers none. *Pist.* germs four, superior, ovate, compressed on the inner side; styles awl-shaped, reflexed, incumbent on the germens; stigmas sharp. *Pericarp* unknown (Schreb.); capsules four (L'Heretier.) *Seeds* single.

Essen. Char. Cal. four-cleft. Cor. four-petalled. *Peric.* four, one-seeded.

Species. *B. ferruginea*, L'Heretier; *antidysenterica*, Bruce. (Bruce, V. 69. L'Heretier, Pl. 10. La Marek, Pl. 81c.) A shrub of the middling size. *Stem* upright. *Branches* few, alternate, spreading, straight, leafy at the summit, with broad scars below left by the fallen leaves. *Leaves* crowded, crowning the extremity of the branch; lower ones pendent, 2 foot long, unequally pinnated, on round, tomentose, rufous petioles. *Leaflets* eleven or thirteen, on short petioles, oblong-ovate, entire, acuminate, veined, villous. *Spikes* of flowers axillary, linear, tomentose, nearly as long as the leaves. *Flowers* on the common peduncle whorled in short spikelets or bunches, of an herbaceous colour tinged with red or russet.

The male plant began to flower in the stove of the Paris botanic garden, in May and June, 1780 or 1781, when it was between two and three feet high. The female plant has flowered in the royal garden at Kew, where it was introduced in 1775. The root is used in Abyssinia as a specific in the dysentery. It is a plain, simple bitter, without any resinous or aromatic taste.

Off. The figure in Bruce's Travels is monœcious.

BRUCH, or BROICH, in *Geography*, a signiory of Germany, in the circle of Westphalia, and duchy of Berg, about 4 leagues in circuit, deriving its name from a castle, 4 miles E. of Duisburg.

BRUCH, a town of France, in the department of the Lot and Garonne, and district of Nerac; 5 miles N.N.E. of Nerac.

BRUCHHAUSEN, a town of Germany, in the circle of Westphalia, and county of Hoya; 5 miles W. of Hoya.

BRUCHIUM, in *Ancient Geography*. See ALEXANDRIA.

BRUCHSAL, in *Geography*, a pretty small town of Germany, in the circle of the Upper Rhine, and bishopric of Spire, seated on the Salza; where the bishop has a handsome palace, and an arsenal; 11 miles S.E. of Spire, and 5 miles S.E. of Philippsburg. In its vicinity is a very large salt-work; and the surrounding country has many spacious forests, which, however, are intersected by several well cultivated vales. These woods, the timber of which is carried to Holland by the Rhine, constitute the principal revenue of the courts of Spire and Carlsruhe.

BRUCHUS, in *Entomology*, a genus of COLEOPTEROUS insects, with filiform antennæ, equal filiform feelers, and acuminate lip. Gmel. The species of this genus are pili, umbellatarum, robinæ, gibbosus, scabrosus, clathratus, cacæo, undatus, theobromatis, marginalis, canalis, bipunctatus, varius, gleditschiæ, spinosus, baëtrii, rufipes, granarius, cili, abdominalis, feminaris, maculatus, mimosæ, ferraticornis, pectinicornis.—*B. abdominalis* is a native of India. It is black: abdomen cinereous, and without spots; anterior legs testaceous. Fabricius.

BRUCIOLI, ANTONY, in *Biography*, an Italian writer, was born at Florence about the close of the 15th century; and having engaged in the conspiracy against cardinal Julio de Medici, he was obliged to seek refuge in France, whence he returned on the expulsion of the Medici family in 1527; but being suspected of heresy, on account of the freedom

with which he spoke of monks and priests, he left Florence in 1529, and repaired to Venice, where, in 1532, he published his Italian version of the Bible, which was dedicated to Francis I., king of France. This version was accompanied with an ample commentary in 7 volumes folio; containing some strictures, which excited a suspicion, that the author had imbibed some of the principles of the reformers. Although he pretended that he had translated directly from the originals, father Simon demonstrated that he had little knowledge of the Hebrew, and that he had generally used the Latin version of Pagninus. His work was condemned by the Catholics, but approved and encouraged by the Reformers; several editions of it were printed, the last of which is that of Venice in 1546—48, 3 vols. folio. Brucioli lived at Venice, without molestation; and employed himself in a variety of literary works. Besides Italian translations of Pliny's natural history, and of several pieces of Aristotle and Cicero, and editions, with notes, of Petrarch and Boccaccio, he published a folio volume of "Dialogues." Aretine writing to him in 1542, says, "Are you not satisfied with having composed more volumes than you are years old; and with having spread your name through the whole world?" He was still living in 1554. *Nouv. Dict. Hist. Gen. Biog.*

BRUCK, in *Geography*, a town of Germany, in the circle of Franconia, and principality of Culmbach, seated on the Rednitz.

BRUCK, or BRUGG, a town of Germany, in the arch-duchy of Austria, situate on the river Leyta. In the environs of this town asparagus grows spontaneously without culture. It is distant 25 miles E. from Baden, and 20 E.S.E. from Vienna.

BRUCK, a town of Germany, in the circle of Upper Saxony, and electorate of Saxony; 10 miles S.W. of Potsdam.

BRUCK, or PRUCK, a town of Germany, in the circle of Bavaria and Upper Palatinate; 18 miles N.N.E. of Ratisbon. See PRUCK.

BRUCKENAU, a town of Germany, in the circle of the Upper Rhine, and bishopric of Fulda; 14 miles S. of Fulda.

BRUCKER, JOHN-JAMES, in *Biography*, a learned Lutheran clergyman, was born Jan. 22, 1696, at Augsbourg, and educated at Jena, where, in 1718, he took his degree of master of arts. In 1720 he returned to the place of his nativity; in 1724 he became rector at Kasbeuren; and in 1731, he was chosen a member of the Academy of Sciences at Berlin. At Augsbourg he was afterwards pastor of St. Ulric's church, and senior minister; and died there in 1770. Among his works are the following, viz. "Tentamen Introductionis in Historiam Doctrinæ de Ideis," Jena, 1719, 4to.; "Meditationes Philosophicæ de falsa virtute exemplo Alexandri magni illustrata," Ibid. 1720, 4to.; "Historia Philosophica Doctrinæ de Ideis," Augsb. 1723, 8vo.; "De Vita et Scriptis Cl. Etringeri," Ibid. 1724, 8vo.; "Otium Viaticum, sive Meletematum Historico-philosophicorum Triga," Ibid. 1721, 8vo.; "Historia Vitæ Adolphorum Oeconum," Lips. 1734, 4to.; "Dissertatio Epistol. de Vita Hier. Wolfii," Ibid. 1739, 4to.; "De Hoëschelii Meritis in Rem Literariam," Ibid. 1739, 4to.; "Institutiones Historiæ Philosophicæ," Ibid. 1727, 8vo. and 1756, 4to. But the most important work, to which he owes his chief reputation, in his "Historia Critica Philosophicæ," published at Leipzig between the years 1742 and 1744, in four large volumes 4to. and re-printed at the same place in 1767, with large improvements and additions, in 6 vols. 4to. To Dr. Enfield the English reader is indebted for an excellent abridged translation of this comprehensive and learned work, published in

1771, in 2 vols. 4to. In this instructive work the author comprises the history of philosophy under three periods: the *first*, commencing from the earliest times, and extending to the decline of the Roman empire, comprehends the Barbaric and the Grecian philosophy: the *second*, from the decline of the Roman republic to the revival of letters, comprehends the philosophy of the Romans, the oriental philosophy, that of the Jews, that of the Saracens or Arabians, and that of the Christians: and the *third* period, from the revival of letters to the beginning of the 18th century, includes attempts to restore and correct the Sectarian philosophy, attempts to introduce new methods of philosophising, and attempts to improve philosophy in the true Eclectic method.

BRUCKLAW, in *Geography*, a town of Germany, in the circle of Upper Saxony, and county of Reus; 8 miles W.N.W. of Gritz.

BRUCKMAN, FRANCIS-ERNEST, in *Biography*, was born at Helmstadt, in 1697, and, having completed his studies, was created doctor in medicine, at the university there, in the year 1721. As his taste inclined him to botany, he travelled over Bohemia, Austria, and a great part of Germany, examining and collecting plants indigenous to those countries, and other natural productions. In return for his communications to the Academia Nat. Curios. and of Berlin; he was made corresponding member of those societies. Having finished his travels, he settled at Brunswick, where he continued in request to the time of his death, March 21st, 1753. When young, and before he had taken the degree of doctor, he published, "Specimen Botanicum, exhibens fungos subterraneos, vulgo tubera terræ dictos," Helmst. 1720, 4to. with engravings. He considered the black spots on the bark as seeds. In 1727, "Opuscula Medico botanica," 4to. Brunswick. In this he treats of the medical qualities of various vegetable productions, among others of coffee, the use of which he condemns. "Epistolæ Itinerariæ," containing his observations on vegetable and other natural productions, collected during his travels. The epistles are 300 in number, the first century was published in 1742; the two last in 1749, 4to. They contain a great body of useful information. The titles of a few of the epistles follow, for the rest, or such of them as are most curious, consult Haller's Bib. Botan. "De Terrætricole, seu Phallo;" "De Alga Saccharifera;" "Animadversiones in Pisonis et Boetii Libros;" "De Muscis nondum descriptis;" "De Melone Aquiformi;" "De Solani tuberos, radice infantem referente;" "De Ufu Corticis Sambuci in Hydrope," &c. &c. Haller. Bib. Bot. and Chirurg. Elov. Dict. Hist.

BRUCKOBEL, in *Geography*, a town of Germany, in the circle of the Upper Rhine, and county of Hanau Munzenberg; 2 miles N. of Hanau.

BRUCTERII, in *Ancient Geography*, a people of Germany, placed by most geographers next to the Frisii, between the Amisia, now the Ems, and the lake Flevus, now the Zuyder Zee. They were powerful and warlike; but before the time when Tacitus wrote, (see Germ. 37.) that is, before Trajan's second consulship, they had been extirpated by their neighbours, who had conspired against them; and their place was occupied by the Charnavi and Angrivarii. They were conquered by Drusus in a naval fight, on occasion of his first German campaign; again by Tiberius in the 4th year of the Christian era; and afterwards, A. D. 14 and 15, by Germanicus. In the year 69 they joined Civilis in his attack upon the Romans. Towards the commencement of the 4th century, Constantine, having passed the Rhine, entered their country and laid it waste with fire

and sword. Their villages were burnt, their cattle slaughtered, their men and women massacred, and those that escaped the sword, and were made prisoners, met with a still more cruel fate. As he judged them incapable of ever performing any really useful service, on account of their perfidy and invincible ferocity, they were condemned to the same punishment as the kings of the Franks, whom he had vanquished, and delivered to wild beasts, whose savage disposition they imitated.

BRUDUS, EMANUEL, in *Biography*, son of the physician Dionysius, of Paris, practised medicine for some years in England. He published, in 1544, at Venice, "De Ratione Victus in singulis Febris ad Anglos," 8vo. It is a thick and bulky volume, and has been several times reprinted, once by Gesner, in 1555. He appears to have read the old Greek and Arabian writers with attention, and to have drawn his doctrine principally from them. Too slender a diet should not be given to the English in fevers, but care should be taken to keep up the strength of the patients. This should be done in all fevers, of which he describes the different stages, with the treatment in each. He is every where prolix, but some good practical rules may be deduced. "Dialogus circa quasdam Questiones in Medicina," 4to. without date. Haller. Bib. Med.

BRUEGEL, in *Geography*, a town of Upper Guelderland; 10 miles S.E. of Venloo.

BRUEHL, WALTER, or BRAUT, in *Biography*, a German physician, published in 1579, Antw. fol. "Praxis Medica, Theorica et Empirica, familiarissima, in qua morborum internorum cognitio, et curatio traditur." The work, though little noticed now, was in much estimation, as appears by its having passed through eight editions, the last printed at Venice in 1602, 8vo. It is dedicated to the earl of Huntington, which makes it probable the author had been in this country. Haller. Bib. Med. Pract. Eloy Dict. Hist.

BRUEL, in *Geography*, a town of Germany, in the circle of Lower Saxony, and duchy of Mecklenburg; 12 miles N.E. of Schwerin.

BRUEL, *Brugbl*, or *Brugl*, a town of Germany, in the circle of the Lower Rhine, and electorate of Cologne; 6 miles S. of Cologne.

BRUE'RE, a town of France, in the department of the Cher, and district of St. Amand, seated on the Cher; 1½ league N.W. of St. Amand.

BRUEYS, DAVID-AUGUSTIN, in *Biography*, a French writer, was born of a protestant family, at Aix, in 1640, and educated for the bar, but his inclination to controversial theology led him to abandon the profession of an advocate; and, in 1682, he published an answer to bishop Bossuet's exposition of the doctrine of the church. The bishop, however, converted him to the catholic faith; and after he had buried his wife, he entered into the ecclesiastical state, and distinguished himself as the champion of popery against Jurieu, Lenfant, and other protestant divines. Of the sincerity of his conversion his subsequent conduct afforded some ground of suspicion; as he diverted his attention from theology and devoted it to dramatic subjects. Accordingly he composed several pieces for the stage, some of which were written in conjunction with his friend Palaprat. Of these the most celebrated are the comedy of "Le Grondeur," (the Grumbler), which Voltaire prefers to all the lighter pieces of Moliere, and a revived ancient piece, called "L'Avocat Patelin," distinguished for its humorous simplicity. At a more advanced age he again resumed theological controversy, and wrote "The History of Fanaticism in our own times," relating to the state of religion in the Cevennes.

Cevennes. The Abbé Brueys, as he was usually styled, died at Montpellier in 1723. His dramatic works were collected into 3 vols. in 1735. *Nouv. Dict. Hist.*

BRUFF, in *Geography*, a small post and market town of Ireland, in the county of Limerick; situate on the road from Cork to Limerick; 12 miles S. of the latter city, and 106 miles S.W. of Dublin.

BRUFFIER, LA. a town of France, in the department of the Vendée, and district of Montaigu; 13 leagues E.N.E. of Montaigu.

BRUGD, in *Ichthyology*. See *SQUALUS MAXIMUS*, *great shark*.

BRUGES, JOHN OF, in *Biography*. See *EYCK*.

BRUGES, in *Geography*, a town of France, in the department of the Lower Pyrenées, and district of Pau; 4 leagues S. of Pau.

BRUGES, once a commercial, flourishing, and populous city of the Austrian Netherlands, and a bishop's see, and now, since the French revolution, the capital of a district, in the department of the Lys, which is divided into five parts; the first part containing, according to Tineau's statistical view of France, 9508 inhabitants, the canton 14,444, and its territory comprehending 207½ kilometres, and five communes: the second part include 7049, and its canton 13,022 inhabitants; its territory comprehends 70 kilometres, and 4 communes: the third part contains 7553, and the canton 13,896 inhabitants; its territory includes 105 kilometres, and 7 communes: the fourth part contains 6796, and its canton 14,320 inhabitants; its territory comprehends 107½ kilometres, and 11 communes: and the fifth part contains 2821, and its canton 11,974 inhabitants; its territory includes 147½ kilometres, and 12 communes. According to this statement the population of Bruges amounts to 33,700 persons; but others, by a more moderate computation, estimate the number at 20,000. Bruges is about a league and a half in circumference; is advantageously situated for commerce, about 8 miles from the sea; and communicates, by means of navigable canals, with Ghent, Ostend, Nieuport, Furnes, Damme, Sluys, &c. As the adjacent country is nearly level, the water about it has no perceptible current; but it is easily changed in half an hour's time, by opening the sluices, and discharging it into the sea. According to Guiccardini, this city was first founded about the year 760; and took its name from a bridge called "Brug-Rock," in its vicinity, between Oudembourg and Radembourg or Ardenbourg, which are two maritime towns, said to have had considerable commerce in this country, till they were ruined by the Danes or Normans. Out of the ruins of Oudembourg was built the original town or castle of Bruges. In the 13th and 14th centuries, Bruges was the greatest emporium in all Europe. Navigation was then so imperfect, that a voyage between the Baltic and the Mediterranean could not be performed in one summer; and, therefore, it became necessary to establish a magazine or storehouse about midway between the commercial cities in the North and those in Italy. Bruges was selected as the most convenient station; and this choice of course introduced vast wealth into the Low Countries. Bruges was at once the staple for English wool; for the woollen and linen manufactures of the Netherlands; for the naval stores, and other bulky commodities of the North; and for the Indian commodities, as well as domestic productions, imported by the Italian states. The extent of its commerce in Indian goods, with Venice alone, appears from one fact. In the year 318, five Venetian galleasses laden with Indian commodities arrived at Bruges, in order to dispose of their cargoes at the fair. These galleasses were vessels of considerable bur-

den. The citizens of Bruges, enriched by its commerce, displayed in their dress, their buildings, and their mode of living, such magnificence as even to mortify the pride and excite the envy of royalty. To this purpose we may mention a singular instance. In 1301, Joanna of Navarre, the wife of Philip le Bel, king of France, having been some days in Bruges, was so much struck with the grandeur and wealth of that city, and particularly with the splendid appearance of the wives of the citizens, that she was moved (says Guiccardini, *Deserit. de Paesi Bassi*, p. 408,) by female envy to exclaim with indignation, "I thought that I had been the only queen here, but I find there are many hundreds more." However, in the year 1487, this city, become rich and also insolent, in consequence of its extensive commerce, had the audacity to seize on Maximilian, king of the Romans, and to kill some of his ministers in his presence. This violent insult brought about its ruin; for the emperor Frederick, father of Maximilian, took occasion to block up Sluys, its proper haven, by the assistance of Antwerp and Amsterdam, which had been for some time envious of its engrossing the whole trade of the Low Countries; upon which the commerce removed from Bruges to Dort, and from thence soon after to Antwerp. According to Thuanus and Guiccardini, it removed directly to Antwerp, which soon vied with Bruges in opulence and splendour. "Till this time (says bishop Huet, in his *Memoirs of the Dutch trade*;) there was scarce a nation in Europe, how inconsiderable soever, that had not their proper mercantile magazine or store house at Bruges, and a company or factory there residing; as the English, French, Scots, Castilians, Portuguese, those of Arragon, Catalonia, Biscay, Venice, Florence, Genoa, Lucca, Milan, Germany, Denmark, Sweden, and all the Hanse towns." The pensionary, De Wit, in his "Interest of Holland," accounts in a somewhat different manner for the loss of its commerce, which Bruges sustained. He says, that the fisheries and manufactures of the Netherlands increased more and more, together with the traffic by sea to Bruges, which lasted till the year 1482, when Flanders had wars with the archduke Maximilian, about the guardianship of his son and his dominions, which continued for ten years. In the mean time, Sluys, the sea-port of Bruges, being most disturbed, those of Antwerp and Amsterdam, in order to draw the trade to their own cities, assisted the archduke in his unbridled tyranny and barbarous destruction of that country, and thereby regained his favour, and attained their own ends. Notwithstanding the decline of its commerce, Bruges, having a communication with the sea from Ostend by means of a navigable canal, is still a place of considerable trade; and has various manufactures of broad sayes, baize, and other woollens.

Bruges was formerly in the diocese of Tournay; but in 1559, it was erected into a bishopric, by Philip II. king of Spain, subject to the archbishop of Malines. In 1430, Philip the Good, duke of Burgundy, instituted at Bruges the order of the golden fleece. The parts about the city which belong to this order are called "Franc of Bruges," and contain 37 villages, and accordingly enjoy certain immunities. The streets of Bruges, which are about 260 in number, are spacious, and the houses, though old, well built; it has seven gates, and six grand markets; but, having neither fountain nor river, the city is supplied with water from the rivers Lys and Scheldt, conveyed from Ghent by means of pipes. The principal buildings are the town-house, built in the Gothic manner, and situate in the large square called the Burg, the halls, the mint, &c. At the end of the square, called the grand market, is a fine temple,

supported by four pillars, which is one of the most beautiful of the kind in Europe, 533 steps in height, and furnished with bells and chimes, which play a different tune every quarter of an hour. On the side of the great square is an edifice serving as a magazine for cloth, built over a canal, and so sustained by pillars, that small vessels may pass under it, in order to cross the city from the canal of Ostend to that of Ghent. The square in which the Wednesday's market is kept, contains several walks between rows of trees, and a new guard-house in the middle. At Bruges there are several fine churches. The cathedral is dedicated to St. Donat, but the church of Notre Dame is the most beautiful, and its steeple serves as a sea mark for the ships that are coming to Ostend; within it are two tombs of gilt copper, of extraordinary magnificence, and the rich vestments of Thomas à Becket, adorned with precious stones. In the high altar in the cathedral is a picture by Segers, viz. "The Adoration of the Magi," which is considered by Sir Joshua Reynolds as one of the best of that painter's works; and in the sacristy is a picture by Jean Van Eyck, of the "Virgin and Child, with St. George, and the other Saints." Besides the cathedral and two collegiate churches, there are five parish churches, 14 chapels, and 12 convents for men and women. Bruges has also several alms-houses and schools, and it is distinguished by the provision which it affords for widows and orphans. There are still remaining 17 palaces or houses, that were the ancient habitations of so many consuls of trade. The magistracy of Bruges is composed of two burgo masters, 12 echevins, 12 counsellors, 6 pensionaries, and two greffiers. This city, which is but indifferently fortified, was unsuccessfully bombarded by the Dutch, July 4, 1704; in 1706 it submitted to the allies, after the battle of Ramilies; in 1708 it was invested by the French and obliged to surrender; in 1709 the allies re-entered it, by virtue of a capitulation signed on the capture of Ghent, Dec. 30, 1709; and on the 24th of July, 1794, the magistrates opened the gates to the French troops, and signed a formal submission to the French republic. Bruges is 8 miles E. of Ostend, 24 N.W. of Ghent, and 46 W. of Antwerp. N. lat. 51° 15'. E. long. 3° 15'.

BRUGG, or BRUCK, a town of Switzerland, in the canton of Argow, seated on the river Aar. It formerly belonged to the counts of Hapsburg, of the house of Austria; the inhabitants embraced the protestant religion in 1529. N. lat. 47° 23'. E. long. 8° 5'.

BRUGGEN, a town of Germany, in the circle of Lower Saxony; and bishopric of Hildesheim, on the east side of the Leine; 4 leagues S. W. from Hildesheim.

BRUGGEN, or Bruck, a town of Germany, in the circle of Westphalia, and duchy of Juliers, on the Schwalm; 6 miles N. E. of Ruremond. On the 2d of March 1793, a battle was fought near this town, between the Prussians, under the command of prince Frederick of Brunswick, and the French, in which the latter were defeated, with the loss of 1300 killed and 700 prisoners.

BRUGHAN, a river of North Wales, which runs into the Severn, about 2 miles above Llanfyllod, in the county of Montgomery.

BRUGHAT, a town of France, in the department of the Allier, and district of Gannat; 2½ leagues E. of Gannat.

BRUGNETTO, a town of Genoa, situate at the foot of the Apennines; the see of a bishop, suffragan of Genoa; 35 miles E. S. E. of Genoa.

BRUGUIERA, in Botany, (named in honour of Brugiere, the well-known French botanist,) a new genus, formed by La Marck, for a plant placed by Linnæus in the genus

Rhizophora, to which it is closely allied, but differs in having a polygonous fruit. La Marck Illust. Pl. 397. Bosc. Class. *dodecandria monogynia*. Nat. Ord. *Holeracea*. *Caprifolia*, Juss. Gen. Char. Cal. one-leaved, open, permanent; segments ten or twelve, linear, acuminate, keeled without, channelled within, a little fleshy. Cor. petals ten or twelve, oblong, bifid at the summit, pointed, folded together lengthways so as to appear in some degree bivalved, ciliated, villous at the base, shorter than the segments of the calyx and alternating with them. Stam. from twenty to twenty two; filaments attached by pairs to the base of each petal, and enclosed within its fold; anthers upright, oblong. Pist. germ inferior, style triangular; stigmas three. Fruit, consisting at first of a capsule, which is semi-inferior, terminated by the permanent style, one-celled, one-seeded, formed in some degree out of the calyx: but when the seed contained in the capsule is come to maturity, its summit is prolonged into a nearly cylindrical body, a little angular, furrowed, with a blunt point, very smooth and shining; and from four or five inches to a foot long. This appearance is no other than the germination of the seed; and the prolongation is the radicle of the embryo plant, which having by its weight detached the seed from the capsule, fixes itself in the mud, into which it has fallen perpendicularly, in consequence of the capsule's having changed its original upright for a pendent position. This mode of germination is common also to all the species of the true Rhizophora. Eff. Ch. Calyx superior, divided into ten or twelve segments; petals ten or twelve, doubled, bearing the stamens; stamens from twenty to twenty-two. Style, one; capsule one-seeded.

Spec. B. *gymnorhiza*, "Leaves ovate-lanceolate, root above ground." Linn.; a specific character formed to distinguish it from the different species of Rhizophora. A tree about ten or twelve feet high. Trunk commonly crooked, covered with a thick, brown, rugged, cracked bark. Branches very numerous, extending in all directions, the lower ones throwing out naked flexible shoots, which strike into the earth, and, like the fig-tree of Bengal, produce new trunks, so that it is often difficult to determine the parent stock; the whole forming by the intermixture of the branches an impenetrable thicket. Leaves opposite, decussate, ovate, acuminate, smooth, very entire, on short petioles. Flowers solitary, axillary or lateral, greenish yellow, pendent. A native of the banks of salt-water rivers, and on the sea-shore in the East Indies. See Ray. Hist. Plant. and Savigny in Encyclopedie Methodique, under Paletuvier.

BRUGUIERE, JOHN, in Biography, a physician of Montpellier, founded a college for the maintenance and instruction of two young men, to be brought up to the practice of medicine, and dying without children in 1452, he left 800 ecus d'or, to purchase a piece of land, the rent of which was to be appropriated to the support of his institution, to which he also left his library. Astruc. Mem. pour servir a l'Hist de la faculte de Med. de Montp.

BRUGUIERE, La, in Geography, a town of France, in the department of the Tarn, and chief place of a canton, in the district of Castres, 1½ league S. of Castres; the place contains 3929, and the canton 6896 inhabitants: the territory comprehends 137½ kilometres and 7 communes.

BRUGUIERES, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the district of Toulouse; 3 leagues N. of Toulouse.

BRUHESIUS, PETER, or PETER VAN BRUZEEN, in Biography, a physician of Brabant, born the early part of the

the 16th century, was so much esteemed as to be made physician to Eleonora of Austria, sister to the emperor Charles V., while she was resident in the Low Countries. He afterwards settled in Bruges, and was appointed pensionary physician to that city. The time of his death is not known, but his memory was honoured by an epitaph, written in 1571, by the poet Nicolaus, who speaks highly of his professional abilities. He published, "De Thermarum Aquifranensium Viribus, Causa, et legitimo Usu. Epitola dux," 1550 and 1555. Antwerp, 12mo. "De Ratione medendi Morbi Articularis, 1592, in Henry Garret's *Confilia Variorum de Arthritide*." "De Usu et Ratione Cauterio," in the same collection. He was a believer in judicial astrology, and published "An Almanac," at Bruges, in which he sets down the precise times, or circumstances, under which bleeding, purging, and other operations might be safely undergone. Eloy Dict. Hist.

BRUHIER, JOHN JAMES, born at Beauvais, the end of the 17th century, studied medicine at Angers, where he was admitted to the degree of doctor; he afterwards settled in Paris, and acquired considerable reputation by his practice, and by his writings. He died October 24th, 1756. In 1733, he published a translation of Deventer's *Treatise on Midwifery*, under the title of "Observations sur le Manuel des Accouchemens," 4to. Paris, and afterwards several of Hoffman's works; his "Medicus Politicus," 12mo. "Medicina rationalis," in 9 volumes, his treatise on fevers, 3 vols. 12mo. "Le Caprices d'Imagination," &c. But the works by which he is most known, were his warnings against burying persons, supposed to be dead, too early. "Dissertation sur l'Incertitude des Signes de la Mort, et l'Abus des Enterremens, et Embaumemens précipites," Paris 1742. He was at the pains of collecting histories of persons who had revived, after being supposed to be dead, some of whom had been buried. Bodies ought not to be interred, he says, until putrefaction has commenced. "Memoire sur la Necessité d'un Règlement general au Sujet des Enterremens," 1745. No one should be buried until the fourth day from their dying. "Addition aux memoires," &c. adding to the number of examples of persons who had been buried alive, or had revived after being interred. These works have passed through numerous editions, and have been translated into every modern European language, and have doubtless been the means of preserving many lives. M. de la Soriniere, on his being received into the Royal Academy at Angers, read a copy of verses he had composed on the subject, beginning

Bruhier, ton immortel ouvrage,
Ouvre les yeux a bien des gens,
Sur l'abus, la cruel usage,
D'enterrer les morts, tout vivans, &c.

Haller Bib. Chirurg. Eloy. Dict. Hist.

BRUHL, a town of France, in the department of the Roer, and chief place of a canton, in the district of Cologne. The place contains 1932, and the canton 14,967 inhabitants; and the territory includes 31 communes.

BRUJA, BUFF, in *Ornithology*. See *Lanius Madagascariensis*, Gmel.

BRUIN, JOHN DE, in *Biography*, professor of natural philosophy and mathematics at Utrecht, was born at Gorcum in 1626; and having pursued a course of philosophy at Leyden, and prosecuted his studies at Bois-le-Duc, and Utrecht, he removed to Leyden, where he taught mathematics. He afterwards became professor at Utrecht, and besides his official duties, made dissections in private and read lectures on Grotius's treatise, "De Jure Belli et Pacis." He was distinguished by his attachment to experimental

philosophy, and by his observations in astronomy. As an author, he published dissertations, "De Vi Altrice," "De Corporum Gravitate et Levitate," "De Cognitione Dei naturali," "De Lucis Causa et Origine," &c. He also maintained the Cartesian hypothesis in a dispute with Isaac Vossius, and wrote an apology first against a divine named Vogelsang. In 1655, he married the sister of the wife of Daniel Elzevir, the famous bookseller of Amsterdam, and died in 1675.

BRUIN, JOHN DE, born at Amsterdam in 1681, was early initiated into the knowledge of surgery; but in 1700, determining to confine himself to the practice of midwifery, he entered as a pupil to Roger Roonhuysen, to learn of him the art of delivery in cases of difficulty, by means of an instrument he had invented, and which obtained the name of Roonhuysen's lever. Aided with this instrument, he was enabled to relieve and bring down the head of a fœtus, that was firmly fixed in the pelvis, without injury to the mother or the child. As this instrument, and the manner of using it, were kept secret by Roonhuysen, De Bruin paid a stipulated price for obtaining the knowledge of it; and became so skilful in using it, that he was consulted in all cases of difficulty. On his death, which happened January 23d, 1753, the secret was purchased by Dr. Vischer, and Van de Pool, physicians at Amsterdam, and through them communicated to the world. Eloy Dict. Hist.

BRUISE, in *Surgery*. See *CONTUSION*.

BRUISER, in *Mechanics*, the name of a concave tool used for grinding and polishing the specula of telescopes. It is made of brass, about a quarter of an inch thick, and hammered as near to the gage as possible. It is tinned on the convex side, and made equally broad at bottom and top. This serves to reduce the figure of the bones, when it is too convex, and to rub down any gritty matter that happens to be mixed with the putty, before the speculum is applied to the polisher. See *Phil. Trans.* vol. lxvii. part i. art. 16. and *Smith's Optics*, book iii. chap. 2.

BRUISING, in *Pharmacy*, signifies the operation of breaking or pounding a thing coarsely, or by halves; frequently practised on roots, woods, and other hard bodies, to make them yield their juice or virtue more freely than they would do whole.

BRUIT, FR., NOISE. The editors of the New French Encyclopedie, as well as Rousseau, have honoured this sworn foe to music, and persecutor of refined ears, with a long article. Rousseau defines noise in general to be every motion of the air which strikes the tympanum, and is perceptible by the auricular organ; but, in music, noise is opposed to sound, and extends to every sensation of the ear which is not sonorous and appreciable. To explain the difference musically, we may suppose that every musical sound is accompanied by its harmonies, and that noise having no such coincident vibrations, has no determined tone or type in the harmonical system. Noise may, perhaps, be of the same nature as sound, but being produced by violence, and the aggregate of a confused multitude of different sounds heard at once, they mutually counteract the undulations of each other. All elastic bodies seem sonorous in proportion as their matter is homogeneous, as the degree of cohesion is more equal throughout, and its body not divided into numerous small masses, which being of different solidity, consequently give birth to warring sounds. Why should not noise produce sound, since it can excite it? For every violent noise makes the strings of a harpsichord sound, nor, indeed, any single strings as a musical tone does, but the whole instrument at once; because no one finds its unison or

harmonies. Again, why should not noise give the sensation of sound, since with sound noise is produced? Put down all the keys of a harpsichord or piano-forte at once, and a sensation of nothing but noise will be the consequence, and its effect will continue no longer than that of any other noise. Why should not noise be found, since a musical string forced, or a pipe over-blown, is only noise, any more than a voice which screams with all its might, or a great bell heard in the belfry? Because it is impossible to discriminate one sound from another; though the tone of the same bell at a distance is easily ascertained, as would the screaming voice if softened and rendered tuneable.

But it may be asked, whence comes this great change of noise into sound. It is from the diminished violence of the vibrations, which had caused so many aliquot parts to sound at once that the total became mere noise. For the aliquot parts in vibration are not only the half, the third part, the fourth, and all the consequences, but the seventh part, the ninth, the hundredth, and still more; all which have the same effect as the putting down all the keys at once, the bell in the belfry, and the voice of a screamer; and thus sound itself becomes noise, and noise sound. A coarse, confused, and dissonant music, is contemptuously called noise; as a bad opera ill performed is said to produce a great noise, but no effect." Thus far the citizen of Geneva, with his usual force and ingenuity, has described noise. A passage is given from "La Poétique de la Musique," of M. De la Cépide, in support of Rousseau's doctrine, which in this instance seems to want no support.

Messrs. Ginguéné and Framerie have taken up the subject after M. De la Cépide, merely to expand and amplify Rousseau's arguments, without fortifying them by any additional matter, except in censuring the augmentation of force in an orchestra by sabuts, cymbals, double drums, and tromboni, which producing nothing but noise themselves, prevent us from hearing every thing that deserves the name of music.

Instruments of percussion may be of use in the open air to mark the steps of an army on its march, and the screaming and clamour of the rest during battle, to drown the cries of the wounded and groans of the dying; but in an inclosed theatre or concert-room, they only torture delicate ears, and change into punishment the pleasures of sensibility.

BRUKA, or BRUKO, in *Geography*, a town of Africa, on the south coast of the river Gambia; 160 miles from the sea.

BRUKSAL, an island of Africa, near the mouth of the river Senegal.

BRULE, or BRULLOS, *Cape*, lies on the coast of Egypt; 11 leagues W.N.W. northerly from Damietta, or the ancient Pelusium.—Also, a cape on the coast of Cape Breton, in North America, near the gulf of St. Lawrence, separating the bay of Miramichi from the bay of Miray.

BRULON, a town of France, in the department of the Sarthe, and chief place of a canton, in the district of La Flèche; 3 leagues north of Sablé. The town contains 1310, and the canton 10,994 inhabitants; the territory includes 200 kilometres, and 16 communes.

BRUMALIA, or BROMALIA, a feast of Bacchus, celebrated among the ancient Romans, during the space of 30 days; commencing on the 24th of November, and ending the 26th of December. Some say this feast was celebrated twice a year, viz. on the 12th of the calends of March, and on the 18th of the calends of September.

The word comes from *bruma*, the day of the winter solstice; in regard of the time when the feast was held: though others derive it from *Brumus*, or *Bromius*, names of Bacchus.

The *brumalia* were instituted by Romulus, who used, during this time, to entertain the senate. During this feast indications were taken of the felicity of the remaining part of winter.

The *Brumalia* were also called *Hiemalia*.

BRUMALIS, in *Ornithology*, a species of *EMBERIZA* that inhabits the Tyrolese country, called by Latham the Brumal Bunting. Scopoli thus describes this little bird: body beneath, the front, and region of the eyes citron colour: hind head and neck cinereous.—Obs. The back is yellow brown, vent citron, thighs whitish, quill-feathers brown, having the exterior margin citron.

BRUMATA, in *Entomology*, a species of *PHALÆNA* (*Geometra*) the wings of which are yellowish, with a black streak, and a paler one behind. The female is apterous, or without wings, and spotted with black. Linn. Found on apple trees.

BRUMATH, in *Geography*, a town of France, in the department of the Lower Rhine, and chief place of a canton, in the district of Straßburg, 3 leagues N. of Straßburg. The town contains 2671, and the canton 12,951 inhabitants; the territory comprehends 182½ kilometres, and 21 communes.

BRUMEL, ANTHONY, the most ancient contrapuntist of the French school of whose compositions we have been able to find any remains, was contemporary with Jusquin, and scholar of Okenheim; and though he is not likely to be inquired after by the present age, he was so respected in his day, that his name should not be consigned to the gulph of oblivion while a vestige of his works remains; and several still subsist in Glarcanus, and the Museum collection. The fame of the great musicians of antiquity is so established in books, that, though not a single relic of their works has been extant these two thousand years, their names and renown are still held in veneration by mankind.

BRUMOY, PETER, in *Biography*, a celebrated French writer, of the order of the Jesuits, was born at Rouen in 1688, commenced his noviciate at Paris in 1704, and finished his studies at Caen. Having been for some time employed in teaching rhetoric in different parts of the country, he took the vows of his order at Paris in 1722, and undertook the education of the prince de Talmont. He engaged for several years in the *Journal de Trevoux*, but in consequence of publishing father Margat's history of Tamerlane, he was exiled from Paris. On his return, he continued his "History of the Gallican Church;" but having nearly finished the 12th volume, he was taken off by a paralytic stroke in 1742, leaving behind him the character of an amiable man and an esteemed writer. The work from which he acquired the greatest reputation was his "Théâtre des Grecs," in 3 vols. 4to.; containing prose translations and analyses of the principal Greek tragedies, with dissertations on the Greek theatre, &c. The author, whose erudition and taste are much esteemed by the best judges, has been censured by some writers for manifesting too strong a bias towards the ancients, and Voltaire in particular is displeased for his not having allowed the superiority of the French theatre above the Greek. Brumoy published likewise, in 1741, a collection of his own pieces, in 4 vols. 12mo. consisting of Latin poems, founded upon the model of Lucretius, epistles, and dramatic pieces, tragic, comic, and pastoral. His poem on the "Passions" has been much extolled for the elevation of its sentiments, and its poetic beauties. The discriminating excellence of his tragedies consists in the delineation of the tender passions. The "Revolutions of Spain," begun by father Orleans, were finished by Brumoy. *Nouv. Dict. Hist.*

BRUN, CHARLES LE, an eminent French painter, was the

the son of a sculptor, descended from a Scots family probably of the name of "Brown," and born at Paris in 1619. Manifesting in very early life the bent of his genius, so that at the age of four years he took coals from the fire for drawing figures on the floor, and at the age of twelve years made a good portrait of his grandfather, he was placed under the instruction of Vouet, whom he astonished by his rapid progress. In 1642 he was sent by the chancellor Seguier to Italy, where he continued 6 years, boarding in the house of the famous Poussin, and employing himself in copying the works of the principal masters, and in studying the *ceffume* of different ages and nations, so as to acquire the character of a learned painter. He also imitated the taste of Poussin so exactly as to deceive several connoisseurs. On his return from Rome to Paris, in 1648, he was received into the Academy, and as he engaged in the highest branch of his art, historical and allegorical painting, and selected great works, he rose to the most distinguished rank in his profession. He was patronized by the superintendent Fouquet, and by him recommended to Cardinal Mazarin, and by his interposition, to the king. By the interest of Colbert, he was afterwards made the king's first painter, and ennobled in 1652. Lewis XIV. honoured him with peculiar tokens of favour, and frequently attended him whilst he was painting the family of Darius at Fontainebleau. In his five large pieces of the history of Alexander the Great, he is said to have exhibited the exploits of that conqueror in a more glorious light than Quintus Curtius in his history. As an evidence of his attention to truth and nature, it is reported that he caused Persian horses to be drawn at Aleppo as models for those which he painted in Alexander's battles. He was employed by Colbert in painting the chapel and pavilion of Aurora at his seat of Seceaux, and by his interest he had the direction of the royal works, and particularly of the Gobelin manufactory, for the tapestry of which he made designs of the four seasons and four elements, that were engraved by Le Clerc. At the Gobelins he had handsome lodgings, and he was allowed a considerable pension. The Academy of painting was altogether under his direction, and he contributed in an eminent degree, by procuring an establishment at Rome for the gratuitous education of young artists selected from Paris, and in a variety of other ways, to the promotion of the fine arts in France, and to the peculiar magnificence of the reign of Lewis XIV. With a particular view to this last object, he was occupied for fourteen years in representing by history and allegory, in the great gallery at Versailles, the splendid events of this period down to the peace of Nimeguen. But the work, though he devoted to it much time and attention, became the subject of criticism, so that his reputation derived little advantage from it. When Louvois succeeded Colbert as superintendent of the royal edifices, Mignard was set up as a rival to Le Brun, and the mortification he experienced preyed upon his spirits, so that he fell into a decline, and died in 1690, leaving a wife but no children. Le Brun maintained, in his manners and style of living, the dignity of a man of quality: foreign princes testified their respect for his talents by the eagerness with which they endeavoured to obtain possession of his works, and the grand duke of Tuscany paid him the compliment of requesting a portrait of him for his gallery. Thus flattered and honoured, both at home and abroad, it is no wonder that his pride should be mortified by the advancement of a rival; more especially when we consider, that he manifested a jealousy of competitors in his conduct towards Le Sueur, which was unworthy of his talents and character. When this great genius lay on his death bed, Le Brun, after having visited him,

said on his departure, "that death was taking a great thorn out of his foot;" an expression which indicated want of becoming sensibility, and which occasioned the untimely report that he had procured poison to be administered to his rival.

The distinguishing merits of Le Brun as a painter are greatness of conception, good ordonnance, expression and elevation: but he is censured for too much of the French stouter and affectation, a want of variety in his attitudes and draperies, and deficiency of colouring. Among the most estimable of his performances we may reckon the "Battles of Alexander," the merit of which has been more conspicuous by the excellent engravings of Girard Audian, the "Penitent Magdalen" much admired, the "Carrying of the Cross," the "Crucifixion," and "St. John in the lake of Patmos." His designs have been copied by many capital engravers: and he himself etched for his amusement several plates, in a dark bold style, manifesting the hand of the master, among which are the "Four times of the Day" and an "Infant kneeling upon the Cross," from his own designs.

As a writer, he is known for two works: one "On Physiognomy," and another "On the Passions," which latter has supplied various models for drawing. D'Argenville, Gen. Dict. Pilkington. Strutt.

BRUN, PETER LE, a learned ecclesiastical writer, was born at Brignole, in Provence, in 1661, became a priest of the oratory, and was engaged for 13 years in giving lectures, at the seminary of St. Magloire, at Paris, on the Scriptures, councils, and ecclesiastical history. In 1693 he published "Letters to prove the illusion of Philosophers on the Divining Rod," afterwards published under the title of "Critical History of the Superstitious Practices which have seduced the Vulgar and embarrassed the Learned, with the Method and Principles for discriminating the natural from the supernatural Effects," three vols. 12mo. in which the author admits the reality of diabolical illusions in his attempt to give a natural explanation of fraudulent deceptions. He also wrote "An historical and doctrinal Treatise on theatrical Spectacles," 12mo. in which he maintains their unlawfulness to a Christian. At the request of the Abbe Bignon, he published an elaborate work on "Liturgies," in 4 vols. 8vo. the first of which appeared in 1716, and three others in 1726. The opinions which he advanced on the consecration of the mass, involved him in a controversy, during the prosecution of which his life was terminated by a disorder in the breast, in January, 1729. As a writer, he was profound and methodical, with a clear and simple style: and his piety was equal to his erudition. Nouv. Dict. Hist.

BRUN, or BROWNE, CAPE, in *Geography*, lies in the N. N. E. point of the entrance into the great road of Toulon, on the coast of France, in the Mediterranean.

BRUNCA, LA, a sea port town on the west coast of the island of Sicily, at the entrance of the gulf of Catania, 16 miles south of Catania.

BRUNDISI, or BRUNDISIUM. See BRINDISI.

BRUNELLA, in *Botany*. See PRUNELLA.

BRUNELLESCHI, PHILIP, in *Biography*, an eminent Italian architect, was born at Florence in 1377; and in early life having a taste for mathematics and mechanics, and a desire to learn sculpture, he became acquainted with Donatelli, a rising artist in this department, and accompanied him to Rome, in order to survey the monuments of architecture and sculpture in that capital. Here Brunelleschi employed his whole time with indefatigable assiduity, in making drawings and taking measures of all the famous relics of antiquity; and having conceived a design of establishing his fame, by

erecting, on a new plan, a dome for the cathedral of St. Maria del Fiore at Florence, he remained in Rome, after the departure of his friend, in order to qualify himself for this undertaking. As in his youth he had been initiated into the business of a goldsmith, he now found his knowledge useful in procuring a maintenance by setting jewels for the goldsmiths. In 1407 sickness obliged him to return to Florence; and at this time the Florentines had convoked an assembly of architects and engineers to deliberate on the completion of the cathedral. Brunelleschi gave his opinion and then returned to Rome. Many plans were proposed for erecting the proposed dome; but Brunelleschi was singular in asserting that a double dome might be raised to a sufficient height, without that immense mass of timber-work which others had thought to be necessary. Having communicated his designs, he engaged the confidence of the magistrates, and he was employed in the execution of the work. He proceeded in it with ardour, and lived to complete the dome as far as the lantern; carrying it to such a height, and executing it with such beauty, as astonished the whole country. Such indeed was the beauty with which it was executed, that Michael Angelo afterwards said, it would be very difficult to imitate, and perhaps impossible to surpass it. Brunelleschi was employed by Cosmo the Great in building the abbey of canons regular at Fesoli, and in forming for him the model of a palace, which his prudence and moderation would not allow him to execute. But as Cosmo preferred the more humble plan of Michelozzi, Brunelleschi was so indignant that he destroyed his model, though its superiority was acknowledged by Cosmo. He afterwards undertook the construction of the Pitti palace, and carried it up to the second story; but the completion of it after his death, was the work of Ammanati. The church of St. Lorenzo in Florence, was almost entirely the work of Brunelleschi. He was no less skilled in military, than in civil architecture; and in this department, he gave to the duke of Milan the plan of a fortress for his capital; and he also contrived the two citadels of Pisa, and other fortifications in that part of Italy. As a civil engineer, he was employed in 1445, by the marquis of Mantua in constructing dykes for restraining the Po to its bed; and soon after the completion of this work, he died at the age of 69, much regretted by his brother-artists, and more so by the poor, to whom he was a father. His merit was more generally acknowledged after his death than during his life; for he had the mortification of seeing several of his undertakings left unfinished for want of due encouragement. Brunelleschi was also a cultivator of Italian poetry, and some of his burlesque verses have been printed along with those of Burchiello. D'Argenville. Tiraboschi.

BRUNELLIA, in *Botany*. Class, *dodecandria pentagonia*. Gen. Char. *Calyx* with five ovate segments, permanent. *Cor.* none. *Stam.* filaments eleven, villous at their base. *Nect.* eleven permanent glands, alternating with the stamens. *Pist.* germs five, superior; styles tubular; stigmas simple. *Peric.* capsules five, disposed in the form of a star, oblong, pointed, one-celled, one-valved, opening lengthways. *Seeds* two, pedicelled, inclosed in an aril. Two trees of this genus are figured in the Flor. Peruv. pl. 12. Bosc.

BRUNET, in *Ornithology*, the name assigned by Buffon to *Fringilla peccoris*, which see. Thus also *Brunet du Cap de Bonne Esperance*, Buff. is *turdus capensis*, which see.

BRUNET, in *Geography*, a small island near the south coast of Newfoundland, at the entrance into Fortune bay. N. lat. 47° 15'. W. long. 55° 4'.

BRUNET, Cape, is the south point of the entrance into the bay of Arcasson, on the west coast of France, from

which a tail stretches off towards the sea, in the direction of W.S.W.

BRUNETTE, LA, a strong and well garrisoned fortress of Piedmont, near Susa, commanding two vallies. By an article in the peace concluded between the French and the king of Sardinia, in April 1796, this fortress was to be dismantled.

BRUNFELSIA, in *Botany*, (named by Plumier from Otto Brunfelsius of Mentz, who published the first good figures of plants in 1539, and died in 1541). Linn. 260. Reich. 281. Schreb. 1013. Willden. 1151. Juss. 127. La Marck. Bosc. Class, *pentandria monogynia*, Linnæus, Reichard, and Bosc; *didynamia angiospermia*, Gmelin, Schreber, Willdenow, and La Marck. Nat. Ord. *Personate—Solaneæ*. Juss. Gen. Char. *Cal.* one-leafed, bell-shaped, five-toothed, obtuse, very small, permanent. *Cor.* one-petalled, funnel-shaped; tube very long, slightly curved inwards; border flat, with five blunt, nearly equal lobes. *Stam.* filaments four, very short; anthers two, a little higher than the others, prominent from the mouth of the tube (a fifth filament very small, abortive, Juss. & Bosc.) *Pist.* germ roundish, small; style thread-shaped, the length of the tube; stigma rather thick. *Pericarp*, a berry, Linn. Swartz, Juss. La Marck, Bosc; a capsule berried on the outside, one-celled, two-valved, opening by a distinct suture from the summit to the base, Schreb. Willd. Martyn. *Seeds* many, compressed, convex on one side, angular on the other, rugged, with little points.

Ess. Char. *Calyx* five-toothed, narrow; tube of the corolla very long; capsule one-celled, many-seeded, with a large fleshy receptacle.

Sp. 1. *B. Americana*, Linn. trumpet-flower. (La Marck Illustr. Pl. 548.) "Leaves elliptic, acuminate, on longish petioles; tube of the corolla erect; lobes of the border entire." Swartz. A tree of a moderate size. *Trunk*, the thickness of the human body. *Branches* loose. *Leaves* alternate, very entire, narrowed towards the base, smooth. *Flowers* growing three or four together at the ends of the branches. *Tube* of a pale colour, sprinkled with violet spots; border at first very white, at length pale yellow. *Fruit* nearly spherical, a little larger than a nut, of an orange colour, containing numerous russet seeds placed between the external covering and a fleshy succulent substance which occupies all the inside. La Marck. A native of Jamaica, Martinico, and other West Indian islands. Cultivated by Mr. Miller, in 1739. 2. *B. undulata*. "Leaves lanceolate-ovate, drawn to a point at both ends; petioles very short; tube of the corolla curved; border waved." Swartz. A native also of Jamaica, &c.

Obs. Schreber's description of the receptacle not being reconcileable with La Marck's, and not being in itself very intelligible, has been omitted.

Both these species may be raised in the spring, either from seeds or cuttings, and should be treated like other tropical plants. In summer they should have much fresh air; but in winter must be kept close. With proper management they will produce flowers every season in June and July.

BRUNI, LEONARD, in *Biography*. See **ARETINO**.

BRUNIA, in *Botany*, (from Cornelius Brun, the celebrated traveller). Linn. 274. Reich. 293. Schreb. 376. Juss. 381. Gært. 152. Pl. 30. Willd. 428. Ventenat. vol. iii. p. 474. A genus formed by Linnæus for several shrubby plants, which have some resemblance in habit to *erica* and *protea*, and are allied in their mode of inflorescence to *statice*; but its distinguishing characters were not accurately fixed: for Linnæus afterwards separated from it two

of the original species, annexing one to *disfusa*; and the other to *protea*, and admitted an additional one, which he had formerly referred to *protea*. Reichard was sensible that the species of Linnæus differ from each other in the number of styles and situation of the germ, but left them as he found them. Gartner also observed, that the genus stood in need of a thorough investigation; and that the plants with an inferior ought to be separated from those which have a superior germ. In conformity with this idea, Schreber formed a new genus for the former, with the additional characters of two styles, either quite separate, or joined together, and filaments inserted on the calyx. This genus he called *lexisanus*; but in honour of one of Linnæus's disciples, it has since been named *flaavia*. The essential character of *brunia*, as it stands in Schreber, consists of a superior germ, single style, and filaments inserted on the claws of the petals. But the confusion was not yet completely removed; for two of the species with a superior germ have decidedly two styles. It was therefore necessary either to divide the original genus into three, or to allow to *brunia* a greater latitude with respect to the style. The latter has been preferred by the present French botanists, except La Marck; and we do not hesitate to adopt Ventenat's generic character of *brunia*, especially as it corresponds with Willdenow's disposition of the species, though the essential characters of *brunia* and *flaavia* in the German author are both erroneous. We shall only add, that some obscurity nevertheless must remain, till we have new and accurate detailed descriptions of all the species taken from recent and complete specimens. Gen. Char. *Receptacle* common, chaffy. *Calyx* common, many-leaved. *Cal. proper*, inferior, with five segments. *Petals* five, elongate, upright, clawed. *Stam.* five, attached to the claws of the petals. *Pist.* germ superior; style single or double; stigmas two. *Pericarp*, a dry ovate drupe, containing a hard, two-celled nut, with but few seeds.

Ess. Char. *Stamens* on the claws of the petals; germ superior. *Pericarp*, a dry, two-celled drupe.

Species, 1. *B. nodiflora*, Linn. (La Marck, Illust. Pl. 126.) "Leaves three-sided, curved inwards; heads of flowers terminal, on the lateral branches." Thun. A branched, evergreen under shrub. *Leaves* very small, pointed, upright, closely imbricated, forming in the slender branches five longitudinal, somewhat spiral, angles. *Heads of flowers* whitish, about the size of a small cherry. *Styles* two. 2. *B. paleacea*, Linn. "Leaves three-sided, upright, closely pressed to the stem; heads corymbose, chaffy; chaff longer than the flowers." Willd. Similar to the foregoing. *Leaves* smaller. *Heads of flowers* many, panicled. *Receptacle* villous. *Styles* two. 3. *B. lanuginosa*, Linn. "Leaves linear, very slender, spreading, smooth; heads of flowers globular, smoothish, aggregate, terminal." La Marck. Little branches reticulated, with a woolly substance, in the manner of a spider's web, whence the trivial name. *Leaves* numerous, very small, smooth, tipped with a black point. *Heads of flowers* white, small, smooth, numerous. Bergius says, that the germ is inferior; but it appeared to La Marck in a dried specimen to be superior, incorporated with the top-shaped base of the flower. *Style* awl-shaped; stigma simple. If Bergius should prove to be right, and if, as the simple stigma seems to indicate, the fruit should be found one-celled, it must be removed to *flaavia*. 4. *B. abrotanoides*, Linn. "Leaves linear-lanceolate, spreading, with three flat sides, callous at the points." Linn. A much branched under shrub, about a foot and a half high. *Leaves* smooth, rounded. *Heads of flowers* small, smooth, terminating, many together, disposed somewhat in the form of an umbel. *Style* one, emarginate. 5. *B. verticillata*, Linn. jun. "Leaves with

three flat sides, obtuse, smooth; little branches whorled fastigiate; heads terminating." Linn. jun. Heads not globular. 6. *B. superba*, Willd. "Leaves with three flat sides, thread-shaped, with callous points, spreading, ciliate-villous." Willd. "Edges of the leaves thinly ciliated with long hairs." 7. *B. fraganoides*, Willd. "Leaves with three flat sides, pressed to the stem; the edges and the midrib thickly ciliated." Willd. These two are inserted from their habit; the flowers not being known. 8. *B. ciliata*, Linn. "Leaves ovate, acuminate, ciliate." Linn. *Style* bifid. All the species are natives of Southern Africa.

Observ. La Marck, in the letter-press to his plates, has retained all the species under *brunia*; and, in contradiction to his own descriptions published some time before in the alphabetical part, has made a superior calyx part of its essential character. The germ of *B. nodiflora*, he now says, is certainly inferior; and it must be confessed, that he is in some degree supported by the high authority of Gartner, who has figured the fruit of this species, and calls it semi-inferior; but through a strange inattention in the essential character, he describes the fruit as a capsule; in the general one, as a dry berry. He divides the genus into two families: 1. With globular heads of flowers destitute of leaves, comprising the species described above, except the two introduced by Willdenow, and the *ciliata* of Linnæus, which he appears to have discarded. 2. With heads surrounded by a lengthened, coloured calyx, forming a kind of involucre. This family consists of the two species, which have been referred to *flaavia*.

Professor Martyn has inserted under *brunia*, only the *lanuginosa*, *ciliata*, and *verticillata*; assigning to *lexisanus*, the *nodiflora*, *paleacea*, and *abrotanoides*, as well as the *radiata*, and *glutinosa*, which constitute the *flaavia* of Willdenow, Ventenat, and Rose. See STAAVIA.

BRUNIA lexisanus. See *PROTEA Lexisanus*.

BRUNIA uniflora. See *DIOSMA Cupressina*.

BRUNIQUEL, in *Geography*, a town of France, in the department of the Lot, and district of Montauban; 8 leagues S.S.E. of Cahors.

BRUNN, JOHN-JAMES, in *Biography*, was born at Basle in the year 1591. Applying to the study of medicine, he was admitted to the degree of doctor in that faculty in 1615; and in succession was advanced to the rank of professor in anatomy, botany, and in the practice of medicine. To the last he was appointed in the year 1529, and he continued performing the duties of these offices to the time of his death, in 1660. His work is "S. stemæ Materię Medicę, continens Medicamentorum simplicium et compositorum Seriem ac Sylvam, Methodo medendi ac Formulæ Remediorum præscribendis accommodatum," Bas. 1630, 8vo. The work has been many times re-published; and in 1680, with notes, by Gerard Blasius. Hall. Bib. Med. Eloy. Dict. Hist.

BRUNN, in *Geography*, a town of Germany, in the archduchy of Austria, 4 miles W. of Horn.—Also, a town of the same archduchy, 8 miles W. of Ebenfurth.

BRUNN, or *BRIUN*, a city and royal borough, the second town in rank, and the first in commerce, of Moravia, the capital of a circle of the same name, situated at the conflux of the rivers Schwartzschaw and Surtawa. Although this city is not large, it is well-built and populous; the number of inhabitants being estimated at 18,000. It has considerable manufactures of cloth, velvets, and plush. The diets of the state are held here, alternately with Olmutz. It is defended by a strong fortress called "Spilberg," erected on an eminence near the town, at the foot of which stand two cloisters of nuns, and an hospital of the knights of

Malta. The Prussians laid siege to this fortress in 1742, but were obliged to abandon the enterprise. In the town are six cloisters, the bishop's palace, a collegiate church, and a college of Jesuits. The cloister of Augustine hermits is famous for an image of the virgin Mary, pretended to have been made by St. Luke, and a foundation for young ladies. Brunn is distant about 32 miles S.W. of Olmutz, 100 S.E. of Prague, and 156 S.E. of Dresden. N. lat. $49^{\circ} 10'$. E. long. $16^{\circ} 15'$.

BRUNN, a circle of Moravia, bounded on the north by Bohemia, on the east by the circle of Olmutz and Hradish, on the south by Austria, and on the west by the circle of Iglau and Znaim. In this circle are many iron-mines and forges, medicinal springs, quarries of marble, glass-houses, and alum-works. It is said to contain 70 towns, and above 20,781 houses. The capital is Brunn.

BRUNNEA, in *Entomology*, a name given to a species of *MUSCA*, that is entirely of a brown colour. Linn. This is a native of Europe.

BRUNNEA, an East Indian species of *VESPA* of the larger kinds. The prevailing colour is dull, ferruginous; first and second segment black at the base. Fabr.

The legs and antennæ of this insect are ferruginous.

BRUNNEA, a species of *PHALÆNA*, having brown wings, with a large transverse yellow spot in the middle; margin chestnut brown. This is of the *Noctua* family, and inhabits Germany.

BRUNNEA, a species of *CHRYSOMELA*, of a small size, that inhabits New Holland. It is testaceous, with the suture of the elytra, and a small line in the middle, fuscous. Fabr., &c.

BRUNNEA, in *Natural History*, a species of *PLANARIA*, of an oblong shape, and brown colour, with a longitudinal black line. Müll. Hist. Verm. Its habitat unknown. This is nearly allied to *nigra*, another species of *PLANARIA*.

BRUNNEARIA, in *Entomology*, a species of *PHALÆNA* (*Geometra*), the wings of which are deep yellow, with a black margin above, and two black streaks beneath. This is a native of Italy.

BRUNNEATA, a species of *PHALÆNA* (*Geometra*), with ferruginous wings, and four abrupt brown bands. Inhabits Upsal. Borgstr. Inf.

BRUNNEN, in *Geography*, a populous village of Switzerland, in the canton of Schwytz, situate in the midst of a bay formed by a branch of the lake Lucern, or lake of the four cantons; celebrated for the treaty concluded in 1315, between Uri, Schwytz, and Unterwalden, which gave birth to the Helvetic confederacy. It was again distinguished in April 1798, by being the place where deputies from the cantons of Uri, Schwytz, Unterwalden, and Glarus, unanimously determined to maintain their independence, and to resist the innovations of the French. Brunnen is separated from Schwytz by a pleasant and fertile plain, laid out in meadows, and planted with fruit trees, and distant from it about $2\frac{1}{2}$ miles S.W. N. lat. $46^{\circ} 56'$. E. long. $8^{\circ} 26'$.

BRUNNEOLUS, in *Entomology*, a Linnæan species of *ICHNEUMON*, peculiar to Europe. The pervading colour is black; abdomen and legs reddish; antennæ reddish, with the base black; posterior brown.

BRUNNER, BALTHAZAR, in *Biography*, born at Hall, in Saxony, the middle of the 16th century; addicting himself to the study of medicine, was sent to the university at Erford, and afterwards to Leipzig, where he was admitted to the degree of doctor in that faculty. He then travelled over part of Italy, France, and England, and having passed three years in those countries, returned to Hall, where he

acquired much reputation for his learning and for his skill in his profession. He died in 1604. A few years after his death, were published, collected from his papers, "*Confilia medica, summo studio collecta et revisa*, a Laurentio Hoffman, Halæ Sax." 1617, 4to. "*De Scorbuto Tractatus duo*," 8vo.: since printed with the treatise of Eugalenus, written in a methodical manner, and giving an accurate account of the disease. Among other remedies, he recommends the juice of water-creffes taken in milk-whey. Though attached to chemistry, in which he was allowed to be expert, he left no written documents on that subject. Haller Bib. Med. Eloy. Dict. Hist.

BRUNNER, JOHN CONRAD, a Swiss physician and anatomist of eminence, was born at Dieffenhofen, the 16th of January 1653. After passing through the usual school education, he was sent, at the age of 16, to Strasburg, where, applying assiduously to the study of physic and anatomy, he was created doctor in medicine in 1672. For his thesis, he gave the anatomy of a child with two heads, which it was his fortune to meet with. He now went to Paris, and attended the schools and hospitals there, with such assiduity, as to attract the notice, and gain him the intimacy of Dionis and du Verny, who were present while he made the experiments on the pancreas, which enabled him, some years after, to publish a more accurate description of that viscus, than had been before given, under the title of "*Experimenta nova circa Pancreas*. Accedit Diatribe de Lympha et genuino Pancreatis usu," 8vo. 1682, Leidæ. He proved that the fluid secreted by the pancreas is not necessary to digestion, and that an animal may live after that viscus is taken out of the body, having tried the experiment upon a dog, which perfectly recovered from the operation. On quitting Paris, he came to London, and was introduced to Dr. Willis, Lower, and Henry Oldenburg, secretary to the royal society. From England, he passed to Holland, and studied for some months at Leyden. At Amsterdam, he visited Swammerdam and Ruysch, with whom he afterwards corresponded. Returning home, he was made professor of medicine at Heidelberg, and first physician to the elector palatine, who conferred on him the title of baron de Brunn in Hamerslein. About the same time, he married one of the daughters of the celebrated Wepfer, and was elected honorary member of the academia naturæ curios. in return for some ingenious dissertations which he had communicated to them. In 1688, he published "*Dissertatio Anatomica de Glandula pituitaria*," 4to. Heidelb. From this time, he became in such great request, for his knowledge and success in practice, that he was, in succession, consulted by most of the princes in Germany. Among others, in 1720, he was sent for to Hanover, to attend the prince of Wales, afterwards king George II. In 1715, he published at Heidelberg, "*Glandula Duodeni seu Pancreas secundum detectum*," 4to. which was only an improved edition of his "*De Glandulis in Duodeno Intestino detectis*," which had been before twice printed. There are some other lesser works, the titles and accounts of which are given by Haller, in his Bib. Anat. In the later edition of Wepfer's works are given dissections by our author, of the heads of some persons who died of apoplexy, of whom he had had the care. Though early afflicted with gravel, and in the latter part of his life with gout, he continued to attend to the calls of his patients, though living a great distance from his residence. When, in his 74th year, he went in great haste to Munich, to attend the elector Maximilian Emanuel, on his return, he was seized with a fever, which, in a few days, put an end to his existence, on the 2d of October 1727. Haller Bib. Anat. Eloy. Dict. Hist.

BRUN-

BRUNNEUM, in *Entomology*, a species of *ISTER*, described as a Swedish insect. The colour is ferruginous; wing-cases somewhat striated. Linn.

BRUNNEUS, a species of *CURCULIO* of a large size, found at the Cape of Good Hope. The general colour is brown; beak fuscous; wing-cases testaceous, and streaked with dots. Fabr. Gmel. &c.

BRUNNEUS, a species of *PTINUS* of a brown colour, with the wing-cases very smooth, with pubescent striæ. Linn. &c. A native of Europe.

BRUNNEUS, a species of *CRYPTOCEPHALUS*, found in Europe, that is described by Linnaeus. The colour is brown; abdomen fuscous; wing-cases smooth.

BRUNNEUS, a species of *ELATER* that inhabits Europe. The thorax is rufous, in the middle black; wing-cases and body ferruginous. Linn.

BRUNNEUS, a species of *CIMEX*, of an ovate form, and brown colour, except the wings, which are white. This is found in Europe, and is described as above by Linnaeus.

BRUNNEUS, a species of *ASILUS*, the thorax of which is cinereous, lined with black; abdomen and legs brown, with black spots. Fabr. This kind is a native of Cayenne. The head is whitish; snout black; antennæ brown; abdomen cylindrical; wings white; legs at the tips black.

BRUNNEUS, in *Zoology* a species of *COLUBER* of a brown colour, spotted with white; abdomen whitish. Boddaert. This is spotted cobellus of Seba.

BRUNNICHAND, in *Entomology*, a small insect of the *Tortrix* tribe of *PHALÆNA*, named in compliment to Brunnich. This species, which inhabits Germany, and the north of Europe, has the wings of a fuscous colour, with a common rhomboid white spot on the back. Fabr.

BRUNNICHELLA, a species of *PHALÆNA* of the *Tinea* tribe, named after Brunnich. It is of a black colour with three violaceous bands. Vandelli, &c. Inhabits Europe.

BRUNNIPES, a species of *TENEBRIO*, the size of which is small. It is of a black colour, very smooth and glossy; wing-cases striated; antennæ and legs ferruginous. Fabr. &c. Inhabits Europe.

BRUNNIPES, a species of *STAPHYLINUS* of a black colour, with the legs and antennæ at the base and tip ferruginous. Inhabits Europe.

BRUNNUS, a species of *CERAMBYX* of a brown colour; thorax armed with three spines; wing-cases obtuse, with two obscure elevated striæ; antennæ compressed and short. Inhabits North America. Gmel. &c. *Obs.* The *Cerambyx pensylvanicus* of Degeer.

BRUNNUS, a species of *SPHINX*, (*Sesia*), the wings of which are brown, and without spots; posterior ones emarginate. A native of Surinam. Fabr.

BRUNO, **GIORDANO**, in *Biography*, a bold innovating philosopher of the 16th century, was born at Nola, in the Kingdom of Naples; and, though he first entered among the Dominicans, the freedom of his religious opinions rendered it expedient for him to seek a refuge at Geneva in 1582. But the rigid system of orthodoxy, inculcated by Calvin and Beza, obliged him to leave this city, after a residence in it of two years, and to return to Paris; where, notwithstanding his opposition to the Aristotelian philosophy, he was allowed, for some time, to deliver public lectures in the university. In 1586, he defended for three days, at a solemn disputation, opinions concerning nature and the world, which he published in 1588, at Wittemberg, under the title of "*Acrotismus, seu Rationes Articulorum Physicorum adversus Peripateticos Parisiis propositorum.*" Before this time, he took a journey to England, and formed

an acquaintance with sir Fulk Greville, and sir Philip Sydney, to the latter of whom he dedicated two works. From Paris he removed to Wittemberg, and made an open profession of Lutheranism. After a temporary residence at Helmstadt, and at Frankfort, where he superintended an edition of his numerous works, printed by John Wechel, he settled at Padua; but being arrested, he was first confined in the prison of the inquisition at Venice, and afterwards at Rome. After two years' confinement, he was condemned by the inquisitorial tribunal, and burnt alive in February 1600. The crimes that have been alledged against him, were his Lutheran heresy, his desertion from the Dominicans, and his atheistical opinions. Bruno was of a paradoxical turn of mind, and of a confident sanguine disposition; fond of advancing novel and fanciful sentiments, but confused and obscure in his method of explaining them. Bayle and La Croze have charged him with founding his philosophy on the principles of Spinoza; but, in reality, he attempted to unite the ancient emanative and atomic systems. In his works are found obscure hints of the vortices of Des Cartes, the atoms of Gassendi, the optimism of Leibnitz, and the celestial physics of Copernicus; but his suggestions on these topics are very darkly and inaccurately expressed; and he seems to have been more distinguished by his bold attack of ancient errors, than by his introduction and establishment of new truths. One of his most famous works is "*Spaccio della Bestia trionfante,*" or the demolition of the triumphant beast; Lond. 1584, a work satyrizing many received systems of religion, and charged with advancing atheistical opinions. Besides several philosophical and theological writings, he was the author of an Italian comedy in prose, entitled "*Il Candelaio,*" and of some Latin poetry.

Toland's *Posthumous works*, vol. i. Gen. Dict. Brucker's *Hist. Philos.* by Enfield, vol. ii. *Spectator*, N° 389. vol. v.

BRUNO, a saint of the Roman church, and founder of the order of Carthusians, was born at Cologne about the year 1030, and studied at Rheims, where he became a canon and regent of the public school. Compelled to leave Rheims by the tyranny of Manasses, the archbishop, he determined, in 1080, to retire from the world to the desert of Chartreux, where, in 1084, he founded his new order. After residing in this solitude for 6 years, he was summoned to Rome by pope Urban II., who had been his scholar at Rheims; but disgusted with the manners of the capital, he withdrew to Calabria; and declining to accept the archbishopric of Reggio, he obtained from count Roger a forest, with its adjacent district, named la Torre, near Squillace, where he founded the second house of his order. In this retreat he died in 1101; and he was canonized by pope Leo X. in 1514. His works, which are enumerated by Cave, have been confounded with those of his contemporary St. Bruno of Segni, who flourished about the year 1087, and died in 1125. The principal treatises of Bruno, the Carthusian, are, a "*Commentary on the Psalms,*" and another "*On St. Paul's Epistles,*" besides several collections of sermons, and two letters to his disciples. A collection of his works was printed at Paris in 1524, and at Cologne in 1611, 3 vols. fol. Cave's *Hist. Lit.* vol. ii. p. 158.

For an account of the order established by Bruno, see **CARTHUSIANS**.

BRUNO, **JAMES PANCRACE**, born at Altdorf on the 23d of January 1629, after receiving a liberal education in his own country was sent to Padua, where he was admitted doctor in medicine in 1653. Returning thence, he settled at Nuremberg, and soon became distinguished for superior learning and abilities. In 1662, he was invited to accept the chair of professor in medicine by the university at Altdorf,

dorf, his native city, and he continued in that office to the time of his death, October 13, 1709. Besides his commentaries upon many parts of the works of Hippocrates, and his edition of the *Isagoge medica* of Gaspar Hoffman, Bruno published "*Oratio de Vita, Moribus, et Scriptis Gasp. Hoffmanni, Lipsi.*" 1664, 12mo. "*Dogmata Medicinæ generalia in ordinem noviter redacta,*" Norib. 1670, 8vo. "*Castellus renovatus, hoc est, Lexicon Medicum correctum et amplificatum,*" 1682, 4to. The additions to this work are numerous and valuable, and the volume, so improved, has been frequently reprinted. "*Mantissa Nomenclaturæ Medicæ hexaglottæ; Vocabula Latina Ordine alphabetico, cum annexis Arabicis, Hebræis, Græcis, Gallicis et Italicis præponentis,*" Noribergæ 1682, 4to. "*Epitome, Elementa veræ Medicinæ complectens,*" Alt. 1696, 8vo. "*Monita et porismata Medicinæ miscellanea,*" *ibid.* 1698, 4to. His son Frederic James, born at Altdorf in 1665, following the steps of his father, was made doctor in medicine at the university there, in 1697, and practised in that art with considerable credit, to the time of his death, 1727. Haller Bib. Eloy. Dict. Hist.

BRUNO, in *Geography*, a river of Italy, which runs into the lake of Castiglione, near Buriano, in the duchy of Tuscany.

BRUNOR, Buffon, in *Ornithology*. See LOXIA BICOLOUR, or orange-bellied grosbeak.

BRUNOY, in *Geography*, a town of France, in the department of the Seine and Oise, and district of Corbeil; 2 leagues N. of Corbeil.

BRUNSBURG, a town of Germany, in the circle of Westphalia, belonging to the order of Corvey; 4 miles W.N.W. of Hoxter.

BRUNSBUTTLE, a sea-port town of Germany, subject to Denmark, in the circle of Lower Saxony, and duchy of Holstein, on the north side of the Elbe; 40 miles N.W. of Hamburg. N. lat. 44° 30'. E. long. 8° 42'.

BRUNSFELS, ОТНО, in *Biography*, a celebrated restorer and improver of botany, was born at Mentz, the end of the 15th century. He received his education at Solmes, a town in that neighbourhood; and having taken the degree of master of arts, entered a monastery of Carthusians at Mentz, where he resided some years. Embracing at length the tenets of Luther, he left the monastery, and went to Strasburg, and opened a school for the instruction of youth. In this employment, undertaken to procure a maintenance, he continued nine years, reading, during the vacations, the Greek, Arabic, and Latin writers on medicine; in which he became so expert, that, in the year 1531, he was enabled to publish new editions of the works of Serapion, Averhoes, and Rhazes. He had the preceding year taken his degree of doctor in medicine at Basle. Soon after he settled at Berlin, and was made physician to that city, where he died on the 10th of November 1534. Whilst at Strasburg, he published two small tracts to facilitate the study of grammar to children, annotations on the gospels, and on the acts of the apostles, and an answer to Erasmus's *Spongia*, in defence of Hutten. The following are the principal of his botanical and medical works. "*Catalogus illustrium Medicorum,*" 4to. 1530. "*Herbarum vivæ icones, ad Naturæ imitationem, summa cum diligentia et artificio effictæ, cum effectibus earundem,*" fol. vol. iii. 1530, 1531, 1536. The plates are much commended by Haller, who, on account of this work, ranks the author among the restorers of botany. "*Thefes, seu communes loci totius Medicinæ, etiam de usu Pharmacorum, Argentinæ,*" 1522, 8vo. "*Onomasticon Medicinæ, nomina continens omnium stirpium, &c. Argent.*" 1534. folio. For his great skill in medicine, he was thought deserving of the following:

"Te nato, defuncta fere medicina revixit;

Pæonii vindex nominis unus eras."

Adami Vitæ Medic. German. Haller Bib. Botan.

BRUNSFELSIA, in *Botany*. See BRUNFELSIA.

BRUNSTATT, in *Geography*, a town of France, in the department of the Upper Rhine, and district of Altkirch; 7 miles N. of Altkirch.

BRUNSTEIN, a mountainous bailiwick of Germany, in the principality of Calenberg, lying on the Leine and Ruhme, and comprehending 6 villages. The chief trade of the inhabitants consists of thread and linen.

BRUNSVIGIA (Heist.), in *Botany*. See AMARYLLIS ORIENTALIS.

BRUNSWICK, *duchy of*, in *Geography*, is a district of Germany, in the circle of Lower Saxony, bounded on the north by the duchy of Lunenburg, on the east, by the duchy of Magdeburg and the principalities of Anhalt and Halberstadt, on the south, by Thuringia and Hesse, and on the west, by the principality of Minden, and county of Lippe, or by the circle of Westphalia, from which it is separated by the river Weser. Its capital is Brunswick. The territory of the duke of Brunswick, commonly called the principality of Wolfenbüttele, from a less important town than Brunswick, includes 1472 square miles, and 170,000, or, as some say, 185,000 inhabitants. It is fertile in corn and pastures, and abounds with mines and game: it has also several medicinal springs and extensive forests; but its manufactures and commerce, which were once flourishing, have sustained considerable injury by the German wars of the 17th century. Its principal rivers are the Weser, Ocker, Leyne, Ilmenau, and Viper. The territories belonging to the house of Brunswick extend far beyond the limits of this duchy, and comprehend, besides Wolfenbüttele, Grubenhagen, Calenberg, and Göttingen, the principalities and duchies of Lunenburg, Hanover, Zell, Ultzen, Danneberg, Marpuy, Giffhorn, Einbeck, and Hamelen, which see respectively.

BRUNSWICK, a city of Germany, in the circle of Lower Saxony, and district of Wolfenbüttele. It is the capital of the preceding duchy, and the residence of the prince, to whom it belongs, and who is usually styled the "duke of Brunswick and Wolfenbüttele." The town is situated in a plain, on the banks of the Ocker, which enters the plain by two branches, but within it, separates into a greater number of streams, that unite again at its issue out of the city. It is accordingly divided into five different parts, called the Old Town, the New Town, the Hagen or Burg, the Old Wieck, and the Sack. The form of the town is nearly square, and its extent about 2 miles in circumference. The houses in general are old, and constructed of wood; but many new buildings have been lately erected, and the city is every day acquiring fresh beauty. It has several churches, one of which is for the accommodation of the Lutheran worship, which is the prevalent religion of the place, and others appropriated to the French and Dutch calvinists, and to the Roman catholics. Among the public buildings, we may reckon the prince's palace, to which is annexed a library, containing a curious collection of scarce and curious bibles, or fragments of bibles in several languages, to the number of above 1000 volumes; the academy for martial exercises; the armoury; the Caroline college founded by duke Charles, and erected in 1745; the opera-house; the play-house; the "packhofe," where all goods, imported or exported, are rated and taxed; the council-house, where the magistrates meet; the "Autorkof," assigned in 1681 to the foreign dealers, at the fair, for the security and more convenient sale of their goods; the mint; the work-house or house of correction;

BRUNSWICK.

correction; the orphan-house, which, since the year 1753, has had annexed to it a Latin school, with a printing-house and book-shop; two gymnasia, with an anatomy and surgery school, founded by duke Charles, and opened in 1751; a college for the study of physic, instituted in 1757; a large lazaretto; and a hospital. With respect to the academy at Brunswick, Dr. Moore informs us, (*View of Society and Manners in France, &c. vol. ii. p. 70.*) that it has been new modelled, and the plan of education improved, by the attention, and under the patronage of the hereditary prince. Students now resort to it from many parts of Germany, and some even from Great Britain. Such of them as are intended for a military life, will find advantages in this academy, superior to those that may be had at any other place on the continent. They will here be under the protection of a family partial to the British nation; every branch of science is taught by masters of known abilities; the young students will see garrison duty regularly performed, and may, by the interest of the prince, obtain liberty to attend the reviews of the Prussian troops at Magdeburg and Berlin: and they will have few temptations to expence in a town, where they can see no examples of extravagance; they will have few opportunities of dissipation, and none of gross debauchery.

The reigning prince of Brunswick is said to administer the finances of the state with wise frugality, and to diminish the debts, in which, at his accession to the duchy, he found himself involved. As the father of his people, he employs his power to increase their prosperity and happiness. Many of their former burdens are already diminished, and property is not heavily taxed, and the finances are daily advancing to a better condition.

Brunswick is strongly fortified; and on the ramparts it has a mortar-piece of brass, 10½ feet in length, and 9 feet 2 inches in circumference, and weighing 1800 quintals, which will carry a ball of 730lbs. weight to the distance of 33,000 paces, and throw a bomb of 1000lbs. weight; but it requires 52 lbs. of powder for a charge. Although fortifications have occasioned much calamity to many towns in Germany, by attracting the vengeance of enemies, so that many of them are now dismantled; those of Brunswick were of singular utility in 1761, when they preserved the town from being pillaged, and afforded prince Frederick an opportunity of gaining signal honour. When the town was besieged by a body of 20,000 men under prince Xavier of Saxony, prince Ferdinand detached 5000 of his army under his nephew Frederick, assisted by general Luckner, with order to make an attempt for raising the siege, and saving his native city. The prince dispatched a messenger to the governor, with a letter wrapped round a bullet, and which he was instructed to swallow, in case of his being taken by the enemy. However, he had the good fortune to make his way into the town; and the prince, in the middle of the night specified in the letter to the governor, fell suddenly on the enemy's cavalry, who, unsuspicious of his approach, were encamped carelessly within a mile of the town; and having by this sudden movement dispersed the cavalry, he produced an alarm among the infantry, which occasioned their retreat. Early in the morning, the young prince entered Brunswick, amidst the acclamations of his fellow-citizens, whom he had relieved from the horrors of a siege. On the arrival of his brother, the hereditary prince, at his father's palace, he found Frederick at table, entertaining the French officers, who had been taken the preceding night.

Brunswick was formerly one of the Hanse towns, and governed as a republic: but when it became a fortified city, its commerce was injured, and its population diminished.

Its number of inhabitants is now estimated at about 22,000; the peasants are sober and laborious, and as they are robust, though clownish, they make good soldiers. They have several manufactures in the town; but one of the chief employments of the people is spinning wool and flax: and they are provided with an excellent institution for supplying the poor with these means of subsistence. This institution furnishes all who choose to apply with the materials, and they are paid for their labour on the same terms with those of the manufacturers; and yet, what arises from the sale of the yarn and thread, is sufficient to defray all the expences of the establishment. Adults perform this work at their own habitations; but 200 children work every day in the house, and are there also instructed in reading and writing. The first spinning wheels are said to have been invented in this place in 1530, by a ituary, named Jurgen. The strong beer of Brunswick, called "Mum," after the name of its inventor, Christian Munmen, is exported to various parts of Europe, and even Asia. Brunswick has two considerable fairs every year.

Brunswick appears to have been in being so early as the 8th century. In 775, it is said, that the emperor Charles the Great came to the Ocker, which runs through "Brunonis vicum," or Brunswick; and it is also related, that in the beginning of the 8th century, bishop Swibert with his train of followers went to Saxony, and coming to a large town called Brunswick, preached there, and converted great numbers. Hence, it has been thought not improbable, that the place was founded by duke Bruno, son-in-law to duke Witikind, if not by his father duke Bruno of Enjern. Bruno I. margrave of Saxony, is said to have enlarged and embellished this city A.D. 955. In the time of Henry the Lion, it consisted of five precincts, within its separate wall; but this duke, in 1177, inclosed them all within one wall. In 1314, the burghers of Brunswick were discharged from all kinds of villainage; and in 1345, the citizens by mortgage acquired the government of the town, and arrogated other immunities, which were the occasion of severe and tedious contests between them and the duke. At length, in 1671, duke Rodolphus Augustus made himself master of the town after a long siege, by means of the cannon which had been lent him by the inhabitants for another purpose; and he erected a citadel to secure their subjection. In 1757, it was taken by the French, but evacuated in the following year: and an unsuccessful attempt was made against it in 1761. Brunswick is distant 7 miles N. of Wolfenbüttele; in N. lat. 52° 15' 43". E. long. 10° 35'.

Brunswick, Family of, in History. This ancient and illustrious house is descended from the marquis of Azo of Este, who was proprietor of the Milanese, the state of Genoa, and several other countries in Lombardy. About the year 1240 he married Cunigunda, or Cuniza, heiress of the first Welfs, or Guelphs, earls of Altorf, in Suabia; and their son Welf, or Guelph, obtained the duchy of Bavaria of Henry IV. in 1071. His grandson, Henry duke of Bavaria, acquired Brunswick along with Saxony. In 1195, William, son of Henry the Lion, and of Matilda, or Maude, eldest daughter of king Henry II. of England, in whom was united the Anglo-Saxon and Norman blood, acquired Lüneburg; and his son Otho, in 1235, was the first duke of Brunswick and Lüneburg. His son, Albert I. in 1252, was surnamed the Great. Magnus II. in 1368, was surnamed Torquatus, from a large chain which he wore. His son, Bernard, retained Lüneburg; while Brunswick passed to Henry the second's son, and continued in the lines of his descendants till the year 1634. The dukes of Lüneburg acquired some small portions of adjacent territory. Henry being put to the ban of the empire, in 1521, was

succeeded by his son, who only assumed the title of duke of Zell, a title which continued till the reign of George William, in 1665. In 1617, Christian, duke of Zell, obtained possession of Grubenhagen. In 1692, George William, duke of Zell, consented that the electorate, instituted in favour of his family, should be conferred on his younger brother, as he had no male heir. Ernest died in 1698, having married Sophia, daughter of Elizabeth, daughter of James I. of England. He was succeeded by his son George Lewis, elector, in 1698, and king of England, in 1714, who, in 1715, added to his family the duchy of Bremen, with the principality of Verden. In 1727, he was succeeded in the British throne and electorate by his only son, George Augustus, or George II. from whom, in 1760, they devolved upon his grandson, our present sovereign, George III.

BRUNSWICK *Lunenburg*, or *Lunenburg*, in *Geography*, an electorate of Germany, the territories of which are chiefly situated in the circle of Lower Saxony, is frequently denominated, from its capital, the electorate of Hanover; which see. See also LUNEBURG.

BRUNSWICK, *Wolfenbuttle*. See *Duchy of BRUNSWICK* and *WOLFENBUTTEL*.

BRUNSWICK, *New*, a province in the northern part of Nova Scotia, according to the division of 1784, the other retaining the original name, lies on the north west of the bay of Fundy, and is bounded on the south by the north shores of this bay, and by the river Missiquash to its source, and from thence by a due east line to Verte bay, and on the west by a line running due north from the main source of St. Croix river, in Passamaquoddy, to the high lands, which divide the streams that fall into the river St. Lawrence, and the bay of Fundy; and from thence by the southern boundary of the colony of Quebec, until it touches the sea-shore at the western extremity of the bay of Chaleur; then following the course of the sea-shore to the bay of Verte, in the straits of Northumberland, until it meets the termination of the eastern line, produced from the source of the Missiquash already mentioned, including all the islands within the said limits. The towns of this province are the capital Fredericktown, seated about 90 miles from the æstuary of the river St. John, St. Ann's almost opposite to it, St. Andrew's and St. John's. In 1784, another town, near the mouth of the river St. John, was erected, under the appellation of New Brunswick, into the metropolis of the province so called. There are some other settlements near the bay of Fundy, with a fort called Howe. A tribe of savages, called the Marechites, inhabits this province, and they are estimated at 140 fighting men. It has two considerable bays, several lakes, among which the grand lake is 30 miles long and about 9 broad; and its chief rivers are St. John's, Magegadavik, or eastern river, Dickwesset, St. Croix, Merrimichi, Petiscodiack, and Memram-Cook, all of which, except the three last, discharge themselves into Passamaquoddy bay. St. John's river is navigable for vessels of 50 tons about 60 miles, and for boats about 200; the tide flowing about 80. It opens into a vast extent of country, in which are rich vales and meadows under cultivation; and the upland is in general well-timbered; the trees being pine and spruce, hemlock, and hard-wood, principally beech, birch, maple, and some oak. The pines on St. John's river are the largest in British America, and afford a considerable supply of masts for the royal navy. The fish are salmon, bass, and sturgeon. This river affords a common and near route to Quebec. The river St. Croix separates New Brunswick from the province of Maine, belonging to the United States. The rivers which fall into Passamaquoddy bay have on their banks meadows and vales,

and must formerly have been covered with a large growth of timber, as the remains of large trunks are still visible. The great chain of the Appalachian mountains passes on the north-west of this province, probably terminating at the gulf of St. Lawrence. The chief products of this province are timber and fish. See NOVA SCOTIA.

BRUNSWICK, a county of America, in Virginia, lying between Nottaway and Meherrin rivers; is about 38 miles long, and 35 broad, and contains 6917 free inhabitants, and 9422 slaves.—Also, a maritime county, in the district of Wilmington, North Carolina, containing 4110 inhabitants, of whom 1614 are slaves. This is the most southerly county of the state, having South Carolina on the south-west, and bounded by cape Fear river on the east. Smithville is the seat of justice.—Also, the chief town in the above county, seated on the west side of cape Fear river; and formerly the best built in the whole state, and carrying on the most extensive trade. It lies about 17 miles S.W. of Wilmington, and was formerly the seat of government; but in 1780 it was consumed by the British forces, and has now only three or four houses, and an elegant church in ruins. N. lat. 34° 2'. W. long. 78° 12'.—Also, a township in Essex county, Vermont, on the west bank of Connecticut river, opposite to Stratford, in New Hampshire.—Also, a city in Middlesex county, New Jersey, situate on the south-west bank of Rariton river, in a low situation, under a hill rising to the west of the town. It has about 300 houses, and about 3000 inhabitants, one-half of whom consists of Dutch. This town has a considerable inland trade, and over the river, opposite to this city, is one of the most elegant and expensive bridges in America. It is 18 miles N.E. from Princetown, 60 N.E. from Philadelphia, and 35 S.W. from New York. N. lat. 40° 30'. W. long. 74° 30'.—Also, a post town of Cumberland county, in the district of Maine, lying 30 miles N.E. of Portland, and of Boston 151, on the south side of Merry-meeting bay, and partly on the south-western side of Androscoggin river. It contains 1809 inhabitants; and is the site of Bowdoin college. N. lat. 43° 52'. W. long. 69° 58'.—Also, the chief town of Glynn county, in Georgia, situated at the mouth of Turtle river, where it empties into St. Simon's sound. N. lat. 31° 10'. The harbour is safe and spacious enough to contain a large fleet. The town is regularly laid out, but not finished. From its advantageous situation, and the fertility of the back country, it promises to be one of the most commercial and flourishing places in the state. It is distant 19 miles S. of Darien, 60 S.S.W. of Savannah, and 110 S.E. of Louisville. N. lat. 31° 14'. W. long. 81° 45'.

BRUNSWICK *House*, one of the Hudson-bay company's settlements, situate on Moose river, half way from its mouth; S.W. from James's bay, and N.E. from Lake Superior. N. lat. 50° 13'. W. long. 83° 31'.

BRUNSWICK *green*, *Frieze*land-green. This colour is largely used for the bluish greens of paper-hangings, and other coarse kinds of painting in water colours. It is prepared in the following way. Take a barrel, or any other close vessel of wood or earthen ware, and fill it half full of filings or clippings of copper; then pour in a saturated solution of sal-ammoniac, sufficient to moisten the whole thoroughly: put on the cover of the vessel, and set it in a warm place. In a few hours the copper will begin to decompose the sal-ammoniac, and form muriat of copper, ammonia being at the same time disengaged. The muriated oxyd absorbs a considerable quantity of moisture, on which account it is requisite from time to time to add fresh portions of dissolved sal-ammoniac, till, in the course of a few weeks, nearly the whole of the copper is converted into oxyd. The contents of the barrel

are now to be emptied and passed through a sieve in a tub of water, by which the unoxysated copper will be separated from the pigment, which will pass into the water. This being well washed and slowly dried in the shade, is pure Brunswick green. Three parts muriat of ammonia, and two of copper yield six parts of the green. It is rarely, however, that pure Brunswick green is met with, as it is usually adulterated with cerulite.

BRUNTRUT, or **PRUNTRUT**, in *Geography*. See **PORENTRO**.

BRUNUS, in *Biography*, an Italian physician and surgeon of great name in his time, flourished in the early part of the 14th century, and is said to have been intimate with Petrarch. He was author of "*Chirurgia Magna et Parva*," published at Venice in 1400 in a collection of chirurgical treatises, fol. which has been several times reprinted. The *Chirurgia* is a compilation, taken from the Greek and Arabian physicians, principally from Albucasis, from whom he describes the operation of cutting for the stone in the bladder. In the fistula of the anus he recommends opening the sinuses, without which, we cannot, he says, be certain of curing. Haller. Bib. Chirurg. Eloy Dict. Hist.

BRUNUSEE, in *Geography*, a town of Germany, in the duchy of Stiria; 12 miles W. of Raabeburg.

BRUSA, a town of Turkey, in Asia, built by Prusias, the friend of Hannibal. It is still extensive and populous, but the streets are narrow. Many houses are built so much against the hill, that the upper rooms open into the gardens. They reckon 70 mosques, but most of them are neglected, or absolutely in ruins. The police is ecclesiastical. The bazaar is ample, and one of the khans is singularly commodious. The sale of raw and manufactured silks constitutes its commerce.

BRUSA-SORCI, in *Biography*. See **RICCIO**.

BRUSCH, in *Geography*, a river of France, which runs into the Rhine at Stralburg. It forms a canal by means of sluices from Mollheim.

BRUSCIO, a town of Switzerland, in the Valteline, situated near a river which discharges itself into the Adda. N. lat. 46° 9'. E. long. 10 3'.

BRUSCUS, in *Botany*. Gen. See **RUSCUS**.

BRUSEGANA, in *Geography*, a town of Italy, in the Paduan; 4 miles W.N.W. of Padua.

BRUSH, an assemblage of hairs or hog's bristles, fastened in the holes of a wooden handle or board, pierced for that purpose, and serving to cleanse divers bodies by rubbing therewith. Of brushes there are a round, a flat, or square brush, cloath-brush, head-brush, horse brush, beard brush, comb-brush, weavers-brush, and the like. The manner of making brushes, is by folding the hair or bristle in two, and bringing it by means of a pack-thread, or wire, engaged in the fold, through the holes wherewith the wood is pierced all over, or fastened therein with glue or pitch. When the holes are thus all filled, they cut the ends of the hair to make the surface even.

Brush, *Painter's*. See **PENCIL**.

Brush, *Sheermen's*, is made of wild boars' bristles, and serves to lay the wool or nap of cloth, after sheering it for the last time.

The flesh brush is of use in medicine, especially in case of rheumatism, and certain cutaneous disorders. See **FRICTIO**.

The brush is also applied to the soles of the feet of newborn infants, when fainting, to find whether they be alive or dead.

Brush, in *Electricity*, denotes the luminous appearance of the electric matter, issuing in a parcel of diverging rays, from a point. Beccaria ascribes this appearance to the force

with which the electric fluid, going out of a point, divides the contiguous air, and passes through it to that which is more remote. See *Plate, Electricity*. See **STAR**.

BRUSHES, *wire*, are used by silver-smiths and gilders, for scrubbing silver, copper, or brass pieces, in order to the gilding of them.

There is a method of dying or colouring leather, performed by only rubbing the colour of the skin with a brush. This the French leather-guilders called *brouffure*; being the lowest of all the sorts of dye allowed by their statutes.

BRUSH of a fox, among *Sportsmen*, signifies his drag or tail, the tip or end of which is called the chape.

BRUSH iron-ore, signifies a kind of ore full of *frie*, resembling the hair of a brush.

BRUSH is also used in speaking of a small thicket or coppice. In this sense, the word is formed from the middle age Latin *bruscia*, *bruscus*, which signifies the same.

BRUSH-wood denotes smaller slender wood or spray. See **BROWSE**.

BRUSHING. Among *Jockies*, a brushing gallop denotes a brisk one: a horse should have his brushing gallop in a morning before watering.

BRUSINSKOI, in *Geography, an island of Russia, in the lake of Ovezkee; 40 miles S.E. of Petrovskoi.*

BRUSKAU, a town of Poland, in the palatinate of Braclaw; 48 miles N.N.W. of Braclaw.

BRUSLEE ISLAND, lies on the coast of France, in the English channel, below the Seven Islands, and Launon haven and river.

BRUSQUET, **LE**, a town of France, in the department of the Lower Alps, and district of Digne; 5 miles N.W. of Digne.

BRUSSELS, in Latin *Bruxella*, in Flemish *Bruxellas*, a large and handsome town, annexed to France, being the chief place of the department de la Dyle. It was formerly the capital city of Brabant, and of the Austrian Netherlands; where the governor-general held his court with all the splendour of royalty. It is situated partly on a hill and partly in a vale, on the banks of the river Senne, which runs through the town. Various etymologies are given to the name of Brussels: it has been derived from *Brugge-Senne*, bridge on the Senne; from *Brugfel*, hermitage bridge; from *Brugfelle*, a nest of swans, on account of the number of those birds found in the adjacent river and marshes; and from *Bressuiler*, bushes, it being formerly surrounded by woods. It is highly probable that the ancient forest of Ardenne extended to this place; and that the present forest de Soigne was part of it. Brussels was not existing in the 7th century. It owes its origin to a little island formed by two branches of the river, on which St. Gery, or Gaugerie, bishop of Cambray, built a chapel and preached the gospel to the heathens who were seated in the vicinity; he died in 619. In 1014, the town, being considerably enlarged, was surrounded by a wall, and fortified with towers, of which traces are still remaining. A second, more extensive inclosure, took place in 1379, and now exists, but the town extends itself far beyond; since many villages are become its suburbs, by a continuity of buildings and streets. Brussels is ornamented by many handsome public structures. The principal church is collegiate, dedicated to St. Gudule, and was built in 1047, but rebuilt between 1226 and 1273. The palace displays considerable taste and magnificence, and formerly contained one of the most beautiful chapels in Europe, which escaped the great conflagration in 1731, but was pulled down in 1777 to make way for the erection of the new square called Place Royale. The town-house, or guild-hall, was built in 1442; it has a steeple 364 feet high, surmounted by a colossal statue, 17 feet high, of St. Michael with

with the dragon under his feet, which turning on a pivot, acts as a vane. The park in the upper town (anciently part of the forest de Soigne,) is a beautiful promenade, and has a public pleasure-garden in one of its groves. The green walk near the canal has a pleasing appearance, being two miles in length. Besides the place royale, Brussels is ornamented with seven squares or market-places. The principal are the great market, the place St. Michael, the corn-market, the petit sablon, and the grand sablon, where a beautiful fountain was erected by lord Aylesbury. In this town are twenty public fountains, adorned with statues, &c. the most remarkable is the manneke pitt, on which is represented a child in brass, which is so admirably executed that it has excited the notice of many connoisseurs, and particularly the elector palatine in 1698, and Lewis XV. in 1747. The population of Brussels is estimated at 80,000. In Tineau's Statistical View of France, its four parts or cantons are represented as containing 66,297 inhabitants, and including $7\frac{1}{2}$ kilometres, and one commune. It had formerly considerable trade in the manufacture of camlet and tapestry, which is now on the decline: but its lace is still in high estimation, as the most beautiful in the world. Its carpets are also noted all over Europe. This town has suffered frequently by war: it was bombarded in 1695 by marshal Villeroy; and besieged, in 1708, by the elector of Bavaria, and in 1746, by marshal Saxe. It was taken by the French in the summer of 1794. Charles II. king of England, and his brother the duke of York, made Brussels their occasional residence during the usurpation of Cromwell. This town has given birth to many celebrated men: among others are, Duquesnoy, Vanhelmont, St. Aldegonde, Breugh Cham-paigne, D'Artois, and other painters. Brussels is 21 miles S. of Antwerp, 26 S.E. of Ghent, and 141 N. by E. of Paris. N. lat. $48^{\circ} 51'$. E. long. $4^{\circ} 28'$.

BRUSSELS, ROGER *of*, in *Biography*. See VANDER WEYDE.

BRUSSOW, in *Geography*, a town of Germany, in the circle of Upper Saxony, and Ucker Mark of Brandenburg; 32 miles N.E. of Prenzlau.

BRUSTERVORT POINT is situate in the Baltic sea; 3 leagues N. by W. from Koningzburg deep, and 16 leagues N.E. by N. from Memel deep.

BRUSZILOW, a town of Poland, in the palatinate of Kiev; 46 miles W. of Kiev.

BRUTA, in *Zoology*, is the second order of animals in the MAMMALIA class, the character of which consists in having no fore teeth in either jaw. The genera of this class are *bradypus*, *myrmecophaga*, *manis*, *dasyfus*, *rhinoceros*, *elephas*, and *trichecus*; which see.

BRUTE, or BEAST, a term generally applied to quadrupeds, and also to other animals, and implying inferiority of intellect.

Among brutes, the monkey kind, both in the external shape and internal structure, bear the nearest resemblance to man. In the monkey-kind, the highest and the most nearly approaching the likeness of man, is the orang-outang, or *homo sylvestris*.

Philosophers are much divided about the essential characters of brutes. Some define brute as an animal not risible, or a living creature incapable of laughter; others, a mute animal, or a living thing destitute of speech; the Peripatetics, an animal endowed with a sensitive power, but without a rational one. The Platonists allow reason and understanding, as well as sense to brutes, though in a degree less pure and refined than that of men. Indeed, the generality of the ancient philosophers thought that brutes reasoned: this, among the heathens, was the opinion of Anaxagoras, Porphyry, Celsus, Galen, Plutarch, as well as Plato and others.

Plutarch has a dialogue under this title, that brutes use reason (Op. vol. ii. p. 988.) The whole Pythagorean sect should also be of the same sentiment, because the metempsychosis imports, that human souls pass into the bodies of brutes. The Stoics also holding that the Divine Being is diffused through all creatures, were necessitated to maintain the souls of brutes to be divine, and, consequently, that they had reason. Among Christians, Lactantius, and the whole body of Manichees and Gnostics, assert the same. Can any person, says Lactantius (Inst. Div. l. iii. c. 10.), deny that brutes have reason, when they often outwit man himself? He allows every thing to brutes which men have, except a sense of religion. Some Septics have ascribed religion and virtue to brutes; and they say that Solomon (Eccles. iii. 18, 19.) seems to assure us, that the souls of men have no pre-eminence over those of brutes. Sextus Empiricus, in particular (Pyrrhon, l. i. c. 13.), institutes a comparison between dogs and the human kind. The former excel the latter as to sense; they have a quicker scent, by which they pursue beasts that are unseen; they discover them sooner by the eye, and their hearing is more acute. Accordingly it is alleged, that a dog is not destitute of the faculty of reasoning, from the famous instance mentioned by Chrysippus, who observed that a hound coming into a road which separates into three directions, makes choice of the third by virtue of an induction or syllogism; because after having scented the two ways by which the beast did not pass, he runs straight upon the third without scenting it; where the reason is obvious: the beast passed either that way, or that way, or this way; but he passed neither that way nor that way, and therefore this way. See Stanley's Hist. Philos. p. 780. That a dog is possessed of what they call internal reason, appears, from his choosing things convenient, flying the hurtful, pursuing his food, and running away from the whip; and when wounded or sick, acting prudently, as the circumstances of his case, and his abilities and opportunities dictate. It has also been argued, though certainly with no great appearance of reason, that we owe the discovery of many medicines, and the invention of many arts, to brutes. Thus, it is said, that from the spider man learned the art of weaving; from the swallow he borrowed architecture; from the goose swimming, from fish navigation; from silk-worms sewing; to omit many other instances of the like kind alleged by Plutarch (De Solert. Animal. Op. tom. ii. p. 974.), Vossius (De Orig. Idol. l. iii. c. 27.), and others. How many actions of brutes, it is said, are to be observed, which cannot be accounted for without the first processes of reasoning? If we say, that dogs, by long habits and force of rewards and punishment, may be taught many things, do not this docility, and remembrance of blows, argue memory, fear, and desire, which cannot subsist without knowledge, sense, pleasure, and pain? And if brutes have knowledge, it is allowed that they must also have judgment and reason. The Cartesians, on the other hand, maintain, that brutes are mere machines, wholly destitute not only of reason and thought, but of every degree of perception: and that they perform their various functions as mere "automata," excited to motion only by means of animal spirits, which act upon the nerves and muscles. This extravagant and paradoxical opinion Des Cartes has been suspected of borrowing from Gomez Pereira, a Spanish physician, who employed 30 years in composing a treatise, which he entitles "Antoniana Margarita," from the Christian names of his father and mother, published in 1554; but it is more probable, that it was a conclusion originally deduced from his notion of the animal spirits in the economy of human nature. However this be, the notion was revived by Des Cartes, and further asserted by Le Grand, d'Armaçon, and others of his followers, who were led to adopt this doctrine from

from that principle of his philosophy, that the essence of the soul consists in thinking; so that, supposing knowledge and thought in brutes, they must have souls like those of men; the sensitive soul of the Aristotelians being held by him a mere chimera. But Pereira does not appear to have been the first inventor of the doctrine; something like it having been held by some of the ancients, as we find from Plutarch (*De Placit. Phil. l. v. c. 10.*), and St. Augustin (*de Quant. Animæ Patch. Invent. Nov. Antiq. c. 3.*) Des Cartes was probably led to adopt this opinion of the mere mechanism of brutes in order to obviate two great objections; one against the immortality of the souls of brutes, if they were allowed to have any; and the other against the goodness of God, in suffering creatures who had never sinned to be obnoxious to so many evils. In favour of this opinion it has been argued, that many human actions are merely mechanical, being performed without the perception of the agent, and any direction from his will; and these must be ascribed to the impression of objects, and the original disposition of the machine, in which the influence of the soul has no concern: so that in such circumstances often occurring with regard to actions that are habitual, human beings are no better than automata. 2. Some natural movements of the body are so involuntary, that we cannot restrain them, and seem to depend altogether on mechanism. 3. To this mechanism we are also to attribute those likings and antipathies for and against particular objects, which precede knowledge and discrimination, and which in advanced life baffle and controul reason; and they furnish striking proofs of that irresistible influence which certain objects have on the human frame. 4. Our passions are known to depend on the motion of the blood, and the reciprocal impressions caused by the animal spirits between the heart and brain, that are so intimately connected by their nerves; and hence it is inferred, that if effects of this kind may be produced by such simple mechanical means as the mere increase of motion in the blood, without any direction of the will, we need not wonder that the actions of brutes should result merely from a refined mechanism, without thought or perception. 5. It has been further urged, that human ingenuity has produced many surprising phenomena by mechanical means, such as are exhibited in automata of human contrivances; and as the mechanism of the body of the meanest animal must infinitely surpass that of the most curious machines of this nature, the effects produced by it must be proportionably more surprising. In reply to these arguments, it has been alleged, that they only prove, if we allow their full force, the possibility of the case, that brutes are mere machines, or that the power of God might produce certain actions by mechanism, but not that he has actually done so; and, moreover, that if they be admitted, they will prove too much, or that human beings may be mere machines, and not only irrational but insensible too. To the Cartesian hypothesis it has been more directly objected, that the phenomena of perception, foresight, memory, volition, and spontaneous exertion, and of various passions of joy, sorrow, fear, anger, gratitude, love, &c. exhibited by brutes, are inexplicable by any mechanical principles and laws. We have the same evidence in many cases of the sensibility of brutes which we have of that of mankind; and that they are also endowed with the powers of reflection and reasoning, as well as with sensation. If brutes were automata or machines, they could have no perception of pleasure or pain, and consequently no cruelty could be exercised towards them; which is contrary to the common sense and observation of mankind, and seemingly contrary to those declarations of scripture, which obviously intimate that they are the objects of severe

and of mild and merciful treatment. Prov. xii. 10. Ray's *Wisdom of God in the Creation*, p. 56.

The late professor Bergmann, in an ingenious treatise, written in German, and entitled "*Inauguralfrage, &c.*" or "*Researches designed to shew what the Brute Animals certainly are not, and, also, what they probably are, &c.*" 8vo. Mentz, 1785, has produced a variety of arguments in order to prove that brutes are not machines. But if they are not mere machines, what are they? manifestly sensitive beings, with an immaterial principle; and thinking, or reasoning beings to a *certain degree*. In certain classes of animals this appears evident to the professor, who seems to have observed, with great sagacity and attention, their various operations and proceedings, their ways and means, &c. He thinks it impossible to deduce this variety of action in any animals (if we except those of the lowest classes in the gradation of intelligence) from a general and uniform instinct: for they accommodate their operations to times and circumstances. They combine: they choose the favourable moment; they avail themselves of the occasion; and seem to receive instruction by experience. Many of their operations announce reflection; the bird repairs a shattered nest, instead of constructing, instinctively, a new one; the hen, who has been robbed of her eggs, changes her place, in order to lay the remainder with more security; the cat discovers both care and artifice in concealing her kittens. Again, it is evident that, on many occasions, animals know their faults and mistakes, and correct them: they sometimes contrive the most ingenious methods of obtaining their ends; and when one method fails, have recourse to another; and they have, without doubt, a kind of language for the mutual communication of their ideas. How is all this to be accounted for, (says Bergmann,) unless we suppose them endowed with the power of perceiving, thinking, remembering, comparing, and judging? They have these powers, indeed, in a degree, inferior to that in which they are possessed by the human species, and form classes below them in the graduated scale of intelligent beings. But though it seems to him unreasonable to exclude them from the place which the principles of sound philosophy, and facts ascertained by constant observation, assign to them in the great and diversified sphere of life, sensation, and intelligence; he does not, however, consider them as beings, whose actions are directed to *moral* ends, nor, consequently, as accountable and proper subjects for *reward* or *punishment* in a future world.

That brutes possess reflection and sentiment, and are susceptible of the kind as well as the irascible passions, independently of sexual attachment and natural affection, is evident from the numerous instances of affection and gratitude daily observable in different animals, particularly the dog. Of these, and other sentiments, such as pride, and even a sense of glory, the elephant exhibits proofs equally surprising and unquestionable; for which we refer to the article ELEPHANT. The brute creation manifests also a wonderful spirit of sociality, independent of sexual attachment. It is well known that horses, which are perfectly quiet in company, cannot be kept by any fences in a field by themselves; oxen and cows will not fatten by themselves, but neglect the finest pasture that is not recommended by society; sheep constantly flock together. Nor is a propensity to associate restricted to animals of the same kind and size. Instances to this purpose are enumerated in White's *Natural History of Selborne*, to which we refer the reader. From these instances we may conclude that Milton, when he puts the following sentiment in the mouth of Adam, seems to have been mistaken:

"Much less can bird with beast, or fish with fowl

So well converse, nor with the ox the ape."

Mr. Locke (*Essay*, vol. i. p. 120; 148.) maintains, that the souls of brutes are wholly material: that they do not possess the power of abstraction; and that the having of *general ideas* is that which puts a perfect distinction between men and brutes. Accordingly, he supposes that they have no use of words, or any general signs by which to express their ideas. It has, however, been a subject of dispute, whether brute animals have any language intelligible to one another. Some have pretended, that they have a kind of jargon, by which they can make a mutual communication of their sentiments; and Porphyry relates, that Tiresias and Apollonius Tyanæus understood this language. There is at least a similitude of speech in brutes; for they know each other by their voices, and have their signs whereby they express anger, joy, and other passions. Thus, a dog assaults in one strain, fawns in another, howls in another, and cries when beaten in another. To us, indeed, their speech, if it may be so called, appears rude and inarticulate; but perhaps ours, though understood by them, is the same in their ears. But if the voice of brutes be unintelligible to us, does not the same hold of the language of our own kind, till we have been instructed in it? And the language of foreigners, what is it but a confused unmeaning heap of sounds? Laughter, as the sign of mirth and joy, has been thought peculiar to men; and yet we see somewhat resembling it in brutes, signified by the motion of their ears, eyes, mouth, and tongues.

Dr. Hartley (see his *Observations of Man*, p. 239.) has investigated the intellectual faculties of brutes, and applied his theory of vibrations and association in accounting for the inferiority of brutes to mankind, with regard to intellectual capacities. He ascribes the difference subsisting between them to the following circumstances, which he has taken occasion to illustrate on the principles of his theory. The first of these is the small proportionate size of their brains, whence brutes have a far less variety of ideas and intellectual affections than men. The second cause of this difference is the imperfection of the matter of their brains, whereby it is less fitted for retaining a large number of miniatures, and combining them by association, than man's. The third cause is their want of words, and such like symbols; fourthly, the instinctive powers which they bring into the world with them, or which rise up from internal causes, as they advance towards adult age, is another cause of this difference; and, fifthly, it is partly owing to the difference between the external impressions made on the brute creation, and on mankind. This ingenious writer supposes, with Des Cartes, that all the motions of brutes are conducted by mere mechanism; yet he does not suppose them to be destitute of perception; but that they have this in a manner analogous to that which takes place in us; and that it is subjected to the same mechanical laws as the motions. He adds, that it ought always to be remembered, in speaking on this subject, that brutes have more reason than they can show, from their want of words, from our inattention, and from our ignorance of the import of those symbols, which they do use in giving intimations to one another, and to us.

"As brutes," says Dr. Priestley, (*Disquisitions on Matter and Spirit*, p. 238, &c.) "have the same external senses that we have, they have, of course, all the same inlets to ideas that we have; and though, on account of their wanting a sufficient *quantity of brain*, perhaps chiefly, the combination and association of their ideas cannot be so complex as ours, and therefore they cannot make so great a progress in intellectual improvements, they must necessarily have, *in kind*, every faculty that we are possessed of. Also, since they evidently have memory, passions, will, and judgment too, as their actions demonstrate, they must, of course, have the

faculty that we call *abstraction*, as well as the rest; though, not having the use of words, they cannot communicate their ideas to us. They must, at least, have a natural capacity for what is called *abstraction*; it being nothing more than a particular case of the *association of ideas*, of which, in general, they are certainly possessed as well as ourselves. Besides, if dogs had no general or abstract ideas, but only such as were appropriated to particular *individual objects*, they could never be taught to distinguish a *man* as such, a *hare* as such, or a *partridge* as such, &c. But their actions shew, that they may be trained to catch hares, set partridges, or *birds* in general, and even attack *men*, as well as to distinguish their own master, and the servants of the family in which they live. Whether brutes will survive the grave we cannot tell. This depends upon other considerations than their being capable of reason and reflection. If the resurrection be properly *miraculous*, and entirely out of all the established laws of nature, it will appear probable that brutes have no share in it; since we know of no declaration that God has made to that purpose, and they can have no expectation of any such thing. But if the resurrection be, in fact, *within the proper course of nature*, extensively considered, and consequently there be something remaining of every organized body that death does not destroy, there will be reason to conclude that they will be benefited by it as well as ourselves. And the great misery to which some of them are exposed in this life may incline us to think, that a merciful and just God will make them some recompence for it hereafter. He is *their* maker and father as well as *ours*. But with respect to this question, we have no sufficient *data* from which to argue, and therefore must acquiesce in our utter ignorance, satisfied that the maker and judge of all will do what is right."

It has been, till very lately, a general opinion in the Christian world, that the souls of brutes were wholly material, and therefore mortal. The great lord Bacon entertained this opinion. "*Anima sensibilis*," says he, "*five brutorum, planè substantia corporea censenda est.*" The celebrated anatomist Willis also professed the same. The sentiments of Malebranche seem to have coincided with those of Des Cartes; for he says, that they eat without pleasure, and cry without pain; that they fear nothing, know nothing; and if they act in such a manner as to indicate understanding, it is because God, having made them to preserve them, has formed their bodies so as mechanically to avoid whatever might hurt them. The learned Gale maintains at large (*Philosophia Generalis*, p. 323.) that the sensitive soul is corporeal; and the celebrated Dr. Cudworth has revived the long-explored notion of the *soul of the world*, from which the souls of brutes issue, and to which he supposes they return, without retaining their separate consciousness after death. However, in order to solve the difficulty respecting their state and that of mankind, he supposes the immortality of the soul not to follow necessarily from its immateriality, but from the appointment of God. But in accounting for the difference in the divine dispensations to them and us, he conceives them to be destitute of morality and liberty. Some speak, however, as if they held brutes to be moral beings, and under the obligation of the law of nature. Ulpian, and other civil lawyers, are supposed to be of this opinion; as also the Stoics, from whose school this tenet is said to have been first borrowed. It is alleged, on the other hand, that brutes *cannot* be subject to a law, unless they have a power of knowing him that made the law, judging whether we have a right to command them, and what is contained in the law, that they may direct themselves accordingly; which seem all to be things out of the reach of brutes. But Ulpian's definition of the law of nature, "*jus naturale est quod natura omnia animalia docuit*," when fairly

fairly interpreted, does not imply that brutes have reason and reflection, but may be understood of that natural instinct common to man and brutes, by which they are impelled to self-defence, propagation of their species, &c.

We shall close this article with briefly noticing the fanciful opinion of father Bougeant, who has laboured to prove, both from reason and scripture, that the spirits of brute creatures are devils. As so many guilty victims of divine vengeance, they are sentenced to endure a variety of evils. By nature, he says, they are extremely vicious; but God, by irrecoverably reprobating them, has, at the same time, divested them of their liberty, so that they can be no longer criminal: an hypothesis equally absurd in its principles and in its consequences.

BRUTIA, in *Entomology*, a species of *MUTILLA* that inhabits Calabria. Its character is thus described: colour black; thorax rufous; abdomen with six silvery white spots, and belt of the same. Petagn. Inf. Cal.

BRUTIA, in the *Medical Writings of the Ancients*, a term used to denote the fattest and most resinous kinds of pitch, and such as was the most proper for making the oil of pitch, called "*oleum picinum*." The term is derived from *Brutia*, or *Brutium*, the name of the country where it was produced. Plin. N. H. l. xv. c. 7.

BRUTIAN FOREST, in *Ancient Geography*, now called *La Sila*, an extensive forest of Brutium or Calabria, which covered a surface of 200 miles in circumference; and from which Hiero, king of Syracuse, and after him the Romans, drew their masts and other timber for shipping. The same forest is still covered with large woods of pines or firs; but from these extensive woods little benefit is derived, except in turpentine and fuel.

BRUTTIUM, one of the two peninsulas of that part of Italy, anciently known by the name of *Magna Græcia*, which extended to the straits that separated Sicily from Italy; the other peninsula being called Calabria. Part of it towards the north is now distinguished by the appellation of Calabria Citra, and the more southerly part is denominated Calabria Ultra. It was inhabited by the Brutii, who were slaves of Lucania, that had revolted from their masters, taken up arms, and rendered themselves independent. Some derive their name from a Lucanian term, denoting "Rebels;" but others with greater probability seek the etymology of their name in the nature and productions of their soil. Accordingly, as most of their trees were resinous, they find in the oriental term "*Brata*," or, as the Syrians write it, "*Bruta*," the origin of the appellation Brutii. Calabria, it is likewise alleged, has a similar derivation from "*Calab*," signifying pitch or resin. Their principal rivers were, on the west, *Lamatis* and *Metaurus*, and on the east, *Cæcinius*, *Targines*, *Neoethur*, and *Cantis*. Their chief towns, in the west, from north to south, were *Pandesia*, *Conventia*, *Hipponium*, and *Rhegium*; and on the east, from south to north, *Locri*, *Scyllacium*, *Croton*, *Petilia*, and *Rosicium*. The "*Brutium promontorium*" was that promontory since called "*Cabo de Scilio*."

BRUTO, JOHN-MICHAEL, in *Biography*, a polite Italian scholar, was born at Venice about the year 1515; and in the course of his vagrant life, he resided for some time at Padua, afterwards visited Florence, Lucca, and other Italian cities, passed some years at Lyons in France, and travelled into England and Spain. In 1574 he accepted an invitation from Stephen Battori, prince of Transylvania, by whom he was employed in writing the history of that country; and after his advancement to the crown of Poland, accompanied him to Cracow. On the death of this prince, he removed to Vienna, and became historiographer to the em-

peror Rodolph II. He closed a wandering life, in the course of which, notwithstanding the patronage he enjoyed, he never rose above indigence, in Transylvania, in 1594. As a writer, he had the reputation of learning and merit; and, though he contemned the affectation of the Ciceronians, his Latinity was pure and elegant. His critical works comprised notes on Horace, Cæsar, and Cicero; but his historical writings are the most valuable. His Florentine history, extending to the death of Lorenzo de Medici, is considered as one of the finest monuments of the age. It was printed at Lyons in 1562, under the title of "*Florentine Historiæ, libri viii. priores*." As it was conformable to the political conduct of the house of Medici, it was industriously suppressed, and few copies of it now remain. His elegant tract "*De Origine Venetiarum*," his treatise "*De Institutione Italie*," and his "*History of Hungary*," are preserved in the imperial library at Vienna. Of his smaller printed works, comprising orations, Latin letters, and two treatises, one on the manner of studying history, and the other containing conjugal precepts, a new edition was printed at Berlin in 1698, 8vo. Bayle. Tiraboschi.

BRUTOBRIA, or **BRUTOFOLIS**, in *Ancient Geography*, a town of Spain, in Bætica, situate between the river Bætis, and the country of the Tyritani or Turditani. Steph. Byz.

BRUTON, or **BREWTON**, in *Geography*, is a pleasant, well-built market-town in Somersetshire, England, situated 113 miles W. from London, and 12 S. from Frome, at the western extremity of the forest of Selwood, and takes its name from the river Brew or Brue, which, rising in that forest, passes through the town in its way to Glastonbury. The surrounding scenery is extremely interesting: the vales are meadows, the declivities orchards, and the eminences sheep-walks. The manor was once the property of sir Maurice Berkeley, whose younger son John, as a reward for his services to the royal cause, was created by Charles II. lord Berkeley of Stratton. The title became extinct in 1772, and the manor is now in the possession of sir Richard Colt Hoare, bart. of Stourhead in Wiltshire. On this site was anciently an abbey, founded by St. Algar, earl of Cornwall. The town consists principally of five streets, in the centre of which is the market-place, where, till lately, stood a curious old hexagonal market cross, supported by six pillars at the angles, and a larger one in the centre. The roof consisted wholly of the ribs of arches, which diverged from pillar to pillar, and were finely ornamented with sculpture. This edifice was eighteen feet high, the top flat, and encompassed with a stone ballustrade; it was built, as Ieland informs us, by John Ely, the last abbot of Brewton. The market is on Saturday. In the High-street is a market-house, built by a subscription of the farmers who frequented this market, upon land given them for that purpose by Hugh Saxey, esq. who, from a low station, was advanced to the post of auditor to queen Elizabeth. He died in 1620, possessed of several manors and estates in the counties of Somerset and Gloucester; which, in conformity to his intention, were settled in 1638 on twelve gentlemen of the county, for the erection and endowment of an hospital here for the maintenance of old men, women, and boys. The number now supported are eight men, ten women, and twelve boys; the latter are boarded, educated, and apprenticed; and the aged are comfortably provided for. The annual income belonging to this charity is about 2500*l*. In the court of the hospital is a statue of the founder, with this inscription:—"Hugh Saxey, Esq. founder of this hospital, auditor to queen Elizabeth, and king James." There is also a free-school in the town, instituted by king Ed-

ward VI. and endowed by bishop Fitzjames, and his brother sir John, lord chief justice. Bruton consists of 333 houses, containing 1631 inhabitants, the greater part of whom are employed in agriculture: for though Leland tells us, that in his time, "Brewton was much occupied with making of clothe," yet at present the only manufacture is a little hosiery, and silk reeling, at the latter of which three or four hundred young persons are employed. The church, dedicated to St. Mary, is a large structure, and has two quadrangular towers, one occupying the west end, and the other rising from one side of the north aisle. The latter seems to have been the original tower, but the former is the handsomest. The interior of the church is well ornamented, and contains a great number of monuments. Collinson's History of Somersetshire, vol. i. 4to. Maton's Tour through the Western Counties, vol. ii. 8vo.

BRUTUS, or BRUTE, in *Biography*, the first king of Britain, according to the fabulous relation of Jeffry or Geoffrey of Monmouth. See BRITAIN.

BRUTUS, LUCIUS JUNIUS, the founder of the Roman republic, was the son of Marcus Junius, a wealthy patrician, who had married the daughter of Tarquin the Proud, with whom terminated the race of kings at Rome. The father and brother of Brutus were assassinated by order of this tyrant at the beginning of his reign; and Brutus himself escaped by feigning idiotism, whence it is said the name of "Brutus" was derived. Under this character he was admitted into the royal palace, brought up with the king's sons, and regarded merely as the object of their diversion. On occasion of a plague which broke out at Rome, Tarquin sent his sons to consult the oracle of Delphi as to the cause and cure of the contagion; and Brutus also was ordered to accompany them for their amusement. The princes prepared magnificent presents for Apollo; but their companion is said to have offered to the god an elder stick, enclosing a rod of gold, and serving as an emblem of himself. It is further reported, that when the princes made an inquiry, which of them should be king of Rome, the oracle replied, that the government should be reserved for him who should first kiss his mother; and that they, interpreting this answer literally, agreed to kiss their mother at the same time, and to reign jointly. But Brutus, interpreting the response of the oracle allegorically, fell down upon the earth, after his return to Italy, and kissed it, as the common mother of all mankind. Whatever may be thought of this story, it is certain that the tragical death of Lucretia (see LUCRETIA) roused the dormant and disguised spirit of Brutus; and that, having snatched the poignard out of her bosom, he vowed vengeance on the aggressors, and excited her relations to concur with him in retaliating on Tarquin and his family the dishonour she had suffered, and the lamentable event in which it had terminated. Accordingly they all bound themselves by a solemn oath to execute their purpose, and agreed to follow the counsel and example of Brutus, who seemed now, by a kind of extraordinary inspiration, to have recovered his faculties, and to possess talents, which had hitherto been concealed, fit for conducting their deliberations, and securing their prosperous issue. The gates were immediately shut, the senate was assembled, and a public decree was proposed and carried for banishing the king, annihilating the royal form of government, and establishing a commonwealth. Brutus, and Collatinus, the husband of Lucretia, were elected as the first chief magistrates of the state, under the denomination of "consuls;" an important change in the constitution of the Roman government, which took place in the year of Rome 245, B.C. 509. This change, so hastily concerted and accomplished, although it

had obtained the concurrence of the senate, and of the people, excited an alarm amongst those who were attached to the old constitution, and particularly among the young nobility, who were zealous partizans of the dethroned and expelled sovereign. In the number of the malcontents, were the two sons of Brutus, and three nephews of Collatinus. These were active in the conspiracy formed against the new government; and they concurred with others in binding themselves by a very solemn oath to murder the consuls, and to re-establish monarchy. Whilst they were concerting measures for this purpose, the plot was disclosed by a slave to P. Valerius, a patriotic senator, and orders were issued for apprehending them. When the sons of Brutus, venerated by the people as their deliverer, appeared before the consular tribunal, the attendant multitude was seized with a general panic; and as soon as they were convicted of the crime alleged against them, the senators, in a kind of confused murmur, expressed their anxiety and wishes, by uttering the words, "Banish them! banish them!" Collatinus wept, and the stern patriot Valerius was silent. But the father, sacrificing private feelings to the public good, and apprized of the necessity of suppressing rebellion by an awful example of punishment, with a steady countenance, and firm tone of voice, gave orders to the lictors to execute the law on his sons. The distress of the assembled multitude on this solemn occasion was such as no words can describe; mournful looks and secret groans pleaded for pity; and when the consul seemed to pay no regard to their anxiety and tears, they loudly remonstrated, and exclaimed with one voice, "We give them back to their country, and to their family." Neither the intercessions of the people, nor the suppliant cries of the criminals, could alter the fixed purpose of Brutus, who witnessed the execution of the sentence; and having seen them stripped, beaten with rods, and beheaded, retired from the tribunal, to indulge, without doubt, those parental feelings which the necessity of the times had induced him to disguise and restrain. Of his conduct on this occasion very different sentiments have been entertained. Whilst some have extolled, others have condemned it. But to the judgment of sober reason, it exhibits a noble example of the triumph of public virtue over private affections; and the display of it required that sternness of temper, and those peculiar ideas of the extent of parental authority, which seem to have characterized this ancient Roman. Collatinus was more flexible; and he wished to spare his nephews, and to suppress the evidence which the slave Vindicius had adduced against them. The zeal of Valerius was roused; and whilst the people were tumultuous, Brutus returned, and having again ascended the tribunal, justified his own conduct, but referred the fate of the other criminals to the decision of the people, who concurred in condemning them, and ordering them for execution. Collatinus, however, accused by Brutus for his weakness, and want of patriotism, was obliged to renounce his authority, and to retire to Lavinium, where he lived privately to an advanced age. Upon his removal, Brutus, in order to obviate every suspicion that it was his intention to govern singly, convoked the people by centuries in the Campus Martius, for the election of a new consul; and Valerius, afterwards known by the name of "Poplicola," whose meritorious conduct in the disclosure of the conspiracy has been already mentioned, was chosen to supply the vacancy. Some difference occurs in the relation of these events by Dionysius of Halicarnassus, Livy, and Plutarch; but they all agree in the principal fact, respecting the conduct of Brutus towards his sons. During the consulate of Brutus and Valerius, Tarquin and his partizans made some vigorous

vigorous efforts for regaining the throne of Rome; and, joined by the Veientes, the avowed enemies of the Romans, they advanced towards the city. But they were met by the consuls at the head of the Roman forces; the command of the horse being assumed by Brutus, and that of the infantry by Valerius; the horse of the enemy, commanded by Arunx, one of Tarquin's sons, came forward to the charge; and as the hostile armies approached each other, Arunx discovered Brutus attended by his liegions; and inflamed with resentment, he exclaimed, "There is the enemy of my family, the usurper of my father's throne." He then immediately advanced to a personal encounter, and Brutus flew to meet him. Actuated by passion, more than by cool courage, these two champions, neglecting the means of personal defence, transixed each other with their spears, and at the same instant fell dead from their horses. This happened in the year B. C. 509. The conflict thus commenced, terminated in a victory on the part of the Romans; and, as soon as it was decided, Valerius buried his colleague Brutus with great pomp, and gave Rome the first example of those funeral orations, which it was afterwards customary to pronounce in commendation of their great men. The Roman matrons distinguished themselves on this occasion; for, regarding Brutus as the avenger of the honour of their sex, they mourned for him a whole year; and his statue was afterwards erected in the capitol, with a naked sword in his hand. The Romans venerated his memory, as that of the second founder of their city, who had restored liberty to their country, cemented it by the blood of his own sons, and died in defending it against an usurper; and they considered him as having undergone more hardships and dangers in establishing the commonwealth, than Romulus had done in first founding the kingdom. Virgil has nobly sketched his history and praise in the following lines:

"*Consulis imperium hic primus lævæque secures
Accipiet: natosque pater, nova bella moventes,
Ad pœnam pulchra pro libertate vocabit.
Infelix! utcumque ferent ea facta minores;
Vincit amor patriæ, laudumque immanis cupido.*"

Æn. VI. 820.

"He first shall hold the consul's sway, and wield
The dreaded axes; he, a Roman fire,
For thee, fair Liberty! his rebel sons
Shall doom to public death. Unhappy man!
How'er posterity the deed may judge,
His country's love, and boundless thirst of praise,
Shall quell the father."

Dionys. Halic. lib. iv. and v. Livy, lib. i. and ii. Plut., in Poplicol. apud Op. T. i. p. 97, &c.

BRUTUS, MARCUS JUNIUS, an illustrious Roman, derived his name and descent, as some have said, as well as his spirit, from L. J. Brutus, the subject of the preceding article. Cicero records this line of his descent, both in his speeches and writings as a fact which was not doubted by any; and he often speaks of the "image of old Brutus," which Marcus kept in his house among those of his ancestors; and Atticus, who was peculiarly curious in the antiquities of the Roman families, drew up Brutus's genealogy for him; and deduced his succession from that ancient hero, in a direct line, through all the intermediate ages from father to son. Plutarch also, on the authority of Posidonius the philosopher, was of the same opinion. Other ancient writers, however, and particularly Dionysius of Halicarnassus, allege several arguments against this descent, which seem to be very plausible; and they say that the family of the patriot was extinct in the execution of his two sons. However this be, M. J. Brutus was the son of a senator of the same name, who belonged to

the party of Marius, and who was put to death for his severities by Pompey at the surrender of Mutina. His mother was Servilia, the sister of Cato, who disgraced herself by her connection with Cæsar, which gave rise to the opinion that Brutus was his natural son. But as he was born in the consulship of L. Cornelius Cinna III. and Cn. Papirius Carbo I. A. U. 668, he was no more than 15 years younger than Cæsar himself; and this circumstance fully confutes the vulgar story of his being commonly believed to be Cæsar's son. As Brutus lost his father, when he was young, the care of his education devolved on his uncle Cato: under whose direction it was conducted on that liberal plan which prevailed among Romans of distinction, after their connection with Greece. He studied the language and philosophy of that country; and he acquired, by means of his natural talents and sedulous application, a distinguished reputation for eloquence. At the bar and in private assemblies his rhetorical powers were exercised; he pleaded several causes of great importance, and he was allowed to be the most eloquent and learned of all the young men of rank and family at the period in which he lived. His manner of speaking was correct, elegant, and judicious; though he wanted that force and copiousness which are required in a consummate orator. But he was principally delighted with the study of philosophy, in which, though he professed himself a disciple of the moderate sect of the old academy, he nevertheless, from a certain pride and gravity of temper, and from a deference to the example of Cato, affected the severity of the Stoic. His disposition, however, which was mild, gentle, and compassionate, was incompatible with this system; and he was often constrained, by the tenderness of his nature, to confute the rigour of his principles. On the doctrines of the philosophy which he had adopted, he wrote some treatises, and he transfused both the language and sentiments of his sect into Latin. His accomplishments as a scholar and an orator are sufficiently attested by Cicero, who has done him the honour of introducing him as one of his speakers in his dialogue "De Claris Oratoribus," and addressed to him his treatise entitled "Orator." Attached to Cato from his youth, he imbibed, under his discipline, an ardent love of liberty and virtue: and having accompanied him in his expedition to Cyprus, where he was employed by his uncle, after the unhappy end of its king, Ptolemy, in securing the royal treasures for the public. This commission he executed to the satisfaction of his uncle; and by marrying his daughter Portia, he formed a closer alliance with this venerable patriot, and was led to make him the model of his public conduct. Accordingly, after his example, when the civil war broke out between Cæsar and Pompey, he joined the party of the latter; although he had reason to resent his conduct for the murder of his father; and Cæsar's familiarity with his mother induced him to manifest a partiality in favour of her son. At the battle of Pharsalia, in which Brutus was engaged on the side of Pompey, Cæsar gave special orders to find out and preserve him unhurt; and after this battle, which terminated the republic, he surrendered himself to Cæsar, who rejoiced in his safety, and immediately received him into favour, testifying his regard for him by pardoning his friend Cassius at his intercession. Cæsar entrusted him with the government of Cisalpine Gaul, and afterwards nominated him pretor of Rome. Notwithstanding the gratitude and respect he was thus induced to entertain for Cæsar, he was alarmed by his usurped dominion, and a view of the degraded state into which his country was reduced by the violation of the laws and constitution, excited a disgust which no favours could compensate. At the same time, Cassius, who had married his sister, was assiduous in endeavouring

BRUTUS.

pouring to kindle the flame of patriotism in his breast. He caused the name of his supposed ancestor, Junius Brutus, to be sounded in his ears; and led him to believe that the Romans expected his assuming the hereditary office of refusing them from a tyrant. These arguments at length prevailed, and Brutus agreed to take the lead in a conspiracy against Cæsar's life. His character induced several other eminent citizens to join in the design; and they resolved to execute it on the ides of March (March 15) A. U. 710, B. C. 44. It is said, that when Cæsar saw his beloved Brutus among the conspirators, with his dagger drawn against him, he desisted from any farther self-defence, wrapped his head in his mantle and surrendered himself to his fate. Averse from needless effusion of blood, Brutus, by impolitic forbearance, permitted Antony to escape; and by readiness to acquiesce in the reading of Cæsar's will, and by the pompous solemnities of his funeral, he furnished Antony with a pretence for exciting in the minds of the people a reverence for his memory, and a detestation against his murderers; in consequence of which he and his party were obliged to secure their lives by retiring from Rome to Antium. Afterwards, when Octavianus joined Antony, and they concurred in assuming the sovereign power, he and his faithful Portia quitted Italy and set sail for Athens. Here, at convenient intervals, he renewed the prosecution of his philosophical studies; whilst at the same time he secretly prepared for war, and sent a messenger to Macedonia, to engage the Romans of that province in the party of the republic, and to facilitate his admission into it, as governor for the senate. Having obtained a complete supply of men, arms, and money, he marched into Macedonia; and gained possession of the army, and of the person of Caius, the brother of Antony, who had been deputed to seize Dyrrachium and Apollonia.

When Octavianus became sole master of Rome, he proceeded to the condemnation of all who had been concerned in the murder of his adopted father; and the names of Brutus and Cassius were inserted, much to the regret and grief of the people, in the bloody roll of proscription. They, however, were at this time in the command of powerful armies, which speedily formed a junction at Smyrna. Having performed some separate services in the subjugation of those maritime powers, the Rhodians and Lydians, they met again at Sardis; and determined to direct their march to the straits of Hellepont, in order to pass over into Europe, for the purpose of opposing the progress of Antony and Octavianus, who had now arrived at Macedon. It was in the course of this march that the frightful apparition, recorded by Plutarch and other historians, presented itself to Brutus, and which, under the appellation of his evil genius, announced another visit to him at Philippi. Cassius ascribes this phenomenon to the illusion of a troubled imagination, under the influence of anxiety and bodily fatigue; and if it be any thing more than an idle fabrication, to this cause it may be reasonably attributed. On the plains of Philippi the two hostile armies assembled for the decision of the interesting contest. Brutus and Cassius having settled their plan of conduct, if the issue of this conflict should prove unfavourable, they prepared for action. In the first battle Brutus defeated Octavianus, but in the ardour of the contest he left Cassius unsupported, and thus occasioned his defeat and death. This event he grievously deplored, and shedding many tears over the body of his friend, bewailed the loss of him under the honourable appellation of "the last of the Romans." He had now the sole command of a numerous and mutinous army; which compelled him to risk another engagement, having first put to death all the slaves

whom he had made prisoners, and having promised to his soldiers, in case of victory, the pillage of Theſſalonica and Lacedæmon. In the second battle the wing which he commanded routed that of Octavianus, whilst Antony defeated the other committed to the conduct of Cassius's lieutenant. But, instead of pursuing this advantage by following the fugitives, this experienced general availed himself of it by turning round on the rear of Brutus, and entirely breaking and dispersing his troops. Brutus having escaped being made prisoner by the heroic friendship of Lucilius, who surrendered himself under the name of Brutus, and who was generously saved by Antony after the discovery of the fraud, fled with a few friends to a retired valley, where he spent an anxious night. With the returning dawn, he perceived that he was surrounded by the enemy, and conjured some of his domestics to put an end to his life. Upon their refusal, he dismissed them with a request that they would provide for their own safety; and he then renewed his application to Strato, an Epirote, and his former fellow student; but Strato persisted in his denial, till Brutus called upon a slave to perform the fatal office. Upon this the generous Greek exclaimed, "Forbid it, Gods, that it should ever be said, that Brutus died by the hand of a slave for want of a friend!" and covering his face with his left hand, presented with his right his sword, upon which Brutus threw himself with such violence that it pierced through his body, and he instantly expired. Thus perished, in the 43d year of his age, according to Cicero, but in the 37th according to Velleius Paterculus, one of the most irreproachable characters in Roman history; according to Blair's table, A. U. 712, B. C. 42.

To his generosity, humanity, uprightness, and well-principled virtue, public and private, writers of all parties have borne testimony; and those who have condemned the act of assassinating Cæsar, have ascribed it, on the part of Brutus, to patriotic motives. Indeed, Antony himself did him the justice to say, that he "was the only one of the conspiracy who entered into it out of principle; that the rest, from private malice, rose up against the man, he alone against the tyrant." No man in public life seems to have set up virtue more sincerely as the object of his veneration and pursuit than Brutus; and it does not, therefore, seem probable, that according to the report of some writers, his last speech should be a confession of error in having followed an empty name. "His memory," says one of his biographers, "was cherished and honoured as long as a spark of Roman spirit survived the loss of constitutional freedom; and the names of Brutus and liberty are to this day inseparably associated." His body was treated with respect by Antony; but the vindictive Octavianus caused the head to be cut off, in order to expose it at the feet of Cæsar's statue. But his destination was defeated, as it was thrown over-board in a storm. The remains were honourably burnt by order of Antony, and the ashes sent in an urn to Servilia. Plutarch's Brutus, apud Op. t. i. p. 984. Middleton's Life of Cicero, vol. ii. p. 226. Anc. Un. Hist. vol. xi. and xii.

BRUTUS, in *Entomology*, a species of *PAPILIO* (*Eq. Achiv.*) The wings are white with a black border; on the lower pair beneath, a fuscous band. This inhabits Africa; it is a large and rare insect. Cramer describes a variety of it under the name of *Merope*.

BRUTUS, in *Geography*, a military township of America, in New York, through which runs the river Seneca, and where it receives the waters of Owaseo lake, passing from the south-east through the towns of Aurelius and Scipio. It lies 11 miles N. E. from the north end of Cayuga lake, and 19 S. S. E. from lake Ontario.

BRUTZ,

BRUTZ, a town of France, in the department of the Ille and Vilaine, and district of Redon, 2 leagues south of Rennes.

BRUX. See **MOÏR**.

BRUYE, or **BUGA**, an island in the bay of Bengal, near the mouth of the river Ava, about 8 leagues long and 3 broad. N. lat. $16^{\circ} 15'$. E. long. $97^{\circ} 37'$.

BRUYERE, **JOHN DE LA**, in *Biography*, a French writer of reputation, was born, in 1640, in the Ille of France, and, at a proper age, recommended by Bossuet to instruct the duke of Burgundy in history. The residue of his life was passed at court, where he maintained the character of a man of letters; philosophical and unambitious in his temper, as well as polite and unaffected in his manners, uniting the gaiety and social disposition of the well bred gentleman with the studious habits of the scholar. In 1693 he was admitted into the French Academy; and, in 1696, a fit of apoplexy terminated his life. His work, entitled "Characters of Theophrastus, translated from the Greek, with the Characters or Manners of this Age," was first published in 1687, and has been several times reprinted. In this work, of which Malezieux predicted that "it would gain many readers and many enemies," the author has had the honour of participating with Moliere in the correction of more follies and indecours than perhaps any other moralist, ancient or modern. The pencil with which he pictured modern characters and manners is strong but delicate; his style nervous but abrupt, occasionally obscure, and affectedly sententious. The maxims of Publius Syrus are almost wholly transplanted into his works. Keys were made of his characters, for the court, the capital, and the provinces; and his book, by means of its success, produced many imitations. The best editions of the "Characters" are those of Amsterdam in 1741, and of Paris in 1750 and 1765. The author's "Dialogues on Quietism" were arranged for publication by M. Du Pin, and printed in 1699. *Nouv. Dict. Hist.*

BRUYERES, in *Geography*, a town of France, in the department of Vosges, and chief place of a canton, in the district of Epinal, and 11 miles E. of it. The town contains 1911 and the canton 12,435 inhabitants: the territory includes 210 kilometres, and 32 communes.

BRUYERES SOUS LAON, a town of France, in the department of the Aisne, and district of Laon, 1 league S.S.E. of Laon.

BRUYN, **CORNELIUS LE**, in *Biography*, a traveller and painter, was born at the Hague, and having commenced his travels through Muscovy, Persia, the Levant, and the East Indies, in 1674, completed them in 1708. His "Voyage to the Levant" was published at Amsterdam in 1714, folio, and his "Travels to Muscovy, Persia, &c." in 1718, in 2 vols. fol.; an edition much esteemed for the beauty of its plates, but exceeded in value by that of Rouen in 1725, in 5 vols. 4to. on account of the corrections and notes of the Abbé Banier. As a traveller, Bruyn is curious and instructive, but his style is inelegant, and his facts sometimes inaccurate. *Nouv. Dict. Hist.*

BRUYN SWICK, in *Geography*, a plantation of America, in Ulster county, New York.

BRUYS, **PETER DE**, in *Biography*. See **PETROBRUSIANS**.

BRUZEN DE LA MARTINIERE, **ANTONY-AUGUSTIN**, an industrious compiler, was born at Dieppe in 1666, and educated at Paris, under the care of his uncle, the celebrated Richard Simon. In 1709 he was employed, by the duke of Mecklenburgh, marchioness into the history of that duchy, and afterwards attached to the duke of

Parma, and to the king of the Two Sicilies, who appointed him his secretary with a handsome salary. Upon his retirement to the Hague, he completed his "New Geographical Dictionary," which was dedicated to the king of Spain, and recompensed by the title conferred upon him by that monarch, of his first geographer. After a life of study and labour, as well as of social intercourse and pleasure, suited to his friendly disposition and polite manners, he died at the Hague in 1749. His reading was extensive, and he wrote with judgment, facility, and generally with elegance. His favourite studies were geography, history, and polite literature. The most valuable of his numerous works are "The great Geographical, Historical, and Critical Dictionary," 10 vols. fol. Hague, 1726 to 1730, and Paris, 1768, 6 vols. fol.; "Puffendorff's Introduction to the History of Europe, greatly augmented and corrected," of which the last edition is that of the Hague, in 11 vols. 12mo; "Geographical and Historical Treatises to facilitate the Knowledge of the Holy Scriptures, by various celebrated Authors, Huet, Le Grand, Calmet, Hardouin, &c." 2 vols. 12mo. 1730; and "Select Letters of M. Simon," with a life of the author and curious notes, Amst. 4 vols. 12mo. *Nouv. Dict. Hist.*

BRYA, in *Botany*, (*Brown Jam.*) See **AMERINUM EBENUS**.

BRYAN, in *Geography*, a county of America, in Georgia, adjoining Chatham county on the west and southwest. It contains 2836 inhabitants, of whom 2306 are slaves.

BRYANT, **JACOB**, in *Biography, the son of a Custom-house officer at Plymouth, was, for the honour of Devonshire, born there; though he has been represented by some as a native of Kent, from the circumstance of his father's being transferred to that county whilst himself was a child.*

Placed upon the foundation of Eton college he was early distinguished for classical attainments; and the high reputation with which he entered King's served as an incentive to his future exertions. Succeeding at the ordinary period to a fellowship in that college, he continued its ornament till nearly the end of the century, and the boast of both institutions to the close of his life. Having devoted himself early to habitual study, he persevered with but few interruptions; and these are to be considered as referring rather to a change of subject, than a breaking off from his ordinary pursuits; for during his secretaryship to the duke of Marlborough and the Board of Ordnance, he availed himself of the opportunities which his employments afforded for rendering his knowledge in modern tactics subservient to that of the ancients. As he attended the father in the capacity of secretary during his military commands, so he accompanied the son to the seat of the Muses; and, in the office of private instructor, superintended the studies while at Eton of the present duke of Marlborough, as well as those of his brother lord Charles. Devoting himself to a life of literature, his diligence was unremitting in his favourite pursuit, and the effects of it were consecrated to the best purposes of learning and religion.

The first work which he formally published was "Observations and Enquiries relating to various parts of ancient History, containing Dissertations on the Wind Euroclydon, and on the Island Melite; together with an Account of Egypt in its most early State, and of the Shepherd Kings, 1767." Those who knew Mr. Bryant formed considerable expectations from his acknowledged reputation, when this volume was announced; nor were they disappointed on its appearance. The opinion entertained of his learning was confirmed by it, and the ingenuity displayed in it acquired him considerable commendation.

His next communication to the public, and the work on which his character as a scholar must ultimately rest, was his "New System, or Analysis of Ancient Mythology; wherein an Attempt is made to divest Tradition of Fable, and to reduce Truth to its original Purity." Of this publication the *first* and *second* volumes came forth together, in 1774, and the *third* followed two years after. It being his professed design to present a history of the Babylonians, Chaldeans, Egyptians, Canaanites, Helladians, Ionians, Leleges, Dorians, Pelasgi, and other ancient nations, his researches for this purpose were not only of necessity recon-dite, but in many instances uncertain; but to facilitate his passage through the mighty labyrinth which led to his primary object, he not only availed himself of the scattered fragments of ancient history wherever he could find them, but also of a variety of etymological aids; for being persuaded that the human race were the offspring of one stock, and conceiving thence that their language in the beginning was one, this favourite notion was exemplified by him in the investigation of radical terms, and applying these as collateral aids. Considering that his knowledge of the Oriental dialects was very confined, it is to be lamented that upon some occasions he has indulged too freely to fancy; yet thus much must be confessed, that his defects in this kind of learning form a strong plea in his favour; for if, without understanding these languages, he has succeeded in tracing out so many radicals as his table of them exhibits, and more especially if he has been right in explaining them, it will follow that his explanations must be founded on truth, and therefore are not chimerical. In opposition, however to them, Mr. Bryant experienced some severe and petulant attacks: first, from a learned Dutchman, in a Latin review of his work; and shortly after from the late Mr. Richardson, who was privately assisted by sir William Jones; a circumstance which there is reason to think Mr. Bryant never knew.

To their strictures Mr. Bryant replied in an anonymous pamphlet, of which he printed a few copies for the perusal of his friends, but never professedly published. It is hoped, however, that, in the next edition of his Mythology, this tract will be added, as it is among the best of his works.

Amongst other parts of the Mythology which were attacked with asperity, that which relates to the Apamean medal was severely assailed. Mr. Bryant defended himself in a separate publication (which also should be subjoined to the new edition); and though what he offered on the subject was lightly treated by some, who highly appreciated their knowledge of medals, yet the opinion of professor Eckhel, the first medalist of his age, has decided on the controversy in favour of Mr. Bryant.

Whatever may be the merit, in the opinion of the learned, of Mr. Bryant's *New System* at large, no person can possibly dispute, that a very uncommon store of learning is perceptible through the whole; that it abounds with great originality of conception, much perspicacious elucidation, and the most happy explanations on topics of the highest importance: in a word, that it stands forward amongst the first works of its age.

About this time the *Vindiciæ Flavianæ*, a tract on the much disputed testimony of Josephus to Christ, was printed, and a few copies sent to a bookseller in either university; but as the pamphlet appeared without the name of its author, and no attention was shewed it, Mr. Bryant recalled them, and satisfied himself with distributing the copies thus returned amongst a few particular friends. The new light, however, which Mr. Bryant threw upon the subject, and the acuteness with which the difficulties attending it

were discussed, soon caused the *Vindiciæ* to be known, and at length to be published with his name.

Dr. Priestley having, by his statement of the doctrine of philosophical necessity in a less exceptionable point of view than that in which it had been heretofore seen, attracted attention to the subject. Mr. Bryant was alarmed at the pernicious tendency, as he conceived, of the doctrine; and with the design of checking its advancement, addressed the doctor on the subject. But whatever impression this address might have produced on other readers, it certainly left his antagonist unconvinced; which, however, was not the case in a former instance, for Dr. Priestley liberally confessed that, in respect to the testimony of Josephus concerning our Saviour, Mr. Bryant had made him completely a convert.

The poems attributed to Rowley having been published by Mr. Tyrwhitt, Mr. Bryant's attention was next drawn to them. From the communications of his friend Dr. Glynn, and his own enquiries at Bristol, Mr. Bryant having acquired such information as convinced him, that they had their foundation in reality, and were not entirely of Chatterton's fabrication, embarked in the contest; but though he failed to produce conviction in several particulars, his book discovers considerable talent, as well as much knowledge of English antiquities and literature, and abounds with arguments which cannot be repelled.

The hypothesis of Mr. Bryant in reference to the original language was always kept in view by him, and as researches were extended on all sides to obtain elucidations, the language of the gypsies engaged his attention; accordingly the collections which he made from it, were published in the *Archæologia*, vol. vii.

His next production, but which still remains unpublished, was an illustration in Latin of gems in the possession of the duke of Marlborough, engraved for his Grace by Bartolozzi. Of this magnificent work Mr. Bryant's observations formed the text of the first volume, that of the second was written by Dr. Cole, prebendary of Westminster.

The friendship which subsisted between Mr. Bryant and the family of his patron, prompted him on all occasions to subserve their wishes, and to this disposition are the public indebted for his *Treatise on the Authenticity of the Scriptures* and the *Truth of the Christian Religion*, which was written to gratify the dowager lady Pembroke, and is an excellent book for popular instruction.

In two years after (for the treatise just mentioned appeared in 1792) the world were obliged by a large volume, entitled "Observations upon the Plagues inflicted upon the Egyptians; in which is shewn the Peculiarity of those Judgments, and their Correspondence with the Rites and Idolatry of that People; with a Prefatory Discourse concerning the Grecian Colonies from Egypt." This is certainly to be reckoned amongst Mr. Bryant's best performances, and as such will be studiously read.

Professor Dalzel having communicated to the Royal Society of Edinburgh, and afterwards published in a separate volume, M. le Chevalier's "Description of the Plain of Troy," Mr. Bryant, who many years before had not only considered, but written his sentiments on the Trojan war, first published his observations on M. le Chevalier's treatise, and afterwards a dissertation concerning the war itself, and the expedition of the Grecians as described by Homer; with the view of shewing that no such expedition was ever undertaken, and that no such city in Phrygia existed. (The elegant treatise of Mr. Wood on the genius and writings of Homer, was edited, for his deceased friend, by Mr. Bryant.)

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The clamour excited by these pamphlets almost exceeded belief. The author was attacked in all companies without mercy, and even by men from the press, who should have thought more soberly, for having indulged so excessive a scepticism, as could not, in its most direct effects, but be pernicious to the cause of divine revelation. Such censures, however, when duly weighed, could be disgraceful only to their authors, whose want of temper, or of judgment, rendered them unable to discriminate.

Amongst Mr. Bryant's principal opponents were Mr. Gilbert Wakefield, Mr. Morrit, and Dr. Vincent: but though the champions for the war strenuously assailed their antagonist, several of Mr. Bryant's objections remain as yet unanswered.

In the following year Mr. Bryant submitted to the public a work of a different kind and character, under the title of "The Sentiments of Philo Judæus concerning the APOCALYPSE, or Word of God, together with large Extracts from his Writings, compared with the Scriptures in many other particular and essential Doctrines of the Christian Religion." But, learned and curious as this treatise unquestionably is, it appears to have interited the general reader less perhaps than any of his other productions. In addition to those already noticed may be added his "Observations on famous controverted Passages in Justin Martyr and Josephus," and a pamphlet addressed to Mr. Melmoth, written with less temper than might have been wished. Mr. Bryant closed his labours with a quarto volume of Dissertations on the prophecy of Balaam; the standing still of the sun in the time of Joshua; the jaw bone of the ass with which Sampson slew the Philistines; and the history of Jonah and the whale: subjects in themselves exceedingly curious, and treated with much ingenuity; but these tracts upon them having been written above thirty years before, Mr. Bryant in revising so altered, as, through a defect of memory, to render the remarks in one part inconsistent with those in another, which materially diminished the value of the whole.

Other writings to a considerable extent still remain in the hands of his executor, who is said to have submitted them for publication to a competent judgment.

In forming a general estimate of Mr. Bryant's literary character, it will be found that, as a classical scholar, he had few equals; his acquaintance with history and the topics of general information was of very uncommon extent, but from the want of Oriental literature and the stricter sciences he yielded too often to the impulses of a vigorous fancy. It will, notwithstanding, be found from repeated perusals of his writings, that he deservedly ranks amongst the foremost of his age; and from having consecrated his great talents and acquisitions to the service of religion, will be ever entitled to the veneration of mankind.

In his person Mr. Bryant was lower and more delicately formed than men in general, and consequently less capable of strong exercise; but, in early life he had great agility, particularly in swimming, a circumstance which enabled him to save Dr. Barnard, afterward head master of Eton, when drowning. In his ordinary habits of life he was remarkable for his temperance, and though his time and studies were principally devoted to literature, and the pursuit of truth, yet his conversation with those he received and conversed with was uncommonly spritely, as he never failed to mix entertaining anecdote with instruction. In his person he was particularly neat, and in his deportment courteous. His liberality was often conspicuous, and the spirit of religion diffused itself through all his actions. As few comparatively live so long, instances of such exemplary merit can but rarely be found. Elected from Eton to King's, in 1736,

VOL. V.

he proceeded bachelor of arts in 1740; in 1744, took the degree of master, and died, after a long residence, at Cypenham, near Windsor, on the 14th of November, 1804, of a mortification in his leg, occasioned by a hurt from the tilting of a chair in reaching down a book from its shelf. At his own desire, Mr. Bryant was interred in his parish church, beneath the seat he there occupied.

BRYANT'S Cove, in *Geography*, lies on the east coast of Newfoundland, half a league S.W. from Harbour Grace, and two and a half leagues to the south-west of Spanish bay, in which there is good fishing for boats.

BRYANT'S Lick, a south-east branch of Green river, the mouth of which is about 27 miles E. of Craig's fort, and 10 E. of Sulphur spring, in Mercer's county, Kentucky.

BRYANTHUS, in *Botany* (Gmel. Sib.) See ANDROMEDA *bryantha*.

BRYLE, JOHN THEODORE DL, in *Biography*, excelled in the art of designing and engraving. He was a native of Liege, but resided chiefly at Franckfort, where he carried on a considerable commerce in prints. His taste was formed on the works of Sebald Beham. He seldom used the point, but worked almost wholly with the graver. His style of engraving was neat and free, excellently adapted to small subjects, comprehending many figures; such as funeral parades, processions, &c. His drawing was very correct; his heads spirited and expressive, and the other extremities of his figures well marked. His back-grounds, though slight, are admirably touched. He died March 27, 1598. His great works were the plates for the first four volumes of Boissard's Roman Antiquities; the plates for illustrating the Manners and Customs of the Virginians, copied by Picart in his Religious Ceremonies of all Nations; the plates to the Latin Narrative of the Cruelties of the Spaniards in America, published in 1598, and his "Descriptio Indiæ Orientalis et Occidentalis," 5 vols. fol. 1598; and among other detached prints his "Procession for the Funeral of Sir Philip Sidney," engraved at London, 1578. Strutt.

BRYENNIUS, NICEPHORUS, was a native of Orestia in Macedonia, and married the princess Anna Comnena, daughter of Alexius Comnenus, who raised him to the rank of Cæsar, but declined announcing him as his successor in prejudice of his own son. After the death of Alexius, the empress Irene and her daughter Anna attempted to elevate Bryennius to the empire, but he refused to concur in the plot. Having been sent, in 1137, to besiege Antioch, he fell sick, and returning to Constantinople died in that city. His history of the reigns of Isaac Comnenus and of the three succeeding emperors, was comprised in four books, and published with a Latin translation, by the Jesuit Poulaines at Paris in 1661, to which the annotations of Du Cange were annexed in 1670.

BRYENNIUS, MANUEL, the last writer on music in the Greek language that has come to our knowledge. He flourished under the elder Palæologus, about the year 1320; and it is probable that he was a descendant of the house of Brienne, an ancient French family, that went into Greece during the Crusades, at the beginning of the thirteenth century. Fabric. Bib. Gr. Du Cange. Fam. Byzant.

The work is divided into three books, all which are confined to harmonics: the first is a kind of commentary on Euclid; and the second and third little more than explanations of the doctrines of Ptolemy.

Meibomius had promised a Latin translation of this work, but dying before it was finished, Dr. Wallis performed the task, and it now constitutes a part of the third volume of his works, published at Oxford in 3 vols. fol. 1699.

That the Greek music had undergone many alterations since

since the ancient treatises which are come down to us were written, is certain from the change and increase of its vocabulary. Bryennius (lib. iii. sect. 3) has given as names of intervals, a list of barbarous terms not to be found in any preceding writer within our knowledge: and in the Greek glossary of Du Cange, and the Abate Martini's papers on the present music of Greece, a great number occurs that is not to be found either in writers of high antiquity, or in Bryennius: as lib. iii. sect. 4. the words *ἵχος*, and *πλάγιος*, appear for *tonus* and *obliquus*; and *πῆλιος*, *δούριος*, *τρίτος*, *τετάρτος*, are used to distinguish the modes or tones; a proof that he was a modern Greek. Padre Martini is of opinion that these terms were first introduced in church music, to exclude the Pagan titles of Dorian, Phrygian, Lydian, &c.

The technical language of the Greeks has always been copious, and in music perhaps its seeming redundancy is more conspicuous than in any other art or science. But in other arts and sciences words are representatives of things existing; whereas, in denominating the tones and inflexions of voice, which, to realize, require new creation, there can be no correspondence between the type and substance. The colours, the forms, and objects which a painter wishes to represent, are in nature; and the poet, in all the ebullitions of wild enthusiasm and fervid imagination, describes what he has seen and felt, or what is to be seen and felt, and for which common language must supply him with symbols. But it has never entered the thoughts of man to give names to all the minute shades of colour between black and white, or to the gradations by which light is propagated between the time of total darkness and the sun's meridian. And yet, in a scale of sounds, from the lowest musical tone in the human voice to the highest, where octaves are not represented by similar signs and appellatives, the names and characters must be numerous. The lines and clefs of the European music have certainly freed it from many perplexities with which it was embarrassed, even in the artless times of Canto Fermo.

BRYGI, in *Ancient Geography*, inhabitants of Thrace, who were subdued by the Macedonians, and served under Xerxes, when he invaded Greece.

BRYGMUS, in *Medicine*, a grinding or gnashing of the teeth; a symptom common in epilepsy, and some other convulsive disorders: from *βρυγμω*, to snap, or gnash, with the teeth.

BRYONIA, in *Botany*. (*βρυωνία*, Dioscorides; from *βρύω*, germino, pullulo, expressive of the vigorous and rapid growth of its annual stems from the perennial root.) Lin. gen. 1093. Reich. 1594. Schreb. 1480. Gärtner 551. Jussieu 394. Ventenat, vol. iii. 511. Class, *monœcia syn-genesia*. *Pentandria*, Smith. Nat. Ord. *cucurbitaceæ* Linn. & Juss.

Gen. char. Male flowers. *Cal.* Perianth one leafed, campanulate, five-toothed; teeth oval-shaped. *Cor.* five, parted, campanulate, fastened to the calyx; divisions ovate. *Stam.* Filaments three, very short, two bearing each two anthers, and the third with only one. Female flowers. *Cal.* Perianth as in the males, superior, deciduous. *Cor.* as in the males. *Pist.* Germ. inferior. *Style* trifid, the length of the expanding corolla; stigmas emarginate, patulous. *Peric.* Berry subglobular, smooth. *Seeds*, not numerous, fixed to the coat, subovate. Schreb. Not more than six, inclosed in their proper cells. Gärt.

Species, 1. *B. alba*. Linn. "with black berries, and the inward substance of the root of a pale box colour; leaves palmate, callous-scabrous on both sides." This species, though mentioned by many of the old botanists, does not seem to be much known since the time of Linnæus. La Marck observes that he knows nothing of it, and seems to speak with some degree of doubt with respect to its exist-

ence. In this, however, he is certainly wrong; it must have been known to Linnæus. Bosc says that it is a truly distinct species, but gives no description. It appears to be confined to the north of Europe, and not to be found in England or France, for though Plukenet speaks of it as not unfrequent about Cambridge, he was probably mistaken; it had not been observed by Ray, nor has it been found since in that neighbourhood by Professor Martyn, nor in any other part of Great Britain. 2. *B. dioica*. Jacq. Aust. t. 199. Hall. Helv. 574. Allion. Ped. 455. Pollich. pal. 915. Ray hist. 659. Syn. 261. Huds. Ang. 437. Smith Flor. Brit. 398. Eng. Bot. 439. "Berries red; root yellowish white within; leaves palmate, callous-scabrous on both sides; flowers dioicous." Root large, fleshy, white. Stems annual, scandent, angular, rough, leafy, somewhat branched, very long. Leaves alternate, petioled, palmate, five-lobed, angular, rough on both sides, with minute callous points. Stipules none. Tendrils solitary, simple, accompanying the petioles. Peduncles axillary, somewhat umbellate with few flowers. Corolla white, elegantly marked with green veins. Anthers connate by pairs with an odd one. Filaments all a little united at the base. Berries globular, scarlet, smooth. Seeds six, elliptic, spotted. The leaves in autumn have the smell of musk. Smith. The roots have been artificially made to assume a human shape, and shewn to the common people as roots of the celebrated mandrake, *Atropa Mandragora*, to which many fanciful virtues have been attributed. For this purpose the earth is removed round the root of a thriving young plant, so as not to disturb the lower fibres, and a mould, such as is used for plaster figures, is made fast with wires to receive the growing woody part of the root; the earth is then replaced, and in the course of a summer a root of the required shape is produced. 3. *B. palmata*, Linn. "Leaves palmate, smooth, five-parted, repand-ferrate." Root perennial. Berries yellowish, globular, rather large. Native of Ceylon. Introduced into England in 1778, by Messrs. Gordon and Græfer. 4. *B. laciniosa*, Linn. Gärt. tab. 88, fig. 2, copied by La Marck. pl. 796, fig. 2. "Leaves palmate; divisions lanceolate, serrated, petioles muricate." Root perennial. Leaves cordate, palmate, rough above, roughish beneath on the rib and nerves. Petioles almost prickly; not peduncles as it stands in the Mantissa, as copied by Reichard, and translated without a comment by La Marck. Corolla yellow, hairy, or tomentous within, smooth without. Germ smooth. Fruit sessile, of the size of a cherry, marked with six milk-white lines. Berry fleshy, three-celled, the pulp in each cell easily separable from it, gelatinous-membranaceous, two-celled, green. Seeds six, one in each cell of the pulp. La Marck describes a plant cultivated in the Royal garden at Paris, which he supposes to be the *Neboémeka* of the Hortus Malabaricus, and not specifically distinct from the *laciniosa* of Linnæus, though Linnæus has cancelled the reference to it as a synonym in the Mantissa, after having admitted it in the Species Plantarum. The plant in the French garden has deeply palmated smooth leaves, but the petioles, as well as the posterior nerves, are armed with almost thorny prickles. 5. *B. africana*. Linn. Herm. Parad. 107. tab. 108. Gärtner, 2, tab. 88, copied by La Marck, Pl. 796. fig. 3. "Leaves palmate, five-parted, smooth on both sides; divisions pinnatifid." Upper leaves five-parted, scabrous at the edge; divisions pinnatifid, almost linear, acute. Berries solitary, roundish, beaked, obtusely angular, yellow. Linn. Rind of the berry fleshy, rather thick, orange-coloured on the outside; pulp, membranaceous-spongy, easily separable from the rind, regularly divided into six, sometimes only four cells. Seeds one in each cell, ovate-globular, compressed at the sides, and

and especially towards the navel, to a sharp edge, with very minute, whitish bristles or scales lying close to their surface. Gert. La Marek describes a plant, cultivated at Paris, which he takes to be the same, in which the leaves are roughish beneath. 6. *B. cretica*. Linn. "Leaves palmate, rough with callous points on their upper surface." Root long, not so large as *B. dioica*, running deep into the ground. Stems slender, rough, furnished with tendrils. Leaves divided like those of the common fig, but less, streaked or spotted with white. Flowers axillary, pale, streaked, on long pendant peduncles. Berries small, semi-globular, divided at top into two parts, red, generally containing only two seeds. Miller, and La Marek. Native of Candia, whence the seeds were sent to C. Bauhin. Cultivated by Miller, before 1779. 7. *B. bonariensis*, Mil.; *fraxifolia*, La Marek. Dill. Elth. tab. 50. fig. 58. La Marek, Pl. 796. 1. "Leaves semi-palmate, five-parted, with obtuse segments, hairy." Root and stems like those of the common bryony. Leaves resembling those of the common fig, but smaller; narrower and smaller at the ends of the branches, hairy, and very rough, upper surface deep green, lower whitish. Native of Buenos Ayres. Cultivated in the Eltham garden, about 1726. Mil. 8. *B. variegata*, Miller. "Leaves palmate, with lanceolate segments, spotted on the upper, smooth on the under side; fruit ovate, scattered." 9. *B. grandis*. Lin. Mant. "Leaves cordate, angular, smoothish, glandular at the base underneath; tendrils simple." Stem shrubby, smooth, large, branching, scandent. Leaves roundish, five-angled, not lobed, smooth on both sides, scarcely denticulate, obtuse, alternate, petioled. Flowers large, whitish, androgynous, lateral; peduncles one-flowered. Berry roundish, red, smooth, five-celled. Seeds few, oblong, obtuse, compressed. Native of India and Cochinchina. Introduced into England in 1783, by Mr. I. Græfer; into France, by M. Sonnerat. 10. *B. cordifolia*. Linn. "Leaves cordate, oblong, five-lobed, toothed, scabrous; petioles long, with two teeth at the base of the leaf." Stem angular, rough. Native of Ceylon. La Marek suspects it to be a variety of the preceding. 11. *B. Maderaspatana*, Berg. cap. 351. *Cucumis Maderaspatana*. Linn. "Leaves cordate-triangular, toothed, scabrous; berries globular, axillary, in pairs." La Marek. Stem slender, angular, thinly sprinkled with small callous protuberances. Leaves longer than the petiole, toothed at the edges, slightly villous beneath, green, and rather rough. Flowers small, axillary, with a villous calyx, growing two or three together on very short peduncles. Berries globular, many-seeded. A native of the East Indies. La Marek says, that it is certainly a bryony. 12. *B. scabrella*. Linn. fil. 424. "Leaves cordate, angular, and lobed, callous-hispid; tendrils simple; berries globular; seeds muricate." Martyn. Whole plant very scabrous. Stems five-cornered, hispid. Tendrils simple. Leaves blunt, unequally toothed, a little curled at the edge; petioles hispid. Peduncles many; axillary short. Calyx bell-shaped, five-toothed. Corollas small, very like those of *melothria*, yellow. It has altogether the stature of *melothria*, but the whole plant is hispid and rugged, and has the stamens of bryony. A native of the East Indies found by Dr. Koenig, and introduced into England in 1781, by sir Joseph Banks, bart. La Marek describes a plant under the same specific name, which he thinks nearly allied to the preceding, with a doubt whether it be the *scabrella* of the younger Linnaeus. It differs from Martyn's plant in having its berries perfectly smooth; a circumstance which the younger Linnaeus has left undetermined. La Marek's description was made from a dried specimen. 13. *B. scabra*. Linn. fil. 423. "Leaves cordate, angular, toothed, callous-pointed above,

villous underneath, scabrous on both sides. Tendrils simple. Berries globular, smooth." Found at the cape by Thunberg, and Masson, and introduced into England in 1774. La Marek does not notice this species, unless it be his *scabrella*. 14. *B. nana*. La Marek. "Lower leaves cordate-roundish, very entire; upper ones deeply three-lobed; lobes obtuse." Allied to *B. africana*, but much smaller, and with leaves less deeply cut. Stems slender, a little villous, scarcely more than a foot and a half high. Leaves alternate-petioled, green, smooth above, scabrous, with callous points beneath. Native of Africa. Described from a living plant without flowers in the Royal garden at Paris. 15. *B. Abyssinica*. La Marek. "Leaves large, cordate, toothed; upper ones lobed-angular; petioles and peduncles very villous." Stem six or eight feet high, villous, especially near the top. Leaves soft, almost smooth, deep green above, a little glaucous beneath; the lower ones cordate and toothed, the upper ones with four or five angular, unequal lobes. Flowers yellowish, axillary, in pairs; peduncles simple, short. Corolla five-parted, spreading, veined. A native of Africa. Described from a living plant in the Royal garden at Paris. 16. *B. Americana*. La Marek. "Leaves large, cordate, three-lobed; berries oval, with two or three seeds." Root tender, white, a little bitter. Stems long, angular, twining, jointed, with a leaf, a tendril, and a flower at each joint. Leaves petioled, a little rough, with a few rather spinous teeth, and resembling those of the common fig. Flowers pedunculate, with five divisions, greenish without, white within. Berries oval, about the size of an olive, red. Seeds two or three, bedded in a spongy pulp. Plumier's MSS. A native of the Antilles. 17. *B. Japonica*. Thunb. "Leaves cordate, undivided, and angular, toothed, unarmed-hispid." Lobes of the leaves angular, sharp, with very minute hairs on the upper surface, pale underneath, dotted with scales, an inch long. It creeps on walls. Native of Japan. 18. *B. racemosa*. Miller. Pluk. pl. 83. t. 97. "Leaves cordate, three-lobed, the upper ones ovate and somewhat rugged; flowers in racemes; berries nodding, oval." A native of Jamaica. 19. *B. verrucosa*. Ait. Hort. Kew. 3. 385. "Leaves cordate, angled; the upper surface and the veins underneath callous scabrous; the callousities remote; tendrils simple; berries globular." 20. *B. latifolia*. Ait. Hort. Kew. 3. 384. "Leaves subtrilobate, hairy, drawn to a point at the base." This and the foregoing were observed by Masson in the Canary islands, and introduced here in 1779. The latter is easily distinguished from its congeners by the leaves not being in the leaf cordate at the base, but decurrent along the petioles. 21. *B. amplexicaulis*. La Marek. "Stem angular, smooth; leaves flat, cordate, subangular, embracing the stem; berries solitary, acuminate." Stems slender, scandent; leaves alternate, cordate, slightly angular, smooth on both sides, dotted above, glaucous below, on short petioles; the upper sometimes divided into straight diverging lobes. Flowers small, axillary, solitary, peduncled. Germ sharp-pointed at the summit. Berry fleshy, acuminate, very smooth, nearly the size of a hazel nut. A native of the East Indies, communicated by M. Sonnerat, and described from a dried specimen. 22. *B. basifolia*. Martyn. Lour. Cochinch. 594. "Leaves hastate, edged with little teeth, smooth; peduncles many-flowered." Stem herbaceous, slender, scandent, cirrhose. Flowers androgynous, white, axillary. Calyx none. Corolla tubular, with a five-parted, upright border. Filaments placed at the bottom of the corolla, with three alternate, warted glands. Berry ovate, acute, small, red, one-celled; containing a few ovate, arilled seeds. Native of China about Canton. 23. *B. triloba*. Martyn. "Leaves three-lobed, five-nerved; stipules round-

ish, concave; peduncles one-flowered." *Stem* shrubby, grooved, climbing by trifid tendrils. *Leaves* cordate, serrate-repand, smooth on both sides. *Stipules* serrate. *Flowers* androgynous, white, axillary, solitary. *Berry* ovate, sharpish, smooth, yellow, an inch and a half long, five-celled, many-seeded. Native of Cochinchina. 24. *B. Cochinchinensis*. Martyn. Lour. Cochin. 595. "Leaves five-cornered, rough; berries three-celled, ten-cornered." *Stem* herbaceous; four-grooved, branching, scandent, cirrhone. *Leaves* cordate, toothed, alternate, petioled. *Flowers* androgynous, white, large, axillary, solitary, on long peduncles. *Calyx* one-leafed; the tube at bottom cylindrical, at top ovate, dilated; border five-cleft with linear segments. *Corolla* almost wheel-shaped, fixed to the mouth of the calyx; segments ovate-oblong. *Filaments* placed on the middle of the tube of the calyx. *Anther* one, large, oblong-ovate, placed on the three filaments in form of a tripod. *Germ* inferior, ovate-oblong, grooved. *Style* filiform, shorter than the tube. *Stigma* oblong, three-cornered, trifid at the tip. *Berry* ovate, sharpish at both ends, red, smooth. *Seeds* ovate-oblong, compressed, smooth. Professor Martyn observes, that it differs from the other bryonies, but must remain here, unless it be made to constitute a new genus.

Propagation and Culture. The exotic species require the protection of the bark or dry stove, according to the temperature of their native climate. They are propagated by seeds sown on a hot bed, and transplanted into pots filled with light fresh earth. Several of them will endure the open air in summer, but in winter must be sheltered, and should then have little water. They generally flower in July, and in favourable summers will ripen their seeds. Those which are annual must be sown on a hot-bed early in the spring, and, when about three inches high, transplanted into small pots; afterwards shifted into larger pots, and placed in the bark-stove, where their branches may be trained to the wall, or against an espalier, that they may have fun and air, without which they will not produce fruit. When full of fruit, they make a pretty variety in the stove. Miller.

Medical and Economical Uses. The fresh root of the common bryony, taken up in the beginning of spring, abounds with a thin milky juice, which may be collected, for two or three days successively, by baring the root of its earth, cutting the top transversely, and forming a cavity in the middle to receive it. Both the root in substance, and the juice, have a disagreeable smell and a nauseous, bitter, biting taste: applied for some time to the skin, they inflame, and even vesicate the part. On drying the one, or inspissating the other, they lose most of their acrimony, and nearly the whole of their ill scent. In summer, the root is much less juicy and powerful. This strong and irritating cathartic, though now seldom prescribed, is said to be of great efficacy in evacuating ferous humours; and has chiefly been employed in hydropical disorders; but is reported to have good effects also in asthma, mania, and epilepsy. In small doses it operates as a diuretic, and is resolvent and deobstruent; given in powder, from a scruple to a dram, it proves strongly purgative; the juice, in doses of a spoonful or more, has similar effects; but is more gentle in its operation. An extract, prepared by water, acts more mildly and with greater safety, and may be given from half a dram to a dram. Externally the fresh root has been employed in cataplasms as a resolvent and discutient, also in ichiadic and other rheumatic affections. Woodville, Med. Bot. vol. iii. p. 518. A decoction made with one pound of the fresh root is the best purge for horned cattle. Withering. Boerh. observes (Nouv. Dict.) that it has much affinity with the root of *jatropha manihot*, and that a wholesome capava may be made of it by the same

process as is employed in the West Indies on the *manihot*. Beaumé was the first who discovered, that, when grated in water, it yields a secula exactly the same with that of the potatoe. During the scarcity at the time of the French revolution, Boerh. himself often eat of it, and found it very nourishing. He could never entirely deprive it, by maceration, of its peculiar smell and taste; but the unpleasantness was overcome by a pretty high seasoning. The root must be gathered for this purpose in autumn and winter; and a single one will often be a sufficient breakfast for one person. The root of *B. Abyssinica* boiled is said to be eaten in its native country.

BRYONIA (Plumier). See *MELOTHRIA pendula*, and *RAJANIA hastata*.

BRYONIA alba (Sloane Jam.) See *CISSUS ficoides, acida et trifoliata*.

BRYONIA nigra (Sloane Jam.) See *TOURNEFORTIA volubilis*.

BRYONIA (Dal. Pharm.) See *CONVOLVULUS JALAPA*.

BRYONIA (C. Bauh.) See *TAMUS*.

BRYONIA, in *Conchology*, a species of *STROMBUS*, about seven inches in length, fuscous, variegated with white and blue in clouds. This shell is specifically described as being of a conic form, with a mucronate, eight-dentated lip, and knotty spire. Described by Lister.

This shell is extremely rare. Gmelin is in doubt whether it belongs to the *Strombus* genus. Native place unknown.

BRYONIAE SIMILIS (Pluk.) in *Botany*. See *Dioscorea villosa*.

BRYONIOIDES (Dill. Elth.) See *SICYOS angulata*.

BRYONIOIDES (Pluk.) See *CISSUS acida*.

BRYUM, (from *βρυω*, germino, pullulo,) first used as a generic name by Dillenius in his catalogue of plants in the neighbourhood of Gießen, printed at Frankfurt on the Mayne in 1717, introduced by him into his edition of Ray's Synopsis 1724, and finally illustrated with full descriptions and figures of all the then known species in his admirable history of Mosses, published at Oxford 1741. It was given to a family of mosses distinguished by the following characters. Stems generally erect, and little if at all branched. Peduncles either terminal, or springing directly from the stemless root; and when apparently lateral proceeding from the termination of the last year's stem, not surrounded at its base, like hypnum, with a perichætium or scaly involucre, but having instead of it an oblong knob or tubercle. Capsules when young covered with a smooth calyptra. It was taken up by Linnæus in his Flora Lapponica and Genera Plantarum, both published in 1737, and continued in all his subsequent works, with no material change of the original generic character. Dillenius enumerates eighty one species in his Historia Muscorum, sixty-one of which appear as English plants in the third edition of Ray's Synopsis; but in the Species Plantarum the number is reduced to thirty-two, many of Dillenius's species being considered only as varieties, and those which appear to be dioicous being removed by Linnæus to Mnium. The twelfth edition of the Systema Naturæ has only thirty-one, the *B. capillare* of the Species Plantarum being also removed to Trinium. The number has since been greatly increased, so that Dr. Withering in the third edition of his Botanical Arrangement reckons ninety-two British species.

Hedwig, in his new system of mosses which is generally received in Germany, and is beginning to make its way in England through the powerful influence of Dr. Smith and Mr. Dawson Turner, has contracted the genus distinguishing it by this name within much narrower limits, taking out

out of it his *Gymnostomum*, *Anisangium*, *Eucalypta*, *Leersia*, *Grimmia*, *Weissia*, *Trichostomum*, *Didymodon*, *Cynodontium*, *Tortula*, *Barbula*, *Bartramia*, and part of his *Splachnum*, *Fissidens*, and *Dicranum*; and confining it to such species as have the following character. *Peristome*, or fringe surrounding the mouth of the capsule, double; *outer* toothed, teeth sixteen acute; *inner* ciliate; cilia difform, arising from a keeled membrane. *Male Flower*, capituliform, dioicous. It has however since been again extended with various modifications by different authors. Schreber includes in it Hedwig's *Mnium* and *Webera*, with this character. *Capsule*, ovate-oblong. *Peristome*, double; *outer* with sixteen broadish acute teeth; *inner* membranaceous, plaited and keeled, laciniate, with alternate broadish and capillary divisions. *Male*, capitate, or discoid, or gemmaecous. Dr. Smith's *Bryum* comprehends *Webera*, *Pohlia*, and *Meesia*; and Mr. Turner adds *Mnium*. Dr. Smith's generic character stands thus: *capsule*, ovate-oblong, not furrowed. *Peristome*, *outer* with sixteen teeth dilated at the base; *inner* membranaceous, variously toothed and laciniate. *Calyptra* not furrowed. *Pedicell* terminal. He enumerates thirty-three British species.

1. *B. nutans*, silky pendulous thread-moss. Schreber, Swartz, Roth, Ehrh.; (*sericeum*, With. Hull. Sibth.) Dill. t. 50. f. 60. Eng. Bot. 1240. "Stem generally simple; leaves lanceolate acute, keeled; capsule obovate, pendulous, obtuse." *Stems* growing in thick tufts, erect, short, often simple, moist leafy at their summits. *Leaves* pale green, glossy, lanceolate, acute, keeled, one-nerved, tipped with a fine date point. *Fruit-stalk* terminal, solitary, erect, sometimes two inches long, glossy; tawny purple, paler upwards. *Capsule* pendulous, obtuse, a little attenuated or elongate at the base, rusty-coloured, not glossy. *Lid* convex, with a short, blunt point. *Outer fringe* yellowish; *inner* variously laciniated. Perennial. 2. *B. aureum*, gold thread-moss, (*Mnium pyriforme*, Linn.) Dillen. tab. 50. f. 60. Eng. Bot. 389. "Stem perfectly simple; leaves setaceous, upper ones very long; capsule pendulous, pear-shaped, suddenly contracted about the middle." *Stems* in tufts, erect, simple, half an inch high, filiform. *Leaves* pale yellowish-green, capillary, loose, keeled, very entire; upper ones very long, spreading in form of a star. *Flowers* terminal. *Fruit-stalks* solitary, erect, an inch long, capillary, of a gold colour, glossy, somewhat waved. *Capsule* gold coloured, highly glossy, pendulous, pear-shaped, rather blunt, attenuated from the base to the middle; lid rather conic, short, somewhat pointed; calyptra awl-shaped, white. Fringe yellow without; white within, teeth in a double series. Annual. 3. *B. elongatum*, Dickf. Fasc. 2. 8. (*Pohlia* Hed. *Mnium* *Pohlia* Hoff.) "Stem generally simple; leaves linear-lanceolate, thickened at the base. Capsule rather nodding, cylindrical, elongate at the base." *Stem* erect, short, simple, but at length a little branched. *Leaves* deep green, spreading, lanceolate or linear-lanceolate, acute, one-nerved, very entire, curled when dry. *Fruit-stalks* an inch and a half long, solitary, nearly erect, purple, yellow near the top. *Capsule* a little nodding but not pendulous, cylindrical, curved, brown, a little contracted at its orifice, lengthened at its base into an obconical apophysis of nearly its own length; lid conical, acute, short; fringe outer very short, brown; inner white, toothed in a single series. Perennial. Obs. Dillenius confounded this species with *nutans*. 4. *B. trichodes*, long, capillary, thread-moss, Linn. (*Mnium uliginosum*, With. *Meesia uliginosa*, Hed.) Dill. Tab. 49. f. 58. "Stem generally simple; leaves linear, obtuse; capsule obovate, incurved, somewhat nodding; fruit-stalk very long." *Stems* in tufts, scarcely an inch high, sometimes much shorter,

erect, black with a ferruginous down at the base. *Leaves* erect but spreading, of a full yellow green, glossy, obtuse, very entire, keeled. *Fruit-stalks* terminal, solitary, very long, erect, capillary, red, but brown at the base, and yellowish at the top. *Capsule* inclining, obtuse on a short apophysis. Lid conical, obtuse, very short; fringe outer short, inner reticulated twice as long as the outer. *Calyptra* awl-shaped, straight. Perennial. 5. *B. dealbatum*, pale-leaved thread-moss (Meesia Swartz, Hed.) Dickf. Tab. 5. f. 3. "Stem very short, simple; leaves lanceolate, reticulated, a little serrated at the top; capsule obovate, nodding." *Stems* in tufts. *Leaves* pellucid, acute, one-nerved. *Fruit-stalks* solitary, terminal, erect, an inch and a half long, red. *Capsule* curved, opaque, with a very contracted apophysis. Lid convex, with a short point, red; fringe outer short, ferruginous; inner reticulated, twice as long as the outer. 6. *B. cylindricum*, Dickf. Tab. 11. f. 4. "Stem simple; leaves lanceolate-linear, serrated towards the top; capsule rather erect, cylindrical." *Stem* scarcely half an inch high, erect. *Leaves* of a pleasant green colour, erect but spreading, acute, keeled, one-nerved. *Fruit-stalk* erect, terminal, an inch long, red. *Capsule* pale brown, small, slender, with an obconic apophysis of its own magnitude, fringe pale. 7. *B. carneum*, Linn. (*B. delicatulum* Hed. *Mnium carneum* Hoff.) Dill. Tab. 50. f. 69. "Stem generally simple; leaves lanceolate, acute, very entire, reticulated, placed rather remote from each other; capsule pendulous, top-shaped." *Stems* not half an inch high, in tufts, erect, red. *Leaves* alternate, pale green, pellucid, reticulated, very entire, one-nerved. *Fruit-stalks* terminal, solitary, half an inch long, a little zig-zag, of a pale rose colour. *Capsule* pendulous, flesh-coloured, opaque; lid conic, short, obtuse; fringe outer, rusty brown; inner, yellowish, toothed in a double series. 8. *B. alpinum*, Linn. Mant. Dill. Tab. 50. f. 64. "Stem branched, erect; leaves ovate-lanceolate, acute, imbricated; capsule oblong, pendulous." *Stems* in tufts, one or two inches high; branches erect, stiff, round, acute. *Leaves* imbricated densely on all sides, beautifully variegated with green and purple, glossy, very entire, pellucid, often with a very red nerve, when dry pressed close to the stem. *Fruit-stalks* lateral, solitary, an inch long, red, straight, rising higher than the stem. *Capsules* obovate-cylindrical, red when ripe; lid hemispherical, umbonate; fringe white or rose coloured. 9. *B. caespitium*, Linn. (*Mnium caespitium* With. Relb. Abb.) Dill. Tab. 50. f. 66. except the variety F. G. lesser matted thread-moss. "Stem branched at the base, matted, leaves ovate-lanceolate, flat, ending in a hair; capsule obovate, pendulous." *Stems* forming a dense tuft, branched from the base; branches trilinear, simple, spreading, leafy, obtuse. *Leaves* of a pleasant green, very entire, one-nerved, the upper one larger, spreading in form of a star. *Fruit-stalks* from the base of the branches, about an inch and a half long, capillary, erect, purple at the base, green at the top. Lid convex, umbonate, fringe yellow, teeth acuminate. 10. *B. bicolor*, Dickf. Fasc. 4. 16. Dill. Tab. 50. f. 66. F. G. "Stem very short, branched at the base; leaves ovate-lanceolate, acuminate; capsule ovate, obtuse, pendulous." *Stems* scattered, with long fuscous roots. *Leaves* yellowish-green, small, spreading, flat, very entire, a little pointed but not ending in a hair. *Fruit-stalks* from the base of the branches, half an inch long, erect, very red, glossy. *Capsule* rather large, thick, red at the base, fulvous at the top, often entirely blood red; lid hemispherical, umbonate, glossy, fulvous or scarlet; fringe nearly resembling that of *B. carneum*. 11. *B. argenteum*, Linn. (*Mnium argent.* Hoff.) silvery thread-moss. "Stem branched at the base,

base, matted; leaves ovate, concave, ending in a hair, imbricate; capsule oblong, pendulous. *Stems* in convex tufts, half an inch high, branched from the base; branches thread-shaped, erect. *Leaves* with a silvery gloss, closely imbricated, very entire, one-nerved, ending in a short hair. *Fruit-stalks* from the base of the branches, scarcely an inch long, capillary, glossy, purple at the base, yellow at the top. *Capsule* short, reddish. Lid conical, very short, fulvous, fringe yellow. 12. *B. Zierii*, Dickf. Fasc. 2. Tab. 4. fig. 10. Eng. Bot. 1021. "Stem erect, branched; leaves ovate, concave, imbricated, pointed; capsule club-shaped, drooping." Perennial. *Stems* in tufts; branches round, obtuse. *Leaves* soon white or flesh-coloured, glossy, very entire, one-nerved. *Fruit-stalks* from the base of the branches, not an inch long, nearly erect, reddish. *Capsule* scarcely pendulous, before maturity club-shaped, green; when ripe obovate, or ovate, with an obconic apophysis; lid conical, short; fringe red. Calyptra awl-shaped, acuminate. 13. *B. julaceum*, (argenteum β . Linn. *Mnium holosericeum* Hoff.) Dill. Tab. 50. f. 63. "Stem branched at the base; leaves ovate, concave, imbricate, obtuse; capsule club-shaped, pendulous." Perennial. *Stem* larger than in *B. argenteum*; branches slender, erect, acute. *Leaves* glossy, yellowish-green, (not silvery,) closely imbricated, small, very entire. *Fruit-stalk* from the base of the branches, an inch or more long, a little flexuose, red. *Capsule* brown; lid convex, umbonate, glossy, pale brown. 14. *B. capillare*, Linn. Sp. Pl. (*Mnium* Linn. Fl. Suec. With., &c.) "Stem branched at the base, matted; leaves obovate, ending in a hair, twisted when dry; capsule club-shaped, pendulous." Perennial. Resembling *B. caespitium* but larger. *Branches* about an inch long, erect, thickened at the base, stellate. *Leaves* of a fine green, obtuse, very entire, one-nerved. *Fruit-stalks* an inch and a half long, firm, red. *Capsule* obtuse, between cylindrical and club-shaped, large; lid ferruginous, glossy, hemispherical, with a short, straight point, outer fringe fulvous with acuminate teeth. 15. *B. annotinum*, summer thread-moss (*Mnium annotinum* Linn.) Dill. Tab. 50. f. 68. "Stem branched at the base; leaves ovate-lanceolate, pellucid, keeled, somewhat ferrated; capsule obovate, pendulous." Perennial. *Stems* red, erect, leafy; male simple, often elongate, gemmiparous; feminine branched. *Leaves* fine green, under a lens reticulate, keeled, one-nerved, acute. *Fruit-stalks* terminal, solitary, an inch and half long, red. *Capsule* nearly pear-shaped; lid conic, short, acute, flesh-coloured; fringe pale. 16. *B. compactum*, Dickf. Fasc. 4. Tab. 11. fig. 11. "Stem divided at the base; leaves lanceolate, keeled, ferrated near the tip; capsule ovate, pendulous." Perennial. *Stems* in dense tufts, half an inch high, sometimes simple, naked below, red. *Leaves* yellowish-green, glossy, acute, somewhat revolute, ferrated from the middle; the lower ones shorter and nearly heart-shaped. *Fruit-stalks* terminal, not an inch long, a little flexuose, ferruginous. *Capsule* short, dilated at the margin, almost top-shaped; lid convex, umbonate. 17. *B. attenuatum*, slender, proliferous thread-moss. Dickf. Fasc. 4. Tab. 10. f. 8. "Stem simple, proliferous; leaves stellate, ovate, very entire, reticulate; capsule club-shaped, cylindrical, erect." Perennial. *Stems* ascending, half an inch long, filiform, often throwing out new stems which take root. *Leaves* crowded, acute, one-nerved, pellucid. *Fruit-stalks* terminal, erect, half an inch long, yellowish. *Capsules* erect, slender, pale brown, contracted at the orifice; lid convex, without a point. 18. *B. hornum*, swanneck thread-moss (*Mnium hornum* Linn.) Dill. Tab. 51. f. 71. Curtis Tab. 71. "Stem simple; leaves lanceolate, denticulate-ferrated; fruit-stalk curved;

capsule ovate, drooping." Perennial. Larger than the preceding species. *Stems* in tufts, simple, leafy, red, ferruginous and tomentose at the base. *Leaves* fine green, pellucid, membranous, spreading acute, with a strong red nerve, waved when dry. *Masculine flower* large, terminal, discoid, surrounded with large obtuse leaves; feminine on a different plant. *Fruit-stalk* terminal, solitary, very long, straight, and red at the base, curved, and yellowish at the top, thickened under the capsule. *Capsule* large, drooping, turgid, retuse, of a pale rust colour, with a scarlet orifice; lid hemispherical, with a short point; outer fringe of a citron colour, with acute teeth, inner white. 19. *B. crutum*, (*Mnium crutum*, Linn.) Dill. Tab. 51. f. 70. "Stem simple; leaves lanceolate, acute, very entire; upper ones narrow, denticulate; capsule oblong, drooping." Perennial. Transparent-green thread-moss. *Stems* in tufts, simple, erect, scarcely an inch high, naked at the base, dark purple. *Leaves* crowded at the top of the stem, glossy, of a fine green, pellucid, spreading, flat, one-nerved; lower ones shorter, upper narrower, and generally ferrated near the tip. *Fruit-stalk* terminal, erect, an inch long, red. *Capsule* ferruginous, scarcely red at the orifice; lid hemispherical, with a slight tip, yellowish; fringe citron-colour; calyptra recurved, deciduous. 20. *B. marginatum*, Dickf. Fasc. 2. Tab. 5. fig. 1. "Stem simple; leaves lanceolate, acute, denticulate, thickened at the margin; capsule ovate; lid conic." Thick-edged thread-moss. Perennial. *Stems* an inch high, erect, red. *Leaves* with a red nerve and margin. *Fruit-stalks* solitary, erect, an inch long, flesh-coloured. *Capsule* pendulous, retuse; lid conic, awl-shaped; calyptra awl-shaped, reddish, recurved. 21. *B. interruptum*, Dickf. Fasc. 4. Tab. 2. f. 6. "Stem branched, interruptedly leafy; leaves lanceolate, acute, completely ferrulated; capsule pear-shaped, rather erect." Interrupted thread-moss. Perennial. *Stems* in tufts, an inch and half high, branched in a determinate direction, red. *Leaves* fasciculated, yellowish-green, glossy, reticulated, one-nerved; lower ones remote, small, short. *Fruit-stalks* terminal, erect, red, scarcely an inch long. *Capsule* brown, dilated at the mouth; lid hemispherical, obtusely umbonate. 22. *B. nigricans*, Dickf. Fasc. 4. Tab. 2. f. 10. "Stem branched at the base; leaves lanceolate, stiff, ferrated towards the tip; capsule top-shaped, pendulous." Dark-green thread-moss. Perennial. *Stems* in tufts. *Leaves* dark-green, imbricated, acute, keeled, dilated at the base. *Fruit-stalks* terminal, ferruginous, curved at the top. *Capsules* with a spreading orifice; lid convex, obtusely umbonate; fringe yellow. 23. *Bryum? inclinans*, Dickson Fasc. 4. Tab. 2. f. 9. "Stems branched; leaves bristle-shaped, very entire, curled when dry; capsule ovate, inclining; apophysis small." Inclining curled thread-moss. Perennial. *Stem* erect. *Leaves* loosely imbricated, keeled, dilated at the base. *Fruit-stalks* lateral, erect, half an inch long. 24. *B. cubitale*, Dickf. Fasc. 2. Tab. 5. f. 2. "Stem ascending, a little branched; leaves lanceolate, very entire, decurrent; fruit-stalk knee-jointed; capsule club-shaped, pendulous." Elbow-shaped thread-moss. Perennial. *Stems* two or three inches high, leafy, clothed with a rusty down. *Leaves* spreading, fine green, pellucid, acute, thickened at the edge with a strong red nerve. *Fruit-stalk* terminal, solitary, three or four inches long, yellowish-brown, glossy. *Capsule* attenuated at the base. *Obs.* The largest bryum hitherto discovered. 25. *B. ventricosum*, (*Bryum triquetrum*, Hudf. Hull. *Mnium Pseudo-triquetrum* Hed. Hoff. With.) Dickf. Fasc. 1. p. 4. Dill. Tab. 51. f. 73. "Stem branched in a determinate direction; branches ascending; leaves alternate, lanceolate, ferrated at the tip; capsule ventricose, pendulous." Swelling

Swelling bog-thread-moss. Perennial. *Stems* in tufts, with long roots, clothed with a rusty down; branches numerous, ascending, red, loosely leaved. *Leaves* pale green, alternate, erect, spreading, acute, one-nerved, twisted when dry. *Fruit-stalks* terminal, or from the tip of the branch of the preceding year, an inch and a half or two inches long, erect, purple at the base, yellowish at the top. *Capsule* ovate, short, a little contracted under the orifice; lid convex, with a short point; fringe yellow. 26. *B. linum*. Schreb. Roth. Swartz. (*B. triquetrum* β Hudf. *Mnium Binium* Hoff.) Dill. Tab. li. f. 73. "Stem branched; leaves alternate, linear-lanceolate, a little serrated at the top; capsule obovate, club-shaped, pendulous." Long-stalked bog-thread-moss. Perennial. Larger than the preceding. *Stem* two or three inches high, irregularly branched, of a dark rusty colour. *Leaves* elongate, yellowish green. *Fruit-stalks* from the end of the two or three year-old branches, two or three inches long, dark purple, glossy, sometimes knee-jointed towards the base. *Capsule* narrowed at the base, contracted under the orifice, twice as large as in the preceding; fringe yellow. 27. *B. turbinatum*. Swartz. Roth. (*B. triquetrum* γ Hudson. *Mnium nutans* With. Hull. *Mnium turbinatum* Hed. Hoff.) Dill. Tab. li. f. 74. "Stem branched, leaves ovate, awned, very entire, capsule pear-shaped, pendulous." Pear-shaped bog-thread-moss. Perennial. *Stems* scarcely an inch high, in tufts; leaves fine green, spreading, alternate, approximate, one-nerved. *Fruit-stalks* an inch long, purplish brown, a little flexuose. *Capsule* attenuated at the base; lid convex, without a point; fringe rust-coloured. 28. *B. stellare*. Roth. (*B. serpyllifolium*, ϵ Hudf. *Mnium proliferum*, Var. 2. With. *Mnium stellare*, Hed. Hoff.) Dill. Tab. lii. f. 78. "Stem branched; leaves ovate, acuminate, reticulated with round meshes; the upper ones serrate, stellate; capsule oblong, drooping." Starry-leaved thread-moss. Perennial. *Stem* determinately branched, one or two inches high. *Leaves* fine green, with a strong red nerve; scarcely reaching the tip. *Fruit-stalk* terminal, about two inches long, a little curved, thickened at the tip; lid hemispherical. 29. *B. cuspidatum*. Swartz. Roth. Hull. Sib. (*Mnium serpyllifolium* β Linn. *M. cuspidatum* Hedw. Hoff. With. *B. serpyllifolium* γ Hudf.) Dill. Tab. liii. f. 79. "Stem simple; barren one, procumbent, a little branched; leaves ovate, serrated; capsule ovate; lid hemispherical." Pointed-leaved thyme-thread-moss. Perennial. *Stems* leafy, of two kinds; the barren ones procumbent, throwing out roots, three inches or more long; fertile ones erect, simple, an inch long. *Leaves* fine green, pellucid, under a lens minutely reticulated, alternate, broad-ovate, somewhat waved, acutely serrated, pointed with a strong pale nerve. *Fruit-stalk* terminal, an inch long, flexuose, rose-coloured. *Capsule* pendulous, short, ventricose, retuse, yellow, with a scarlet orifice; lid without a point; fringe lemon-coloured. 30. *B. punctatum*. Roth. Hull. Sibth. (*Mnium serpyllifolium*, Linn. *M. punctatum*, Hedw. With. *B. serpyllifolium*, Hudf. Swartz.) Dill. Tab. liii. f. 81. Eng. Bot. 1183. "Stem nearly simple; leaves obovate, very entire, dotted, reticulated; capsule elliptical; lid awl-shaped." Dotted-leaved thyme-thread-moss. Perennial. Habit of the preceding, but distinguished at once by its dotted leaves. *Stems* an inch and half high, leafy, red, often flexuose. *Leaves* broadly ovate, very obtuse, a little pointed, thickened at the edge, red, repand, with a strong red nerve; the upper ones broader. *Fruit-stalks* terminal, more than an inch long, purplish, bowed at the top; capsule pendulous, green, with a purple orifice, finally brown; lid yellow, convex at the base, with a rather obtuse recurved point. 31. *B. rostratum*.

Schrad. (*Mnium punctatum*, Var. ii. With. *M. ellipticum*, Hoff. *B. serpyllifolium* β Hudf.) Dill. Tab. liii. f. 80. "Stem simple; leaves obovate-spatulate, ferrulate; capsule ovate; lid awl-shaped." Long-beaked thyme-thread-moss. *Stem* shorter than in the preceding. *Leaves* less and narrower, not reticulated. *Fruit-stalks* solitary or aggregate, terminal, an inch and half long, flesh-coloured purple at the base. *Capsule* pendulous, green flesh-coloured at the mouth; lid yellow, convex at the base, with an obtuse, recurved point, a little shorter than the capsule. 32. *B. roseum*. Schreb. Swartz. Roth. (*Mnium serpyllifolium* γ Linn. *M. proliferum*, With. Hull. *M. roseum*, Hedw. Weiss. *B. proliferum*, Sibth. *B. serpyllifolium* δ Hudf.) "Stem somewhat proliferous; leaves crowded, stellate, ovate, acute, sprinkled with small dots, scabrous at the margin; lid conical." Rosaceous thyme-thread-moss. Perennial. *Barren stems* elongate, procumbent, covered with smaller, obtuse, alternate leaves. *Fertile stems* erect, an inch high, often proliferous, squamous, and without leaves below, leafy above. *Leaves* a little decurrent, flat, rough, or slightly crenulated at the margin. *Fruit-stalks* terminal, often aggregate, an inch and half or two inches long, stiff, red, glossy. *Capsule* pendulous, ovate-oblong, glossy; lid, on the authority of Dillenius, conical, short. 33. *B. ligulatum*. Schreb. (*Mnium serpyllifolium* δ Linn. *M. undulatum*, Hedw. With. *Bryum undulatum*, Sibth. Turner.) "Stems simple, but finally branched at top; leaves oblong, waved, serrated; fruit-stalks aggregate." Long-leaved thyme-thread-moss. Perennial. *Root* creeping. *Stems* erect, almost inclining to shrubby, leafy; barren ones elongate; fertile ones finally determinately branched; branches stellate ascending. *Leaves* fine green, close-set, alternate, decurrent, spreading, linear-oblong, obtuse, one-nerved, acutely serrulate, soon growing flaccid when gathered. *Fruit-stalks* aggregate, two inches long, fulvous, glossy. *Capsule* pendulous, ovate, short; lid conical, short.

The system of Hedwig does not seem likely at present to be received in France. La Marek, in the Dictionnaire Methodique, does little more than enumerate and describe the species of Linnæus, as they stand in the last edition of the *Système Naturel*. Bosc, in the *Nouveau Dictionnaire d'Histoire Naturelle*, published so lately as 1803, says, that the bryum of Linnæus is a very natural genus; but that the German botanists, who never think that they have genera enough, have exercised their skill upon it, and have formed out of it seventeen genera, most of them founded on characters which are scarcely discernible with the best lens. It must be acknowledged that there is some reason for the complaint; and we feel a pride in reflecting that our two great English cryptogamists have steered a middle course, and have produced a real improvement in the science; avoiding at the same time the difficulties which are justly objected to by the French naturalist.

As Hedwig's new genus *bartramia*, which was formed entirely at the expence of Linnæus's bryum, has been omitted in its proper place, owing to the German system of mosses not having publicly received the powerful patronage of Dr. Smith and Mr. Turner, when that part of our dictionary was written, it cannot now be more properly introduced than as an appendix to the present article. The other genera will be found under their respective letters of the alphabet.

Bartramia, Hedw. Gen. Char. *Capsule* spherical, furrowed when ripe. *Outer fringe* of sixteen teeth, dilated at the base; *inner* membranaceous, plaited, variously lacinated. *Calyptra* smooth; lid depressed.

British species. *B. hallcriana*, Hedw. Swartz. Roth.

(*Bryum laterale*, Hudf. Light. With. Hull. Dickf. Eht. B. pomiforme, Var. i. Scop. *Mnium laterale*, Hoff.) Haller Hist. vol. iii. tab. xlv. f. 8. Eng. Bot. 997. "Fruit-stalks lateral, curved, shorter than the leaf; leaves linear, awl-shaped, one-nerved, with an even surface." Lateral bartramia. Perennial. Stems in tufts, erect, two or three inches high, branched, leafy. Leaves spreading, dense, of a fine green, rather inclining to one side, soft, thin, keeled, ferrulated towards the tip, dilated at the base. Fruit-stalks axillary, solitary. Capsule globose, at length laterally contracted, and longitudinally marked with sixteen strong furrows, a little drooping, ferruginous; inner fringe plaited, almost entire, a little torn at the opening; lid convex, short; calyptra conical, soon falling off. 2. *B. pomiformis*, Hedwig. Swartz. Roth. (*Bryum pomiforme*, Linn. &c.) Dill tab. xlv. f. 1. Haller tab. xlv. f. 7. Moris. vol. iii. tab. vi. f. 6. "Fruit-stalks erect, longer than the stems; leaves awl-shaped, one-nerved." Apple bartramia. Perennial. Stems in dense tufts, branched, fastigiate, leafy, often an inch high. Leaves fine green, spreading, linear-awl-shaped, with a strong nerve, ferrulated near the tip, not much dilated at the base, striated when dry. Fruit-stalks solitary, terminal at first, but soon becoming axillary, an inch, or an inch and a half long, red. Capsules erect, globose, green; when ripe brown, a little curved and drooping, longitudinally furrowed; fringe short; outer red; inner very thin; lid convex, very short; calyptra conic-awl-shaped, soon falling off. 3. *B. fontana*, Swartz, Smith, and Turner. (*Mnium fontanum*, Linn. Hedw. With. &c. *Bryum fontanum*, Hudf. Sibth.) Dillen. tab. xlv. f. 2. Flor. Dan. 298. Eng. Bot. 390. "Fruit-stalks erect, longer than the stem; leaves ovate, very entire; branches fasciculated, erect, thread-shaped." Fountain bartramia. Perennial. Stems in dense tufts, often a span high, determinately branched, leafy, towards the bottom clothed with a rusty down. Leaves yellowish green, imbricated on all sides of the stem, short, acuminate, keeled, one-nerved. Flowers dioicous, terminal; males forming a disc, surrounded by larger leaves and new little branches. Fruit-stalks solitary, three inches high, red, springing from the divarication of the branches. Capsules obliquely drooping; ovate-spherical, brown, with many furrows, lid convex, with a short, acute, crooked point; fringe short, brown; inner one in a double series. 4. *B. arcuata*, Smith. (*Mnium arcuatum* and *hypnum chrysocomum*, Dickf. *Bryum arcuatum*, Hall.) Dill. tab. xxxix. f. 36. Eng. Bot. 1237. "Fruit-stalks recurved; leaves lanceolate, one-nerved, furrowed, ferrulated; branches scattered, spreading." Curvestalked bartramia. Perennial. Stems erect, branched, leafy, clothed with a dense rusty down; branches numerous. Leaves imbricated but spreading, yellowish green, glossy, acuminate; Fruit-stalks solitary, terminal, at length lateral, short, red, with a small scaly perichætium. Capsule drooping, globose, green, glossy, furrowed; lid a little convex, with a short, obtuse point, scarlet; outer fringe short, fulvous, with obtuse teeth; inner membranaceous, white, with sixteen divisions, corresponding with the outer teeth.

BRYUM, *lactuca folio*, a name given by some to the oyster-green. See TREMELLA.

BRÛNE BAY, in *Geography*, lies on the east side of Greenland, in N. lat. 65° 46'. In this bay is a little island called "Kangak" or Forehead, where a colony was founded in 1755, by Andrew Olsen, a factor belonging to the company of merchants. The harbour is one of the best and safest in the country, lying half a league from the open sea, between two small islands, but the adjacent country is barren, and has no rein-deer. Besides the ordinary fish, seals, and birds, the sea affords occasionally the whale,

which come here in January and February, but they are seldom taken by the Greenlanders, and never by Europeans, for want of proper boats and tackle.

BRZESC. See BRZEST.

BRZESK or BRZETSK, a town of Lithuania, in a territory of the same name, one of the districts of the province of Polesia, called also the palatine of Brzeskie, or Brzetsk, is seated on the river Bug, in a marshy situation, and has a castle built upon a rock. Near it is a royal palace with a good garden. In this town is a famous Jewish synagogue, to which the Jews resort from all the countries of Europe. A Greek bishop resides in this town, and a provincial diet is also held in it. N. lat. 52° 12' E. long. 24°. In the month of October, 1794, a battle was fought near this town between the Russians and the Poles: the battle lasted eight hours, and the Poles were totally defeated. Out of 13,000 of the best Polish troops, only 500 were made prisoners, as they refused quarter; and the rest, 300 men excepted, were cut to pieces; so that the field of battle, for some miles, was covered with the dead.

BRZESNO, a town of Bohemia, in the circle of Boleslau, 5 miles E. of Jung Buntzlau.

BRZEZANY, BREZANY, or BREZAN, a well built town, with a castle, of Poland, in the palatinate of Red Russia, 24 miles N.N.E. of Halicz. N. lat. 49° 45'. E. long. 25° 20'.

BRZEZIN, a town of Poland, in the palatinate of Bielsk; 44 miles N.W. of Bielsk.

BRZEZINY, a small town of Poland, in the palatinate of Lenczicz; 48 miles S.E. of Lenczicz.

BRZISTEW, a town of Bohemia, in the circle of Boleslau; 11 miles S.E. of Jung Buntzlau.

BRZOSTECK, a town of Poland, in the palatinate of Sandomirz; 56 miles S.S.W. of Sandomirz.

BSURA, a river of Poland, which runs into the Vistula, 12 miles E. of Plocsko.

BU, a town of France, in the department of the Eure and Loire, and district of Dreux, 2 leagues N.E. of it.

BUA, or the *Isle of Partridges*, a small island in the northern part of the Adriatic, near the coast of Dalmatia, joined to the town of Trau by a bridge, 20 miles W.N.W. of Spalatro.

BUADH-VAILL, *q. d.* mouth-piece of victory, called also, in the old Irish tales and romances, *Benwoven* and *Barr-vail*, is supposed by Mr. Ousley to have been a species of trumpet. It is made of a light fine-grained wood, probably willow, and is 6 feet 4 inches long; the wider end measures 3¼ inches diameter, from whence it gradually tapers to a point at the other end, where a mouth-piece is supposed to have been fixed. This instrument, which is particularly described and illustrated by figures in the fourth volume of the Irish Transactions, was found, in 1791, in the county of Mayo, lying horizontally in the body of a turf bog, at the depth of about 9 feet from the surface. The precise age of this instrument, the wood of which was perfectly found, is not ascertained. Mr. Ousley supposes it to have been at least previous to the settlement of the English in Ireland, as it is not mentioned by Cambrensis, or any subsequent author. Lord Dillon, on whose estate it was found, concludes, from the great accumulation of bog over it, that it must have been in the situation in which it was discovered for many ages, and this is further confirmed by the rudeness of its contrivance and workmanship, which indicates its remote antiquity.

BUALLT. See BUILTH.

BUAMACHUCO, a town of South America, in the country of Peru, and jurisdiction of Caxamarquilla, chiefly inhabited by Indians.

BUANES,

BUANES, a town of France, in the department of Landes; 5 miles W. of Aire.

BUARCOS, or **BUARGAS**, a town of Portugal on the sea coast, in the province of Beira; 7 leagues S.W. of Coimbra.

BUARID, a small island in the Red sea, near the coast of Arabia, 4 miles W. of Lohia.

BUBALE, in *Zoology*. See **BUBALUS**.

BUBALINUS SERPENS, a name assigned by some authors to the *Anacaulaya* of the Ceylonese, a very terrible sort of serpent, according to report, common in that part of the world. It is most mischievous among cattle, a circumstance implied by the name it bears in India. The particular kind of serpent bearing this name is not exactly known to us.

BUBALUS, the *Buffalo*. Gmelin describes this animal, *Bos Bubalus*, after Linnæus, as having the horns recumbent, or lying backwards, turned inwards, and flat on the front, or anterior part.

The Buffalo appears to be so closely allied to our common ox, that without an attentive examination it might be easily mistaken for a variety of that animal. In point of size it is rather superior to the ox, and upon an accurate inspection it is observed to differ in the shape and magnitude of the head, the latter being larger than in the ox; the forehead is more elevated, the muzzle of a longer form, much larger, square, and less depressed. But it is chiefly by the structure of the horns that the Buffalo is distinguished, these being of a shape and curvature altogether different from those of the ox: they are of a gigantic size in proportion to the bulk of the animal, and of a compressed or depressed form, with a sharp exterior edge; for a considerable length from their base these horns are straight, and then bend slightly upwards: the prevailing colour of them is dusky, or nearly black. The buffalo has no dewlap: his tail is small, and destitute of vertebrae near the extremity, and his ears long and pointed. The teats of the buffalo, which are four in number, Desmefne conceives to be sufficiently indicative of this species, without adverting to any other character; for these, he remarks, are not differed, as in other animals, in two longitudinal parallel lines, but on the contrary range in a single row in a transverse direction.

This animal has an appearance of uncommon strength. The bulk of his body, and prodigious muscular limbs, denote his force at the first view. His aspect is ferocious and malignant, at the same time that his physiognomy is strongly marked with features of stupidity: his head is of a ponderous size, his forehead convex, his eyes diminutive, and his muzzle flat, and what serve to render his visage still more savage are the tufts of frizzled hair which hang down from his cheeks and the lower part of his muzzle.

Most commonly the buffalo is entirely of a blackish colour with the exception of the hair at the top of the forehead, and the tuft at the extremity of the tail, which are of a yellowish white colour. The skin itself is also of a black colour, and from this general cast it is but very seldom observed to vary; though we meet with descriptions in the works of travellers of white, grey, and reddish, or bay buffaloes. In Europe they are, however, sometimes whitish on the insides of the limbs, and Sonnini records an example of one which he saw in Egypt, which had all the legs, belly, and sides, perfectly white. It varies, however, greatly as to the length and thickness of its hair, and is sometimes seen nearly naked.

This animal is originally a native of the hotter parts of India and Africa, from whence it is said to have been introduced into Italy in the seventh century; and is now completely naturalized to the climate of the South of Europe.

Mr. Pennant supposes the *Bos aegypti* of Aristotle to have meant buffaloes. Gmelin is of the same opinion, referring for his *Bubalus* to *Bos aegypti* in *Agagurus*. *Arist. Hist. An.* &c.; and he considers also the *Bos Indicus* of Pliny as the same animal. This conjecture has the sanction of much respectable authority, but there are naturalists of no mean celebrity who are disposed to discountenance it. Buffon endeavours to prove that the animal we are acquainted with at this day under the name of buffalo, was altogether unknown to the ancient Greeks or Romans; and further, that the buffalo was not transported from its native countries, the hottest parts of Africa and the Indies, to be naturalized in Italy, before the seventh century. In support of the former of these assertions, he adduces the silence of all authors prior to that age. For the second, he observes that the wild buffaloes of the hotter parts of Asia and Africa are precisely of the same kind as our buffalo. He compares the description of this animal with the remarks of travellers and navigators who have spoken of the buffaloes of Persia and the Mogul empire, Bengal, Egypt, Guinea, and the Cape of Good Hope; and from this comparison infers that in all those countries the buffalo is of the same individual species as our European buffalo, subject only to some inconsiderable variation.

The buffalo grows in some countries to an extremely large size. Mr. Pennant quotes a pair of horns in the British Museum in proof of this, which are six feet and a half long, and the hollow of which will hold five quarts. Jerom Lobo, in his account of Abyssinia, affirms that some of the horns of the buffaloes of that country will hold ten quarts, and Dillon saw some in India which were ten feet long: they are sometimes wrinkled, but generally smooth. The distance between the points of the two horns of the buffalo is commonly about five feet. Wild buffaloes occur in many parts of Africa and India. In Malabar, and the islands of Borneo and Ceylon, they are abundant, and are considered as excessively fierce and dangerous animals. The buffaloes of Abyssinia grow to twice the size of our largest oxen, and are called elephant-bulls, not only on account of their vast size, but from their naked black skin resembling that of an elephant.

In a state of wildness the buffaloes live in the forests, and go about in great troops. The hunting of these animals is a favourite, but very dangerous pursuit, among the Indians, and requires the greatest share of dexterity. The hunters never venture in any numbers to oppose these ferocious animals face to face, but conceal themselves in the thickets, or among the branches of the trees, from whence they strike their javelins upon the buffaloes as they pass below them. These people are very fond of the flesh, which is affirmed by some to be hard and indifferently flavoured. They drive a considerable trade in the skins and horns of the buffalo, which for many purposes is far more useful than those of the ox. In the Mogul dominions it is no uncommon circumstance to ensnare the wild buffalo, the lion, or the tiger, in nets, when the people amuse themselves before they put them to death by forcing them to combat each other, and it is said that instances have occurred in which the buffalo has proved victorious over these powerful antagonists, by attacking one when he had overcome the other. Thunberg, in his travels through Japan, speaks of having seen, in the environs of Miaco, buffaloes with a hump upon the back; but from this peculiarity it has been thought most likely that it was the Zebu which that traveller observed, and not a variety of the buffalo.

The domestic buffalo is much cultivated in Egypt, where according

according to Sonnini it yields plenty of excellent milk, from which butter is made as well as several kinds of cheese. "The buffalo (says that writer) is an acquisition of the modern Egyptians, with which their ancestors were unacquainted. It was brought over from Persia into their country, where the species is at present universally spread, and is very much propagated. It is even more numerous than that of the common ox, and is there equally domestic, though but recently domesticated, as is easily distinguishable by the constantly uniform colour of the hair, and still more by a remnant of ferocity and intractability of disposition, and a wild and lowering aspect, the characters of all half-tamed animals. The buffaloes of Egypt, however, are not near so wild nor so much to be feared as those of other countries. They there partake of the very remarkable gentleness of other domestic animals, and only retain a few sudden and occasional caprices. The sight of any thing red, which is said to make them fly into fits of ungovernable fury elsewhere, makes no impression on those of Egypt. The inhabitants of the country, besides their red turban, wear also in general another shawl of the same colour, which envelopes the neck and chest, and I never observed that the sight of either at all affected the buffaloes. They are so fond of the water, that I have seen them continue in it the whole day. It often happens that the water which is fetched from the Nile near its banks has contracted their musky smell."

These animals multiply more readily than the common ox: they are also more robust, better capable of bearing fatigue, and, generally speaking, less liable to distempers. They are therefore employed to advantage in different kinds of labour. Buffaloes are made to draw heavy loads, and are commonly directed or restrained by means of a ring passed through the nose. Two buffaloes yoked, or rather chained, to a cart, are able to draw as much as four strong horses. As they carry their neck and head low, the whole weight of their body is employed in drawing; and their masts much surpasses that of a labouring horse. In its habits the buffalo is much less cleanly than the ox, delighting to wallow in the mud; and, next to the hog, may be considered as the dirtiest of domesticated quadrupeds. His voice is deeper, more uncouth and hideous than that of the bull. The milk of the female buffalo is said by some authors to be not so good as that of the cow, but it is more plentiful, and is used for the purposes of the dairy in the warmer regions. In the sixth supplemental volume of Buffon, it is affirmed that the milk is far superior to cow's milk, not only in taste but colour, and that it makes the most excellent butter, cheese, &c. The skin and horns are of more value than all the rest of the animal; the former being of extreme strength and durability, and consequently well adapted for various purposes in which strong leather is required; the latter are of a fine grain, strong, and bear a good polish, and are therefore in much esteem with cutlers and other artificers. Italy is the country where buffaloes are most common in a domesticated state, being used there, as in India, both for the dairy and the draught. The parts in which they are most successfully cultivated are the district of the Pontine marshes, and those of Sienna. The Spaniards are attentive to this race of cattle, and indeed the cultivation of this useful animal seems to be pretty general in all countries on the borders of the Mediterranean sea both in Europe and Africa.

For so robust a creature, the buffalo is of a delicate constitution, and suffers equally by an excess of cold or heat. In the summer it retires to shady places, or into the water in which it takes the greatest delight; and in winter retreats to the warmer coverts, or the recesses and shelter of the

forests. This instinctive quality of the animal seems to imply that the buffalo originated rather in temperate climates than in such as are either very hot or cold.

Besides the maladies that are common to the ox and other cattle, the buffalo is subject to one of a particular sort, with which it is attacked only in the early part of its life. This is called by the French *barbone*, an expression that implies it to be most common in the male. The symptoms of this disorder are easily detected by a considerable swelling that takes place in the throat and under-parts of the muzzle, and sometimes by the whole body becoming inflated. The poor animal thus afflicted refuses all kinds of nourishment; his eyes trickle; his tongue appears covered with a thick white scum; and when he attempts to walk, he moves with difficulty at a slow pace, with a lame or limping motion. They breed in the fourth year, producing young for two years together, and remaining sterile the third. The buffalo has seldom more than one young at a birth, or two at the utmost; and they commonly cease breeding after their twelfth year. Their term of life is pretty much the same as that of the common ox.

The small naked Indian buffalo of Pennant, and its analogous variety, the dwarf buffalo, appear to us to belong rather to the species *Bos Caffer*, than to the above; and will be therefore considered separately under that article. See *CAFFER*.

BUBASTIS, or **BUBASTUS**, in *Ancient Geography*, a famous town of Lower Egypt, seated on the most eastern branch of the Nile, which, from the name of this city, was called by the ancients the "Bubastic" river, or canal. The prophet Ezekiel calls this place "Phi-Beseth." M. d'Anville supposes, that the Bubastic canal of Ptolemy was not that which proceeded from Bubastis to the sea, this being the Pelusiac canal; but that which passed from this city towards the south, and, joining with the Trajan canal, discharged itself into a lake called "Lacus Amari." In this place was a magnificent temple dedicated to Diana, who, in the Egyptian language, was denominated "Bubastis;" and hence has been derived the name of the city.

BUBASTIS, in *Mythology*, a name or attribute ascribed by the Egyptians to Isis, or the moon, which, being personified, was regarded as a distinct deity, and gave name to the city above-mentioned, whither the people resorted from all parts of Egypt, at a certain period of the year. The symbol of this deity was a cat, which was fed by the priests with sacred food, and, when it died, embalmed and carried in pomp to the tomb prepared for it. To this fabulous circumstance, the veneration manifested by the Egyptians for the cat has been ascribed. In the language of the priests, Bubastis was represented as the daughter of Isis; and hence the Greeks, who honoured the moon by the name of Diana, bestowed it also on this Egyptian divinity. Accordingly Herodotus (lib. ii.) says, that Bubastis was called Diana by the Greeks; and to her the Egyptians attributed the office of assisting pregnant women. The Greeks and Latins ascribed the same power to Diana. See Horace, lib. iii. od. 23. According to the Greeks, Diana was the daughter of Jupiter and Latona; and Bubastis sprung, according to the Egyptian mythology, from Osiris and Isis. Bubastis was called by the Greeks also Ilithyia, or Lucina, from her presiding over child-birth; and the Egyptians adored her under this name in the city of Ilithyia, situated near Latopolis. Plutarch, in his treatise of Isis and Osiris, says, that at the festivals celebrated in honour of Bubastis, they burnt men alive, calling them Typhons, and throwing their ashes to the winds. Amasis, says Porphyry, in his discourse of abstinence, who cites the same fact, abolished these sanguinary sacrifices, and established

established figures of wax of the natural size for the human victims. Herodotus, on the other hand, contends (lib. ii.), that the Egyptians were never guilty of this crime. "How can a people," says he, "who can scarcely prevail upon themselves to sacrifice a few animals, shed human blood upon the altars of their gods?" In order to reconcile these contradictory testimonies, Savary conjectures, that the pastoral Arabs, who subjugated Egypt, long before the arrival of the Israelites, brought with them that barbarous custom, which had been established among them from remote antiquity; and as an evidence of the probability of this opinion, it is suggested, that the Egyptians abstained from shedding human blood, as soon as the Pharaoh Amasis had taken Heliopolis from these ferocious conquerors, and had driven them to the frontiers of Arabia.

It has been questioned, how Bubastis could be called the daughter of Isis, as she was also the symbol of the moon. The Egyptian theology, says Savary, explains this apparent contradiction. Isis was the general appellation of the moon, Bubastis a particular attribute. The sun, in conjunction with the star of the night, formed the celestial marriage of Osiris and Isis; the crescent, which appears three days after, was allegorically styled their daughter. In this sense, the Hebrews called the same phenomenon "the birth of the moon;" and to the same purpose Horace says, (od. 23. lib. iii.):

"Cælo supinas si tuleris manus,
Nascente lunâ, rusticæ Phidyle," &c.

Hence we may deduce the reason why, in the city of Ili-thyia, where Bubastis was adored, the third day of the lunar month was consecrated by a particular worship. On this day the moon assumes the form of a crescent; and therefore the Egyptians celebrated a solemnity in honour of Bubastis, which in their tongue signified "New Moon." The crescent with which her head was crowned, obviously expresses the intention of the priests in creating this symbolical divinity. Savary's Letters on Egypt, vol. ii.

BUBASTUS (Cramer), in *Entomology*, a variety of *SPHINX diluvius*, Fabr. See DIDYMA.

BUBBLES, BULLE, in *Physics*, little round drops or vesicles of any fluid filled with air, and formed, either on its surface, upon the addition of more of the fluid, as in raining; or in its substance, upon a vigorous intestine commotion of its parts.

Bubbles are dilatable or compressible, i. e. they take up more or less room, as the included air is more or less heated, or more or less pressed, from without; and are round, because the included aura acts equally from within all round. Their coat, or cover, is formed of the minute particles of the fluid, retained either by the velocity of the air, or by the brisk attraction between those minute parts and the air. See COLOUR.

These little bubbles, rising up from fluids, or hanging on their surface, form the white foam at top; and these same bubbles form the steam, or vapour, flying up from liquors in boiling, &c. the manner of which see under BOILING, VAPOUR, &c.

BUBBLES, in *Commerce*, is a cant name given to a sort of projects, for the raising of money on imaginary grounds; very frequent in the years 1718, 1719, 1720.

The pretended design of these undertakings was, to raise a stock, for the retrieving, setting on foot, or carrying on some promising and useful branch of trade, manufacture, machinery, or the like. In order to which, proposals were given out, showing the advantages of the design, and inviting persons into it. The sum necessary to carry on the affair, together with the profits expected from it, were di-

vided into a certain number of shares, or subscriptions, to be purchased by persons disposed to adventure therein.—The real design, in some, was to raise a sum for the private advantage of the projectors, to be laid out by them in the South-sea stock, &c. in hopes, by the rise thereof, to be able to refund the subscribers' money, with profit to themselves. In others, the design was absolutely to defraud the adventurers of their subscription money, without any view to restitution. There was a third kind somewhat different: the projectors of these, to proceed the more securely, proposed to have books opened, and subscriptions taken at some time to come; and in the mean time took money by way of premium, to entitle persons to be admitted subscribers, as soon as the affair should be ripe for dividing into shares. Several thousand shares were thus very frequently bespoke in one day; and premiums, from one shilling to some pounds, paid thereupon to the profits of the projectors.

The number of bubbles, and their qualities, are very extraordinary; some of them, too, authorized by patents; and, in others, the projectors and their proprietors formed into corporations; some for fisheries, some for insurances, some for the digging of mines, &c. A statute was enacted (6 Geo. I. c. 18), which subjected all unwarrantable undertakings, by unlawful subscriptions, to the penalties of a "præmunire;" and a proclamation was issued in 1720, for suppressing these bubbles; but they were not sufficient for restraining and abolishing them. At length, in the same year, writs of "scire facias" were issued against several companies by name, and in general against all other projects promulgated contrary to law; and the crown-lawyers were strictly enjoined to prosecute all such as had opened books of subscriptions, and all who subscribed to them, or who made or accepted any transfer in them. The publication of the "scire facias," by authority, in the Gazette, struck so general a panic amongst the conductors of all these bubbles, that the suddenness of their fall was no less astonishing than their extent and magnitude.

BUBBLING WATERS. See WATER.

BUBBOLA, in *Ornithology*, a synonymous name of the hoopoe, *upupa cypripes*, which see.

BUBEREZNOUSKOL, in *Geography*, a town of Russian Tartary, on the river Zulux, 32 miles north of Arkadinskai.

BUBIL, in *Ornithology*, a species of TURDUS, of a brown colour, with a black longitudinal band behind the eye. Gmel. This inhabits China, and is the only song-bird that is naturally an inhabitant of the Chinese dominions. It is the same species as the *boubil* already described. See BOUBIL.

BUBLITZ, in *Geography*, a town of Hinder Pomerania, in the principality of Cammin, 4 miles S. E. from Cöllin. This small town, belonging to a bailiwick of the same name, lies on the Gozel, not far from the borders of Poland. In 1605, and again in 1682, it was wholly consumed by fire.

BUBO, in *Anatomy*, is sometimes used to denote that part otherwise called *inguen*, or groin.

BUBO, in *Ornithology*, a species of STRIX, or owl of the eared tribe, known in this country by the name of the great eared, or horned owl. This bird is the largest species of its tribe, being in point of size almost equal to the eagle. Willughby for this reason calls it the eagle-owl. The body of this creature is of a tawny colour, very beautifully variegated with lines, streaks, and speckles of black, brown, cinereous, and ferruginous. The wings are long; the tail short, and marked with dusky bars; legs thick, covered down to the extremity of the toes with a thick and close down of a testaceous

aceous colour. The claws are large, much incurvated, and of a dusky colour.

This bird is of a solitary disposition, residing almost constantly in the depths of extensive forests, in ruined edifices standing in lonely situations, or among rocks that are difficult of access. It therefore abounds most in woody and mountainous countries. There are few instances of its having been observed in Britain. Once or twice it has been shot in Scotland, and another time in Yorkshire. In France it is rather more frequent, but is still less so there than in Germany, Sweden, and Lapland. Besides the European variety, which is found generally diffused over the continent, there are three other very distinct varieties of the *strix bubo*. The first is the Athenian owl, *bubo Atheniensis* of Linnæus, which Latham and other ornithologists agree in admitting to be nothing more than a variety of *bubo*. This is *le grand due d'Italie* of Brisson, and *great horned owl from Athens* figured by Edwards. Albin names it the *black-winged horn-owl*, in allusion to the blackish colour of the wings; the whole plumage being of a darker colour than in *bubo*, but the wings especially. This bird is further distinguished by the legs which are shorter and weaker, but the claws are large and sharp; the face is of a whitish grey colour. Another variety, *le grand due dechauffé* of Brisson, differs only from the Athenian variety in having the legs bare of feathers, and both the legs and feet weaker. The existence of the last mentioned variety rests principally upon Maregrave, who describes it under the Brazilian name of *jacurutá*. He informs us it is the size of a goose, with a head like that of a cat; the eyes shining like crystal, with a yellow circle. Near the aperture of the ears it has several pointed feathers, two fingers long, which being moveable can be erected at pleasure. The tail is broad, the wings not reaching to the end of it. Legs covered to the feet. Colour of the bird variegated with yellow, blackish, and white. This is the variety *δ. bubo magellanicus* of Gmelin.

It should be further added, that the Virginian owl is considered by Buffon to be a mere variety of the species *bubo*; the two birds differing only in the position of the ear-like tufts of feathers on the head. We must allow, that it admits a doubt whether the Virginian owl be in reality a distinct species from *bubo*, or not.

BUBO, in *Surgery*, is a term derived from the Greek βῆλον, *ingen*, which among the ancients had various significations; viz. the inguinal region or groin; an inflammation and swelling of the absorbent glands in the groin; an inflamed or suppurating gland at the bend of the elbow, or under the armpit; a phlegmonous tumour behind the ear, in the neck, or in some other external part of the body, accompanied with febrile symptoms, &c. Vide *Definit. Medicar. Gorrhai*, et *Æconom. Hippocr. Fæsi*, Art. βῆλον.

As the remote causes and consequences of buboes are various, so there have been numerous pathological distinctions introduced; many of which, however, are of but little importance to the practical surgeon: for example, *benign bubo*, *malignant bubo*, *pestilential bubo*, *sympathetic bubo*, *venereal bubo*, *serofulous bubo*, *variolous bubo*, *feirrbous bubo*, *erysipelatos bubo*, *œdematous bubo*, *phlegmonous bubo*, *idiopathic bubo*, *consecutive bubo*, &c. &c. The principal indications of cure are not so much governed by the supposed character and name of the local disorder, as by the nature and tendency of its remote cause: which being detected and removed, will very seldom leave any doubt as to the choice we should make of topical remedies. To describe all the possible causes, symptoms, concomitants, and secondary effects of buboes, in whatever part of the body they may arise, with their various modes of treatment, would be to write a large volume.

Our present business will be, to give only a short account of the principal diagnostic signs of buboes, and their surgical management in ordinary cases.

Buboes are distinguished from other tumours by one or more of the following circumstances:

1. *By their usual situation.* They are only to be found in the course of the lymphatic vessels; i. e. chiefly along the inner sides of the leg and thigh, ascending to the groin; also upon the under surface of the arms, going towards the axillæ; or, upon either side of the neck, and underneath the lower jaw.

2. *By their form and structure.* These glands are usually roundish or oblong: at the beginning of the inflammation, and for some time after, they are hard, or but slightly compressible; they are moveable among the cellular membrane, by which they are surrounded; they have very little sensibility on being touched, until the inflammation advances considerably; they are not, at first, attended with redness, or discolouration of the superincumbent skin; and when they are fairly suppurated, the matter (being confined within a distinct capsule) does not recede upon pressure, like the pus in a lumbar abscess, &c.

3. *By their progress and termination.* They are commonly slow in taking on the inflammatory state, and in advancing to complete maturation. The symptoms will frequently remain a long time, even when their exciting cause has been apparently removed; and the diseased absorbent glands will be apt to inflame repeatedly, with longer or shorter intermissions, after their natural structure has been once deranged.

4. *By the manner of their first appearance.* Buboes often appear in clusters, accompanied with induration and enlargement of the neighbouring lymphatic vessels, which resemble tense chords under the skin; they never arise suddenly, like ruptures and false aneurisms, assuming a large bulk in a very short period; they may generally be ascribed to the presence of an acrid matter, or other cause of local irritation, affecting the adjacent orifices of the absorbent vessels; though, occasionally, buboes will originate from morbid action excited in the glands themselves by cold, &c. or by some vitiated and poisonous fluid, which, after circulating through the system of blood-vessels, is deposited in the glandular substance.

We have known a small crural hernia in a strangulated and irreducible state, mistaken by a celebrated practitioner for an enlarged and indurated lymphatic gland. An incipient true aneurism has been also treated as a suppurating bubo, and even been advised to be opened with a lancet, to the great hazard of the patient's life. Another mistake, not much less serious than these, we have likewise witnessed; viz. that of the operation for an aneurism being proposed at an hospital, in a case where the patient had had deep glandular abscesses or buboes situated over the femoral artery, which might therefore communicate a feeling of pulsation to the examiners. This patient, having been terrified at the proposed operation, left the hospital abruptly, and languished for some months under repeated evacuations of pus, &c. from the diseased glands. His disorder was not clearly understood, until after the man's decease, when it was minutely inspected, and proved to be as stated above. Such cases shew the great difficulty, as well as the importance, of forming a just diagnosis of glandular affections under particular circumstances.

We shall now suggest a few hints for the general management of buboes.

Treatment of a simple Bubo.

All kinds of buboes may be included under two heads; the *simple* and the *complicated*. In the former, we are

to suppose there is no malignity arising from the passive and action of any poisonous matter or acrimonious fluid in the bubo; for when that is the case, regard must be paid to the existing cause, and peculiar means should be adopted, with a view to remove the latent virus from the system.

A simple bubo generally terminates, either by resolution or suppuration. There are circumstances, under which no art can prevent a suppuration; but, whenever it can be prevented, we should endeavour to resolve the tumour, by what are called discutient or antiphlogistic means. The most powerful remedies of this class are, local bleeding by leeches, cold saturnine applications, perfect rest of the member affected, saline purgatives, and moderate or spare diet. But, if the inflammation be not considerable; if the tumefied gland remain indurated; and there be no obvious source of topical irritation, which we hope to get rid of by the gland maturing; we may then, with a design of resolving the induration, employ lightly stimulating means: such as, dry cupping, electrical sparks, volatile liniment, camphorated oil, mercurial frictions, warm farinaceous poultices, and fomentations, &c. At the same time we should direct the patient to use rather a generous diet, with warm clothing, and moderate exercise.

Suppose, however, that the diseased gland goes on to a state of suppuration, which often will happen in spite of all the efforts we can employ to obviate it; a question arises, when the pus has formed, whether or no the abscess should be opened? Some surgeons advise us, in all cases, to leave buboes to themselves, to let them burst, and never interfere with the natural process. This conduct, or rather negligence, we do not wholly approve; for it often occurs, that the pus insinuates itself widely before it finds vent; and it then, perhaps, only oozes by little and little, while the skin remains loose, flaccid, and unhealthy. On the other hand, if a simple incision be made with a lancet through the skin, the sore will not always heal readily, and the surgeon incurs blame for not perfecting what he began.

The common rule to be adopted, and which we have observed to be followed with the best effects, is to let the tumour break of itself, if it be situated in the face or neck, where we always wish to avoid a scar; but in other cases to open the abscess with a caustic, in preference to the knife, so as to destroy a small circular portion of skin. If the gland underneath be very much indurated, and the suppuration does not soon come on kindly, nor the healing process advance, we apply red-nitrated mercury, either by itself, or mixed in some ointment, every day, until the sore assumes a more healthy aspect; still continuing the cataplasms, so long as the morbid hardness remain. See CAUSTIC and ANACRESS. Should the edges become callous and indolent, not being disposed to cicatrize, they may be now and then touched with the caustic, or with an escharotic lotion. Attention must be paid likewise to the patient's ordinary state of health, and such a plan of conduct pursued, as may be indicated by the existing circumstances.

Treatment of the complicated Bubo.

A bubo may be dependent on another disease; and is then to be considered not as a local or primary affection, but as symptomatic of the original malady. Buboes are extremely common, as a symptom of the venereal disease, plague, scrofula, measles, &c.

In the lues venerea, indeed, it but seldom (in comparison with other symptoms) occurs as a sequel of the general contamination, but mostly precedes it. The syphilitic infection very frequently produces buboes in the first instance, before the whole system has been vitiated; though, in some few cases, this order is reversed. And, whenever we believe the

venereal bubo to be a primary or local disorder, unattended with absorption of the virus, our treatment should be much more lenient and topical than in other cases, where we suspect the contrary. See LUES VENEREA, and SYPHILIS. We are perfectly convinced, that great mischief has been done by the indiscriminate and free use of mercury in venereal buboes, especially if they have existed only a short time. Innumerable facts prove that other means, besides a course of mercury internally, will cure venereal buboes; and in particular we may appeal to the effects produced by nitric acid, as recently detailed by Dr. Rollo, Mr. Pearson, Mr. Platt, Dr. Beddoes, and Mr. Blair.

With reference to this subject, and to shew that a salivation has not been universally regarded as necessary for the cure of syphilitic buboes, we shall quote the words of the medical gentlemen of St. Thomas's hospital, who thus express their opinion in a little work printed for the use of their pupils, A. D. 1775.—“If the patient has a suppurating bubo, you should not only wait until it be suppurated and opened, but until it be so near healing, that you may be sure it will be cicatrized before the salivation be over. From a neglect of this caution, you will sometimes have tedious, painful, and phagedenic sores remaining. Mercury will oftener exasperate than dispose them to heal.” See General Rules in raising a Salivation, &c. p. 4.

Whatever be the nature of the disease which occasions buboes to arise, we should principally direct our attention to that disease, and not to the treatment of the local symptoms. Consequently the remarks we have to offer on the management of pestilential buboes, scrofulous buboes, &c. must be referred for other articles in the Cyclopædia. See PLAGUE, FEVER, SCROFULA, and MEASLES.

BUBON, in Botany, (*Bosbon* Hippoc. and Dioscor. from *βουβων*, the groin, or a tumour to which that part is liable, and which it was supposed to cure). Linn. gen. 350. Reich. 380. Schreb. 482. Willden. 546. Gært. 12. Tab. 23. fig. 2. La Marek, Pl. 194. Juss. 221. Ventenat vol. iii. p. 19. Class and order *pentandria digynia*. Nat. Ord. *umbellata*, Linn. *umbellifera*, Juss.

Gen. Char. *Cal. Umbel universal*, of about ten rays, the middle ones shorter; *partial*, of from fifteen to twenty rays. *Involute universal*, of five leaves or more. *Leaves* lanceolate-acuminate, spreading, equal, much shorter than the umbel, permanent; *partial* with rather more leaves, of the same shape, as long as the partial umbel. *Perianth proper*, scarcely visible. *Flowers* all fertile, forming an uniform umbel. *Cor.* petals five, lanceolate, imbricated. *Stam.* filaments five, simple, as long as the petals; anthers simple. *Pist.* germ ovate, inferior; styles two, bristle-shaped, permanent, scarcely the length of the corol, spreading and reflected; stigmas obtuse. *Pericarp*, none; fruit dividing into two, crowned. *Seeds* two, ovate, flat on one side, convex on the other, striated.

Ess. Char. Fruit ovate, striated.

Species, 1. *B. macedonicum*, Macedonian parsley. Linn. Hort. Cliff. 95. Blackwel, Tab. 382. Gært. fruct. 1. 102. *Apium macedonicum*. Bauh. Pin. 154. Tourn. 305. Ray. hist. 463. N° 4. *Petroelinum macedonicum*, Lob. Ic. 703. Dod. Pempt. 697. Ger. 864. 2. *f. 1. emac.* 1016. *f. 2.* Park. 924. 1. “Leaveslets rhomb-ovate, deeply toothed; teeth acuminate; umbels very numerous; seeds rough with hairs.” Biennial in its native climate, but in England it seldom flowers till the third or fourth year, and then dies. *Stem* a foot and a half, or two feet high, cylindrical, with numerous pubescent, whitish branches. *Leaves* smooth, pale green, resembling those of parsley, but with pubescent petioles; those from the root growing almost horizontally, spreading

spreading near the surface of the ground. *Umbels* terminating, the stem and branches small, whitish; peduncles and leaves of the involucre pubescent. Miller and La Marck. *Seeds* ovate-acuminate, of a bay-brown colour; convex, striated their whole length with five elevated lines, and beset with hoary hairs, on one side; flat or slightly concave on the other. Native of Greece and Barbary. Its seeds have a pleasant aromatic taste and smell, and are esteemed diuretic, emmenagogue, and carminative. They are an ingredient in Theriaca. 2. *B. Galbanum*. Lovage-leaved Bubon, Linn. Hort. Clif. 96. Jacquin. hort. 3. 21. tab. 36. Berg. cap. 77. Woodville Med. Bot. v. 1. tab. 12. Oreoselinum, Afric. Tourn. 319. Anifum Africanum Pluk. Phyt. tab. 12. fig. 2. Moris. hilt. 3. p. 297. Ferula Ray. Sup. 252. "Leaflets ovate-wedge-shaped, acute, finely serrated; umbels few; seeds smooth; stem shrubby, glaucous." An evergreen shrub from eight to ten feet high. *Stem* cylindrical, jointed, smooth, covered with a glaucous exudation, which comes off when handled; towards the bottom, woody and naked; towards the top, sending off leaves and branches. *Leaves* alternate, bipinnate, smooth, of a pale green colour, inclining to glaucous. *Umbels* terminal from the stem, and pendant branches; leaflets of the general involucre, about twelve, lanceolate, membranous, and bent downwards; of the partial one six, spreading. *Flowers* small, greenish yellow. *Seeds* smooth, marked with three elevated lines, without a membranous wing. Native of the Cape of Good Hope: cultivated by Gerard in 1596. It is from this plant, that the drug called galbanum is said by Linnæus to be obtained. Linnæus asserts this on the authority of Plukenet, and has been followed by the London, Edinburgh, and other medical colleges. But Herman, who was an intelligent physician, and practised many years in the East Indies, and at the Cape of Good Hope, is of opinion, that the inspissated juice of several kindred plants is brought to Europe, and vended under the same name. Galbanum is commonly imported from Turkey and the East Indies, in large, softish, ductile, pale-coloured masses, which by age acquire a brownish-yellow appearance: these are intermixed with distinct white grumes or tears, which are accounted the best part of the mass; but the separate hard tears are externally of a ferruginous colour, and always preferred to the mass itself. It has a strong unpleasant smell, and a warm bitterish acrid taste. Like other gummy resins, it unites with water by trituration into a milky liquor, but does not perfectly dissolve in water, vinegar, or wine. Rectified spirit takes up a greater quantity, but not the whole. A mixture of two parts of rectified spirit, and one of water, dissolves all but the impurities. Medically considered, it may be said to hold a middle rank between asafætida and ammoniac: but it is much less fetid than the former, and is therefore accounted less antispasmodic, nor is it supposed to have expectorant powers equal to those of the latter: it has the credit, however, of being more useful in hysterical disorders, and of promoting and correcting various secretions and uterine evacuations. It has been applied externally to expedite the suppuration of inflammatory and indolent tumours, and as a warm stimulating plaster. It is an ingredient in the pilulæ e gummi, the emplastrum lithargyri cum gummi, of the London-pharm. and in the empl. ad clavos pedum of the Edin. Miller, La Marck, and Woodville. 3. *B. levigatum*. Hort. Kew. 1. p. 352. "Leaflets lanceolate, very obtusely and obsoletely crenate; seeds smooth; stem shrubby." A native of the Cape; introduced into England by Mr. Masson, 1774. 4. *B. gummiferum*. Linn. Spec. Ferula Africana galbanifera folio myrrhidis Comm. hort. 2. p. 115. t. 58. "Leaflets gashed, acuminate; the

lower ones broader; seeds smooth; stem shrubby," nearly allied to *B. galbanum*. A native of the Cape, cultivated by Miller in 1731. 5. *B. rigidus*. Linn. Hort. Clif. 95. (Ferula durior Bocc. mus. 2. p. 84. t. 76. Bar. rar. t. 77). "Leaflets linear." A low perennial plant with the habit of a small ferula. *Stem* about a foot and a half high, cylindrical, striated, but little branched. *Lower leaves* large, tripinnate; leaflets linear, stiff, and short. *Flowers* yellow, in loose umbels. A native of Sicily.

Propagation and Culture.—*B. macedonicum* is propagated by seeds, sown in light sandy earth, either early in the autumn, or in April: if the season prove hot and dry, the ground should be shaded in the middle of the day, and frequently watered. In the beginning of October, the plants should be transplanted into a warm dry border, and a few of them put into pots to be sheltered under a frame, in case the winter be severe. The seeds of galbanum and gummiferum should be sown in pots filled with light loamy earth, as soon as they arrive. If it be in autumn, they should be kept during the winter in a bed of tanners' bark, where the heat is gone. In spring, the plants will come up, and in April, should be carefully transplanted into fresh pots filled with the same kind of earth. After having remained in the bark till they have taken root, they should be gradually enured to the open air, and may be placed in June with other exotic plants in a sheltered situation. In winter, they must be kept in a green-house, where they should have but little water. Miller's Dict.

BUBON, in *Ancient Geography*, a town of Asia Minor, in Caballia, over against Caria. This city, according to Pliny, (l. v. c. 27.) was situated in the vicinity of Great Cibyra, and had, with this and two other cities, formed a league, offensive and defensive, called the "league of the four cities." When the prætor Murena, in the year of Rome 670, dismembered the state of Cibyra, the town of Bubon was annexed to Lycia. According to Steph. Byz., this town, and also that of "Balbuso," derived their names from the pirates who founded them.

BUBONIUM, in *Botany*, Tabern. See INULA SALICINA.

BUBONIUS, *Lapis*, in *Natural History*, a figured stone, in shape resembling an owl's head, of a stony substance, black within and cineritious without; it was thus denominated by Dr. Plott, having not before been named by naturalists. Plott's Oxford, ch. v. §. 45.

BUBONOCELE, in *Surgery*, is a tumour in the groin, formed by the protrusion of the intestines, or omentum, through the openings designed for the passage of the spermatic cord, in the male, and the round ligament in the female.

It appears first in the groin, at an aperture, situated midway between the symphysis pubis and superior spinous process of the ilium, and which may be properly called the superior abdominal ring, and then passing obliquely downwards and inwards, it emerges at the inferior abdominal ring in the tendon of the external oblique muscle, and appears within the scrotum. Whilst placed in the groin, surgeons usually call it the inguinal hernia, and when it has extended into the scrotum, it is termed scrotal hernia. The protruded parts are contained in a sac formed by the peritoneum; and whilst the tumour remains in the groin, it is placed under the tendon of the external oblique muscle; but when it descends into the scrotum, it is covered, both by a fascia given off by the external oblique muscle, and by the cremaster. The spermatic cord usually passes behind the sac, through its whole course, but it has been found in some instances divided by it, and in others, passing before the tumour. The epigastric artery is placed near the mouth of the sac, sometimes on the inner, but most frequently on its

outer side. This hernia may be distinguished from other diseases of the scrotum, with which it is liable to be confounded, by the following marks:

1. By its dilating under coughing.
2. By its disappearing in the recumbent, and re-appearing in the erect postures.
3. By the gradual progress of the disease from the groin to the scrotum.
4. From its feel, which is irregular, and doughy, where omentum is contained, but elastic and regular, if it contains intestine; and where the intestines return into the cavity of the abdomen, it recedes with a gurgling noise.

The inguinal hernia is more frequent on the right, than on the left side, probably, because our strongest exertions are made on that side; and the inguinal hernia in the male is more frequent than any other species, on account of the magnitude of the abdominal rings.

This hernia exists in the three following states:

1. Reducible, where the parts can be returned into the cavity of the abdomen.
2. Irreducible, when they cannot be returned.
3. Strangulated, when they are inflamed and obstructed by the effects of pressure.

In the reducible state, a steel truss must be applied, the pad of which should press upon the upper abdominal aperture; for the object in wearing it is to close the communication between the hernial sac, and the abdomen, by adhesion, which can only be effected by the pressure being applied upon the mouth of the sac. Trusses are faulty in this respect, being made to press upon the pubis, instead of midway between the pubis and spinous process of the ilium. A double truss is required if there are two herniæ; the construction of which differs from the others, in having two pads instead of one.

When irreducible, it grows to an enormous size, the scrotum often becomes diseased, and the person is always liable to accidents. It is therefore necessary that some means should be adopted to prevent its increase. If it is an omental hernia, a steel truss may be safely worn, which will prevent any further protrusion; but if it is intestinal, a bag truss should be applied, which ought to lace on its fore part, and thus, by preserving a constant pressure upon the part, any increase of the tumour is prevented, and even its size will gradually diminish.

The strangulated state is produced by the pressure, either of the abdominal ring, of the mouth of the hernial sac, or the edges of the aperture surrounding the mouth of the sac, or by a cord formed by adhesion within the sac, which becomes entwined around the intestine.

Whatever is the cause, it becomes necessary to liberate the part from pressure, or the person cannot long survive.

For this purpose, it is proper to put the patient in a supine position, with the body a little bent, and the thighs raised to a right angle with the spine, so as to relax the rings through which the hernia has passed. The surgeon then embracing the lower part of the tumour with his right hand, and applying the fingers of the other opposite the orifice of the sac, kneads the swelling into the cavity of the abdomen. If this plan, after a trial of a quarter of an hour, does not succeed, the patient should be bled copiously, and put in a warm bath, and when faint from the operation of both these causes, another attempt to return the tumour is to be made. If this is unsuccessful, a tobacco clyster composed of half a drachm of tobacco, infused in a pint of boiling water, is to be injected, and after some minutes should be repeated, if the first has produced but little effect in exciting nausea and fainting. Another, and often successful mode of attempting the reduction, is by the application of ice enclosed in a

bladder, and laid on the part; but if the abdomen is sore upon pressure, no time should be lost in any of these trials, but an operation to liberate the bowels should be immediately performed, in the following manner: the patient is to be placed on a table three feet six inches in height, the body to be horizontal, and the legs hanging from the knees over the table, and the surgeon, standing between them, makes an incision from the upper part of the tumour through the skin, and then successively and cautiously, through the fascia and cremaster muscle, and this exposes the surface of the hernial sac. This being pinched up between the fingers, is to be opened by a very small incision, and a director being introduced, the sac is to be cut to within an inch of the abdominal ring, in the oblique muscle to its lower part. The intestine or omentum is thus exposed, and a small quantity of fluid generally escapes. The finger is then to be passed into the sac towards the abdomen, and the seat of the stricture examined. If the stricture is at the abdominal ring, the probe-pointed bistory should be passed between the sac and the ring, and the latter only cut in the direction of the tumour, and no danger whatever results from doing this. And, if the stricture arises from the pressure of the parts forming the upper aperture, the knife is still to be passed in the same direction as before, but further under the tendon of the external oblique, and the upper part of this aperture is to be cut in the same direction as the former. But when the mouth of the sac itself girts the contents, it must be divided as follows: The finger is to be thrust within the sac to the stricture, and then the probe-pointed bistory carried along the middle of the finger is insinuated within the stricture, which is to be cut upwards or forwards at the middle of the anterior part of the hernial sac. The epigastric artery has been found on either side of the mouth of the sac, but it is never situated on its anterior part, and this, therefore, is the part which should always be cut.

When a band is entwined around the intestine, or omentum, it is easily seen, and as readily divided.

The stricture being divided, and the intestine or omentum being found free from mortification, they are to be returned into the cavity of the abdomen by small portions, and by gentle pressure; but if the quantity of omentum is large, a portion of it should be cut away, and ligatures applied upon the divided vessels.

When the hernia is very large, and has been long irreducible, it is right to divide the stricture at the abdominal ring, (which is in a large hernia the usual seat of the stricture) without opening the hernial sac. The incision for this purpose is to be made through the skin, over the neck of the tumour, so as to expose the ring and the fascia, which it sends off: an opening is to be made through the fascia, and a director passed under the abdominal ring, which being divided, the contents of the tumour will be liberated from pressure.

When an inguinal hernia is so small as to extend no further than the upper part of the scrotum, the operation is to be begun mid-way between the pubis and the ilium over the tumour, and the incision carried as far as the hernia extends. The tendon of the external oblique muscle which is exposed by the division of the skin, is next to be cut through, and the hernial sac being then seen, is to be opened in a very cautious manner. The stricture which is situated, either in the sac itself, or occasioned by the edges of the upper ring, is then to be cut in a direction parallel with the *linea alba*.

The inguinal hernia in the female is not so frequent an occurrence as in the male, because the abdominal rings are less. It passes through the same apertures as in the male, and when large, extends itself into the *labium pudendi*. It requires the

the same truss in the reducible state, as that worn by the male, and when strangulated, it demands the same means for reduction. If the operation is required, it is to be performed in the following manner. An incision is to be made from the upper part of the tumour to the lower, and along its middle, and when the skin is thus divided, a fascia is exposed which covers the sac, which being next cut through, the sac becomes exposed, and is to be carefully opened, and the stricture felt for. If it is situated at the ring of the oblique muscle, the probe-pointed bistory must be passed between the sac and the ring, and the ring cut upward; but if the stricture is at the mouth of the sac, the bistory is to be passed within the sac, and the stricture is to be divided at the anterior and middle part of the mouth of the hernial sac.

BUBROMA, in *Botany*, (from *Bovus* an ox, and *Bryonia* food,) Schreb. 1216. Willden. 1389. Martyn's Miller. (Guazuma Juss. 276. Ventenat 3. 196. La Marck, Bosc.) Class and order *polyadelphia dodecandria*. Nat. Ord. *columnifera*, Linn. *Malvaceae* Juss.

Gen. Char. *Cal.* perianth three-leaved; leaves ovate, concave, acute, reflexed, deciduous; two a little larger. *Cor.* Petals five, concave or hollowed, in the shape of a pouch at their base, lengthened at their summit into a long bifid awn, inserted into the nectary at the base. *Nectary* a bell-shaped pitcher, divided into five equal, lanceolate, sharp, minute, upright segments, spreading a little at the tip. *Stam.* Filaments five, filiform, upright, bent outwards at the tip, outwardly fastened to the nectary, and alternate with its segments, trifid at the tip; anthers three on each filament, two at the tip on each side, the third a little lower, each placed on one of the divisions of the filament; the cells margined. *Pist.* germ superior, roundish, hispid; style filiform, about the length of the stamens; stigma simple, bearded, but not divided. *Pericarp*, capsule, (Drupe, La Marck) subglobular, woody, muricated all round with club-shaped tubercles, punched with a tenfold series of small transverse holes, five-celled, valveless, not opening; partitions woody-fibrous; cells covered on the inside with a thin membrane. *Seeds* numerous, angular, almost reniform, attached in a double row in each cell to the common central receptacle.

Obs. Jussieu, Ventenat, La Marck and Bosc. call the five segments of the nectary, barren filaments, and describe its lower part as a tube formed by the union of all their ten filaments. Schreber says, that the capsule is terminated by a five-rayed leafy star; but there is no appearance of such an appendage in La Marck's figure, nor is it mentioned by any other author. According to Swartz, the rind is perforated like a sieve, referring, doubtless, to Schreber's ten-fold series of little transverse holes, improperly translated by Mr. Martyn, dots, through which, we presume, the ripe seeds escape; and, if we rightly understand Schreber's rather obscure description, there is one for each seed.

Ess. Char. *Perianth* three-leaved. *Petals* five, lengthened into a bifid awn. *Anthers* three on each filament. *Stigma* simple. *Capsule* muricate, perforated with holes, five-celled, valveless.

Species, *B. Guazuma*, elm-leaved Bubroma, or bastard cedar. (*Theobroma Guazuma*, Linn. hort. Cliff. 379. &c. Reichard, Swartz obs. 291. Brown Jam. 306. 1.) La Marck, Pl. 637. A tree forty or fifty feet high. *Trunk* nearly the size of a man's body, covered with a dark-brown, furrowed bark. *Branches* extending nearly horizontally; smaller ones leafy, tomentose. *Leaves* alternate, ovate, acuminate, a little heart-shaped, obtusely and unequally serrated, glossy, bright green on their upper, and pale on their under

surface, with a strong midrib, and several transverse veins; petioles tomentose, a little thicker than the leaf; stipules linear-awl-shaped, approximating to the branches. *Racemes* corymbose, axillary. *Flowers* small, pale yellow; awn purplish. A native of the East and West Indies. In the West Indies it is planted in rows to make a shady walk. For this purpose, it is pollarded at the rainy season, when nine or ten feet high; within a month of which operation, it is covered with foliage, and forms a head more than six feet in diameter. As it is liable to suffer by the wind, its upper branches are lopped every five or six years. Cattle are fed on its leaves and fruit in dry seasons, when other forage is scarce. Its seeds are very mucilaginous, but agreeable to the palate. The wood is light and easily wrought, and is employed in coach pannels. A decoction of the inner bark is very glutinous, and very like that of the elm. It is said to be excellent in the elephantiasis, a disorder to which the negroes are much subject.

Propagation and Culture.—This tree was cultivated in England by Mr. Miller, in 1739. La Marck's description was formed from a living plant which flowered in the stove of the royal garden at Paris, about 1788. The seeds must be sown in a hot bed in the spring, and when the plants are fit to be removed, should be put into separate pots, and treated in the same way as the coffee-tree.

BUBRY, in *Geography*, a town of France, in the department of Morbihan, and district of Lorient, 10 miles N.N.E. of Hennebont.

BU C, GEORGE, in *Biography*, an English antiquarian, was the descendant of an ancient family, and was born in Lincolnshire towards the close of the 16th century. In the reign of James I. he was made one of the gentlemen of his Majesty's privy chamber, and knighted. The work by which he was chiefly distinguished was his "Life and Reign of Richard III. in five books," in which he takes great pains to vindicate that prince's character. But in this attempt he evinces more zeal than judgment, and his work is a pedantic, rhetorical panegyric, rather than a judicious and impartial history. It is printed in bishop Kennet's collection of the English Historians, London 1706 and 1719. He was also the author of "The Third Univerſitie of England; or, a Treatise of the Foundations of all the Colleges, ancient Schools of Privilege, and of Houses of Learning and Liberal Arts, within and about the most famous Citie of London, &c." written in 1712, with a view of shewing that all the arts and sciences are taught in the metropolis, and annexed to the edition of Stow's Chronicle by E. Howes, London, 1631. He composed likewise a treatise of "The Art of Revels." Camden represents him as a person of excellent learning, and acknowledges obligations to him. Biog. Brit.

BUCA, in *Conchology*, an old name for buccinum.

Buca, in *Ancient Geography*, a town of Italy, in the country of the Frentani, situate on the sea-coast.

BUCANECEPHALUM, in *Botany*. Pluk. See *SARACENIA*.

BUCAO, in *Ornithology*, a name given in the Philippine islands to a species of screech-owl, which is the size of a peacock. It is very common in those islands, but wholly unknown to us. It is a very beautiful bird, but makes a hideous noise in the night.

BUCARDITES, or **BUCARDITA**, in *Natural History*, a name given by many authors to a stone in some degree resembling the figure of an ox's heart. It is usually of the substance of the coarser stones, and is no other than a quantity of the matter of such stone received while moist into the cavity of a large cockle, and thence assuming the figure of

the inside of that shell, the depression of the head of the cockle, where the *cardo* or hinge of this shell is, makes a long and large dent in the formed mass, which gives it a heart-like shape. Plott mentions a *bucarditer*, which he found at Stretford in Staffordshire, which weighed twenty pounds, though broken half way, curiously reticulated, with a white spar-coloured stone. Nat. Hist. Oxf. chap. v. § 145.

BUCARDIUM, in *Conchology*, with old authors, a name applied to the bull's heart chama, *Chama cer* of Linnaeus; and, in a more general sense, as a generic title for all the *cardiformes*, or heart shells in the *chama*, the *venus*, and the *arca* genera. *Bucarde* of the French, comprehends the subcardiform shells of the genus *Cardium*.

BUCARELLI, in *Geography*, a large bay on the Northwest coast of America, discovered by Don Juan de Ayala, a Spanish navigator, in 1775. It was named "The entrance of Bucarelli," by Don de la Bodega and Don Maurelle, in honour of friar Don Anthony Maria Bucarelli, of Ursua, viceroy of Mexico, and was visited again in 1779, by two frigates under the command of Don Ignace Arteaga and Don de la Bodega, in 1779. The entrance of this bay is situated, according to the determinations of La Perouse in 1786, in about 136° 15' W. long. from Paris, and according to the observations made by Capt. Cook in 1778, of the coasts near this entrance, very nearly 227° E. long. from Greenwich, or 1351° W. from Paris, and in N. lat. 55° 15'. The Spanish commandant caused a complete survey to be made of this gulf, which runs upwards of eight leagues inland, contains several large islands, and presents in its circumference 11 fine harbours, where ships may anchor with safety. Maurelle says, that he does not know a single port in all Europe that could be preferred to that of Santa Cruz, which was the name they gave to the port at which their frigates anchored, and which is situated at the entrance of the gulf on its east coast. Maurelle met with but few habitations in his expedition; seeing only one village, situate at the top of a steep mountain, which could only be ascended by a flight of steps, or rather wooden ladder, whence, if the foot slipped, one must fall down the precipice. For an account of the inhabitants, &c. See *Cross Sound*.

BUCAROS. See *ALCARRAZAS*.

BUCCA FERREA, in *Botany*. Mich. See *RUPPIA*.

BUCCALES glandule, in *Anatomy*, the mucous glands of the mouth, which are situated beneath the membrane which lines the cheek. See *MOUTH*.

BUCCANEERS, or **BUCANEERS**, a term frequent in the West Indies, properly used for a kind of savages, who prepare their meat on a grate, or hurdle, made of Brasil-wood, placed in the smoke, at a good height from the fire, and called *buccan*. Whence, also, the little lodges, raised for the preparation of their food, are called *buccans*; and the action of dressing it *buccaning*.

Meat buccaned is said to have an excellent taste, the vermilion colour of a rose, and a charming smell; all which it retains many months. Oexemelia, from whom we have this, adds, that the neighbouring people send their sick thither; that, by eating their buccaned meat, they may be recovered.

The origin of the word is referred to the people of the Caribbee islands, who used to eat their prisoners of war in pieces, and lay them on hurdles with fire underneath, which they call *buccaning*, i.e. roasting and smoking together: hence our buccaneers took both their name, and their custom; with this difference, that what the former did to men, these did to animals caught in hunting.

The Spaniards, Savary tells us, called the buccaneers in

their territories *matadores*, that is, *killers*; and *monteros*, that is, *hunters*: the English call theirs, *cow-killers*.

The buccaneers are of two distinct professions: the one only hunt bulls for their skins; the other beasts for their flesh.

The art of *buccaning*, Oexemelia describes thus: the beast being flaid, and the bones stripped out, the flesh is cut into pieces of the length of the arm, and salted, and the next day laid on the buccan; which consists of twenty or thirty bars laid across, half a foot from each other: under this they raise a thick smoke, adding the skin and bones of the beast, to heighten it.

This is found vastly better than any simple fowl: because the volatile salts of those parts are by this means communicated to the flesh, and give it such a relish, as that, after a little of this buccaning, the nicest palate will eat it without further preparation.

Buccaneers are usually confounded with freebooters, from whom, in strictness, they ought to be distinguished. The ancient inhabitants of Hispaniola, and the other Caribbee islands, after their conquest by the Europeans, consisted of four ranks or orders of persons, viz. *buccaneers*, or bull-hunters, who scoured the woods; *freebooters*, who scoured the seas as pirates; *kufbandmen*, who tilled the lands; and *slaves*. Of these the two first distinguished themselves most by their military disposition, and the ravages they made, especially among the Spaniards.

The name is particularly given to the French inhabitants of the island of St. Domingo, whose sole employment is to hunt bulls or wild boars; in order to sell the hides of the former, and the flesh of the latter. The French buccaneers packed their hides in bundles, which they called loads, and which consisted of those of full-grown bulls, of young bullocks, and of cows. Each load was formerly sold for about six pieces of eight rials; the French coins not being current in the island of St. Domingo. The boar meat, previously seasoned, was also sold by the bundle or pack, weighing commonly 60 pounds, at the rate of six pieces of eight per pack. It was packed up in palmetto leaves, the weight of which was deducted; so that each pack contained 60 lbs. of buccaned meat. These buccaneers had also a great trade in the lard of boars, which they melted and deposited in large pots, which they called "potiches." This lard, which is called *mantequa*, is also sold for about eight pieces of eight per pot.

Of this article there were a great consumption and trade in the French settlements of the islands of St. Domingo, and in those of Tortuga; beside which they sent great quantities of them to the Antilles, and even into the continent of French America. There was also a great deal of it sold for the support of the crews of the ships that came from France for trading, or which the privateers of Tortuga fitted out for cruising against the Spaniards. The Spaniards also, who had their buccaneers, under the appellation of "matadores," or "monteros," and who were employed in bull-hunting, prepared their hides after the manner of the French; and these hides found a ready market at the Havannah, a famous harbour in the island of Cuba. From hence they were brought by the flota and galleons, which touched at this port, in their return from Vera Cruz and Porto Bello, to Spain, and under the denomination of Havannah hides, were esteemed the best of any that were brought from America to Spain.

Sometimes the word *buccaneer* signifies also those famous adventurers of all the nations in Europe, who joined together to make war against the Spaniards in America: and,

BUCCANEERS.

under that name, their history has been published in the year 1686, by Alexander Oliver Oexemelia.

These adventurers had taken possession of the small island of Tortuga, as early as the year 1632, and found little difficulty, after having excluded the Spaniards, and fortified themselves in this island, in establishing themselves on the northern coast of Hispaniola. They at first subsisted chiefly by the hunting of wild cattle. Part of the beef they ate fresh, and part they dried; and the hides they sold to the masters of such vessels as came upon the coast, and who furnished them, in return, with cloaths, liquors, fire-arms, powder, and shot. Their dress consisted of a shirt dipped in the blood of the animals they had slain; a pair of dirty trowsers; a leathern girdle, from which hung a short sabre, and some Dutch knives; a hat without any rim, except a flap before, in order to enable them to pull it off; and shoes made of raw hides; but they wore no stockings. When the wild cattle became scarce, these buccaneers were under a necessity of turning their industry to other objects. The more sober minded among them applied to the cultivation of the ground, which abundantly requited their toil; while those of a bold and restless disposition associated themselves with pirates and outlaws of all nations, and formed the most terrible band of ravagers that ever infested the ocean. To these ravagers, however, rendered famous by their courage and their crimes, France and England are indebted, in some measure, for the prosperity of their settlements in the West Indies.

These piratical buccaneers, assuming the name of the "Brothers of the coast," formed themselves into small clans or societies; and made their excursions in open boats, each of which generally contained between 20 and 30 men, exposed to the intemperature of the climate, and encountering alternately the burning heat of the day, and the chilling damps of the night. The natural inconveniences, connected with this mode of life, were augmented by others arising from their licentious disposition. A love of freedom and independence, by which they were actuated to a degree of frenzy, in common with other savages, rendered the buccaneers averse from all restraints which civilized men impose upon themselves for their common happiness; and as the authority, which they had conferred on their captain, was chiefly restricted to giving orders in battle, they lived in the greatest disorder. Like savages, having no apprehension of want, and taking no care to guard against famine by prudent economy, they were frequently exposed to all the extremities of hunger and thirst. But deriving, even from their distresses, a kind of courage that defied all danger, they were transported with an astonishing degree of enthusiasm whenever they saw a sail. On the mode of attack they seldom deliberated, but it was their custom to board the ships that fell in their way as soon as possible. The smallness of their own vessels, and their dexterity in managing them, preserved them from the fire of the enemy. They presented only to the broadside of a ship their slender prows, filled with expert marksmen, who fired at the port-holes of the enemy with such exactness, as to confound the most experienced gunners. And when they could fix their grappling tackle, the largest trading vessels generally were obliged to strike. In cases of extreme necessity, they attacked the ships of every nation; but those belonging to Spain were assailed as the principal objects of their piracy. They thought, that the cruelties, which the Spaniards had exercised on the natives of the new world, furnished a sufficient apology for any violence that could be committed against them; nor did they ever embark on any expedition without publicly praying to Heaven for success, nor return loaded with booty without

solemnly returning thanks to God for their good fortune. This booty was originally carried to the island of Tortuga, the common rendezvous of the buccaneers, and at first their only place of safety; but afterwards the French went to some of the ports of Hispaniola, where they had established themselves in defiance of the Spaniards, and the English to those of Jamaica, where they could dispose of their prizes to greater advantage, and lay out their money more to their own satisfaction, either in business or in pleasure. Before the distribution of the spoil, each adventurer, holding up his hand, protested that he had secreted no part of what he had taken; and if any one was convicted of perjury, which seldom occurred, he was punished by being expelled the community, and by being left, at the first opportunity, on some desert island, as a wretch unworthy to live in society, even among the destroyers of their species.

After having provided for the sick, the wounded, and the maimed, and after having settled their respective shares, and distributed such as belonged to those who had no relations or friends, in charity to the poor, and to churches; they indulged in all kinds of licentiousness. When they were asked, why they dissipated so heedlessly and rapidly the spoil which they collected with so much personal danger? they replied, "Exposed as we are to a variety of perils, our lives are totally different from those of other men. Why should we, who are alive to-day, and run the hazard of being dead to-morrow, think of hoarding? Studious only of enjoying the present hour, we never think of that which is to come." The ships that sailed from Europe to America seldom tempted the avidity of the first buccaneers, as the merchandize they carried could not readily have been sold in the West Indies in those early times. But they eagerly watched the Spanish vessels on their return to Europe, when they were known to be laden with treasure. They commonly followed the galleons and flota, transporting the produce of the mines of Mexico and Peru as far as the channel of Bahama; and if any ship was accidentally separated from the fleet, they instantly beset her, and she seldom escaped. And they even ventured to attack several ships at once, which were commonly surrendered, when they came to close quarters; for the Spaniards considered them as demons, and trembled at their approach. The Spaniards, indeed, who found themselves a continual prey to these furious ravagers, were almost reduced to despair; they lessened the number of their ships, and the colonies gave up their connections with one another. The buccaneers were thus emboldened; and instead of confining themselves to those invasions of the Spanish settlements, which had for their object a supply of provisions, they determined, more especially as their opportunities of making captures by sea were diminished, to procure by land that wealth which they could not obtain on the ocean. Accordingly, they formed themselves into large bodies, and plundered many of the richest and strongest towns in the New World. Maracaybo, Campeachy, Vera Cruz, Porto Bello, and Cartagena, on this side of the continent, and Quayaquil, Panama, and many other places on the coasts of the South Sea, severely suffered from their depredations. In a word, the buccaneers, the most extraordinary association of men that ever appeared on the face of the globe, but whose duration was transitory, subjected to their arms, without a regular system of government, without laws, without any permanent subordination, and even without revenue, cities and castles, which had baffled the utmost efforts of national force; and if conquest, not plunder, had been their object, they might have made themselves masters of all Spanish America.

Among the buccaneers, who first acquired distinction in
this

BUCCANEERS.

this mode of plundering, was Moutbars, a gentleman of Languedoc, who conceived from his youth a violent antipathy to the Spaniards, on account of the enormities they had committed in the conquest of the New World, and who, determining on retaliation, embarked about the middle of the 17th century, on board a French ship for the West Indies, in order to join these enemies of Spain. An enthusiasm which originated in humanity, at length became the source of the most unfeeling barbarity; for so much did the Spaniards suffer from the fury of this enthusiast, that he acquired the name of the "Exterminator." Michael de Basco and Francis Lolois were also greatly renowned for their exploits both by sea and land. The most important enterprise, in which these leaders, with eight vessels and 600 associates, engaged, was that of the gulf of Venezuela. This gulf runs up into the land for about 50 leagues, and communicates, by a narrow strait, with the lake of Maracaybo. They began (A.D. 1667,) with storming and taking the castle, called "La Barra," which defended this strait, and putting to death the garrison, consisting of 250 men; and they then advanced to the city of Maracaybo, built on the western coast of the lake, at the distance of about 10 leagues from its mouth. But on their arrival, the inhabitants had abandoned it and removed their most valuable effects. Here they spent a fortnight in debauchery and riot; so that when they proceeded to Gibraltar, a town at the extremity of the lake, to which the flying inhabitants had retired, they found it newly fortified, and after reducing it at the expence of much blood, they took possession only of an empty town. Exasperated at this second disappointment, they set fire to Gibraltar; and Maracaybo would have shared the same fate, if it had not been ransomed. But, previous to this ransom, they despoiled it of its bells, images, and all the ornaments of the churches, intending, as they said, to build a chapel in the island of Tortuga, and to consecrate that part of their spoil to sacred uses. But of all the buccaneers, French or English, no one was so uniformly fortunate and successful, or executed so many daring enterprises, as Henry Morgan, a native of Wales. While de Basco, Lolois, and their companions, were squandering, at Tortuga, the spoils they had acquired in the gulf of Venezuela, he sailed from Jamaica, to attack Porto-Bello: and he conducted his measures so well, that soon after his landing, he surprised the centinels, and made himself master of the town, (A.D. 1668,) before the Spaniards could put themselves into a posture of defence. In order to reduce the citadel, whither the inhabitants had conveyed their most valuable property, and the plate of the churches, he resorted to the following artful expedient: he compelled the priests, nuns, and other women, whom he had made prisoners, to plant the scaling ladders against the walls of the fortrefs, from a persuasion that they gallantly and superabundantly of the Spaniards would not suffer them to fire on the objects of their love and veneration. In this imagination, however, he was deceived. The Spanish governor used his utmost efforts to destroy every one that approached the works; so that Morgan was reduced to the necessity of carrying the place by storm. Having thus succeeded, he took possession of a vast quantity of rich merchandise, and also of bullion and specie amounting to one hundred thousand pounds sterling. With this booty Morgan and his associates returned to Jamaica; and formed a new enterprise against Maracaybo. Accordingly he collected 15 vessels and 960 men; and with this armament (A.D. 1669,) entered the gulf of Venezuela unobserved, silenced the fort that defended the passage to the lake of Maracaybo, and found the town totally deserted; but he discovered the chief citizens, and the greater part of

their wealth in the neighbouring woods. He proceeded to Gibraltar, which was left desolate; however, whilst he was attempting, by the most horrid cruelties, to extort from the inhabitants, whom he had seized, a discovery of their hidden treasures, he was informed of the arrival of three Spanish men of war at the entrance of the lake. Having reconnoitred the enemy, he considered his condition as desperate. Nevertheless, he concealed his apprehensions, and sent a letter to the Spanish admiral, boldly demanding a ransom for the city of Maracaybo. The answer returned by the admiral was resolute; insisting on his surrendering his booty and prisoners, with leave to return to his own country, or if he refused, announcing his fixed purpose of putting every man to the sword. Morgan and his associates deliberated; and they at length determined to risk any consequence rather than resign their booty, which they had gained with so much peril. As the admiral adhered to his declared purpose, Morgan informed him, that if he would not allow him to pass, he would find means to effect his escape without his permission. He accordingly divided the spoil, so that each might have his own portion of it to defend; and having filled a vessel, taken from the enemy, with combustibles, he gallantly proceeded to the mouth of the lake; and having burnt two of the Spanish ships and captured one, he made a feint of disembarking men, in order to attack the fort by land, and thus diverted the attention of the garrison, whilst he passed the bar with his whole fleet, without receiving any damage. Morgan, having disposed of his booty at Port-Royal in Jamaica, put to sea again (A.D. 1670,) with a larger fleet, and a more numerous body of adventurers; and after reducing the island of St. Catharine, sailed for the river Chagre, by which he intended to advance to Panama. At the entrance of the river stood a strong fortrefs; an arrow was shot from the bow of an Indian, and lodged in the eye of one of his associates; but Morgan, pulling the arrow from the wound, wrapped one of its ends in tow, put it into his loaded musket, and discharged it into the fort; and this arrow falling on the roof of one of the houses, which, according to the custom of the country, were constructed of wood, and covered with straw, set fire to it; and thus the Spaniards were thrown into the utmost consternation. After the death of the governor, who bravely perished with his sword in his hand, at the head of a few resolute men, the place surrendered to the assailants. Morgan proceeded up the river to Craces, and thence by land to Panama, and, after several rencounters, took quiet possession of it, and deliberately pillaged it for some days. Here he met with a fair captive, who inflamed his savage heart with love; and finding all his solicitations ineffectual, he made a forcible attempt on her person. "Stop, ruffian," she exclaimed wildly, and springing from his arms; "stop! thinkst thou to ravish from me my honour, as thou hast wrested from me my fortune and my liberty? No! be assured that my soul shall sooner be separated from this body:" and she drew a poniard from her bosom, which she would have plunged into his heart, if he had not avoided the blow. Enraged by this virtuous resistance, Morgan threw the female into a loathsome dungeon, and endeavoured to subdue her by severities. But his followers became clamorous on account of his detention of them to no important purpose, and constrained him to relinquish this amorous pursuit. Before their return, the booty was divided, and the share of Morgan himself amounted to 100 thousand pounds sterling. This wealth he carried to Jamaica, and never more engaged in any piratical enterprise. Some have said (see Edward's Hist. of the West Indies, vol. i. p. 160,) that king Charles II., though he issued public orders for the suppression of the hostilities of the

buccaneers, exacted and received a share of their booty; and that this circumstance induced him to manifest peculiar favour to Morgan, to receive him graciously on his visit to England, and to confer upon him the honour of knighthood. Several other expeditions were formed by the buccaneers of the 17th century, against the Spanish settlements. Van Horn, a native of Oltend, who served almost through life among the French, was very active in his depredations. Associating, on one occasion, with 1200 other persons of the same description, and manning a fleet of six vessels, he sailed to Vera Cruz, and, favoured by the darkness of the night, reached the place and landed without discovery. He and his companions made themselves masters of it without resistance; and having confined all the citizens in the churches, whither they had fled for shelter, they placed at the door of each church barrels of gun-powder, and a buccaneer with a lighted match to set fire to them, upon the least appearance of an insurrection. They then proceeded to pillage the city; and having carried off whatever they could find of value, they made a proposal to the prisoners, to ransom their lives and liberty by a contribution of 437,500*l.* Half this money was paid them; but whilst they were expecting the other moiety from the interior parts of the country, they were alarmed by the sight of an European fleet of 17 ships, and reduced to the necessity of making a retreat, which they accomplished, by boldly sailing through the Spanish fleet, carrying with them 1500 slaves. Other expeditions were concerted against Peru; and if the intrepidity of these numerous marauders had been directed by a skilful and respectable commander, they would have dispossessed the Spaniards of this important colony. But their character prevented their union in a large and compact body, and their steady prosecution of the same object. However, they successively attacked the most considerable places on the coast of the South Sea, enriched themselves by plunder, and committed a great number of enormities. Others of the buccaneers associated with Gramont, a native of Paris, who had distinguished himself in a military capacity in Europe, and embarked with him, in 1685, to attack Campeachy. Having landed without opposition, after some resistance on the part of the Spaniards, they made themselves masters of the city; and after carrying off the treasures which they had collected in the town and its environs, and depositing them in their ships, they proposed to the governor of the province to ransom his capital. Upon his refusal they determined to burn the place, and to demolish the citadel. Accordingly they destroyed to the value of a million of logwood, which was a very considerable part of their spoil, and after this act of folly and frenzy, they returned to St. Domingo. At a subsequent period, viz. in 1697, 1200 buccaneers joined a squadron of seven ships, that sailed from Europe, under the command of Pointis, to attack the famous city of Carthage. In this enterprize they succeeded, took the city, and acquired booty to the amount of 1,750,000*l.* After they had set sail, their rapacious commander attempted to deprive them of their spoil; upon which they resolved to massacre him; but being diverted from their purpose by one of their number, who proposed returning to the city, where their share of the plunder had been left by Pointis, they immediately sailed towards Carthage. Having entered the city without resistance, they confined all the men in the great church, and demanded payment of 218,750*l.* which they alleged to be their share of the booty, of which they had been defrauded, accompanying their demand with threats of vengeance if it was refused. A venerable priest ascended the pulpit, and by his eloquent address persuaded his hearers to surrender all the gold, silver, and jewels in their possession.

But the sum raised falling short of that which was demanded, an order was issued for plundering the city. The adventurers, having amassed as much treasure as they could find, set sail; but unfortunately they met with a fleet of ships belonging to Holland and England, both which nations were then in alliance with Spain, so that several of the pirates were taken or sunk, with all the cargo which they had on board their ships; and the rest escaped to St. Domingo. This was the last memorable event in the history of the buccaneers. The total separation of the English and French buccaneers, in consequence of the war between the two nations, which followed the revolution in 1688, very much weakened the force of these powerful plunderers: and the king of Spain also being then in alliance with England, repressed the piracy of his subjects in the West Indies. However the French buccaneers continued their depredations, and with no small success, till the peace of Ryfwick, in 1697; when all differences between France and Spain having been adjusted, hostilities were every where suspended; and not only the association, but the very name of this extraordinary class of men, became extinct. They were lost among the other European inhabitants of the West Indies.

Before this period, however, the French colony in Hispaniola had arrived at a considerable degree of prosperity; and Jamaica, into which the spoils of Mexico and Peru were more abundantly poured, was already in a flourishing condition. The buccaneers found at Port Royal better reception and greater security than any where else. They could there land their booty with the utmost facility, and spend, in a variety of pleasures, the wealth produced by their piracy; and as prodigality and debauchery soon reduced them again to indigence, that grand incitement to their sanguinary industry induced them eagerly to concert fresh depredations. Thus the settlement derived benefit from their perpetual vicissitudes of fortune, and was enriched by their rapacity as well as by their profusion; by the views which led to their want, and also by their abundance. The wealth, which flowed into Jamaica through this channel, gave great activity to every branch of culture; and after the piracies of the buccaneers were suppressed, it proved a new source of riches, by enabling the inhabitants to open a clandestine trade to the Spanish settlements, whence it had its origin.

BUCCARI, **BUKARI**, **BOKERI**, or **BUKRI**, in *Geography*, a town of Morlachia, in that district of Hungarian Dalmatia called Zengh, or Segna, belonging to Austria, and seated on a rocky eminence in the north-east part of the Adriatic. This town was declared by the emperor a free port for the commerce of the East Indies in 1780. The harbour, or rather the gulf of Buccari, or Bukaria, is commodious and safe; but a little exposed to the south-east wind, which sometimes makes it dangerous. From this place great numbers of cattle are shipped for Italy. N. lat. 45° 20'. E. long. 15° 13'.

BUCCATA, in *Entomology*, a species of **CONOPS** (*Myopa*, Fabr.). The prevailing colour of this insect is ferruginous; abdomen hooked, and grey; face vesicular and white; wings clouded. Linn. Inhabits Europe.

BUCCATUS, a species of **OESTRUS**, of a griseous colour, with the face white, and dotted with black. Inhabits South Carolina.

BUCCELLARII, formed from *buccellus*, a kind of loaf, or cake of a circular figure, an order of soldiery under the Greek emperors, appointed to guard and distribute the ammunition-bread. The buccellarii were also called, in respect of their country, *Gallagraci*, or *Helenogalata*, q. d. Greeks of Galatia; sometimes *Maryandini*.

Authors are much divided as to the office and quality of the buccellarii: some give the denomination to parasites in the courts of princes and great men, maintained at their table and expence. In reality, among the Visigoths, buccellarius was a general name for all clients or vassals, who lived at the expence of their lords. Spelman rather supposes them to answer to what among us are called "tenants by military service."—Others represent the buccellarii as stationary soldiers in the provinces, who, when the emperor commanded, marched before and behind him as his body guard.—According to others, they were men whom the emperors employed in putting persons to death secretly.

BUCELLATUM, formed from *bucca*, or *buccella*, a morsel, or mouthful of meat, in *Ancient Military Writers*, denotes camp bread or bisket baked hard and dry, both for lightness and keeping. Soldiers always carried with them enough for a fortnight, and sometimes much longer, during the time that military discipline was kept up.

BUCCHOREST, or **BUCKHAREST**, or **BAKAREST**, in *Geography*, a fortified town of European Turkey, and capital of Walachia, seated on the river Dembrovitz; the usual residence of the waywode, and the see of a Greek archbishop. The Lutherans hold their assemblies here, under the protection of Sweden. The number of inhabitants is estimated at 60,000. N. lat. $44^{\circ} 50'$. E. long. $26^{\circ} 45'$.

BUCCINA, an ancient military metaline instrument, crooked like a horn, used in war; especially for proclaiming the watches of the night, and giving notice to the soldiery when they were to mount, and when to quit the guard.

The word comes from *bucca*, mouth, and *canto*, I sing; because played on by the mouth: others suppose it formed from *sonum*, or *sonam*, which signifies the same; formed from *bes*, bullock, and *canto*, I sing; because anciently made of bullocks horns: others from the Hebrew *buk*, a trumpet. Varro will have it to have been originally formed by *onomatopœia*, from *bou bou*, alluding to the sound it gives. Others, with more probability, derive it from *buccinum*, the name of a shell-fish.

The buccina is usually considered as a species of *tuba*, or trumpet; from which, however, in propriety, it appears to have differed, not only in respect of figure, which in the tuba was straight, and in the buccina recurved or crooked; but in sound, that of the buccina being sharper and audible to a greater distance than the trumpet-sound.

The buccina approached nearest to the *cornu*, or horn: originally the two seem to have been the same; though in after times a difference arose: the name *buccinum* being restrained to the lesser sort, and the *cornu* to the larger.—Some also take the buccina to have been less crooked than the *cornu*, which made a full semicircle.

Varro assures us, that the buccinæ were also called *cornua*, horns; because originally made of the horns of cattle, as is still done among some people. Servius intimates, that they were at first made of goats or rams-horns; and accordingly, in Scripture, the like instruments used both in war, and in the temple, are called "rams-horns," *keren-jabal*, and *sofophareth haimelelem*, or buccina of rams.

This instrument was in use among the Jews, to proclaim their feast-days, new moons, jubilees, sabbatic years, and the like. At Lacedæmon, notice was given by the buccina when it was supper-time; and the like was done at Rome, when the grændees had a buccina blown both before they set down to table, and after.

The sound of the buccina was called *lucinus*, or *lucinus*, and the musician who played on it, *buccinator*.

BUCCINA also denotes the space or extent to which the sound of the buccina may be heard.

BUCCINA curis, in *Middle Age Writers*, denotes the *tympanum* or drum of the ear.

BUCCINATOR, he that sounds or winds the buccina.

Among the Romans there was a public slave, denominated *buccinator nomenclum*, whose office it was to attend the public crier.

BUCCINATOR Musculus, in *Anatomy*, arises from the alveolus, containing the last grinder of the lower jaw, from the coronoid process, and from the tubercle behind the socket of the last grinder of the upper jaw; its fibres proceed over the membrane of the mouth, where it lines the cheek, and terminate extensively in both the lips and in the angle of the mouth. It may draw the lips backwards towards its posterior attachments, and when the lips are made fixed parts by the action of the orbicularis oris, it will thrust any matter intervening between the cheek and the cavity of the mouth into that cavity, for the purposes of mastication and deglutition.

BUCCINATOR, in *Entomology*, a species of *HYDRACHNA*, of an obovate form; colour red, black behind; tail cylindrical, yellow, and narrowed at the base.

Degeer has this as *acarus caudatus*. It is found on banks. The body is black beneath, eyes reddish, legs black.

BUCCINUM, in *Botany*. Dodon. gal. See *DELPHINIUM Consolida*.

BUCCINUM, in *Conchology*, a genus of univalves, described by Linnæus as having the shell spiral and gibbous; the aperture ovate, terminating in a short canal inclining to the right, with a retuse tail or beak; and the pillar lip expanded. Animal inhabiting the shell a limax.

Linnæus comprehends a vast number of species in his genus *buccinum*, which, for the sake of methodical uniformity and perspicuity, he places under several distinct sections; a mode of arrangement in which he has been closely followed by his editor, Gmelin, in the last edition of the *Systema Naturæ*. We shall follow the latter writer, as usual, in the first instance, and afterwards notice certain alterations that have been made in the arrangement of the *buccinum* genus by other naturalists.

Ampullacea, the first family, is distinguished by having the shell inflated, rotundate, thin, subdiaphanous, and fragile. This section includes the species *olearium*, *galea*, *perdix*, *pomum*, *dolium*, *caudatum*, *niveum*, and *clatratum*.

Gastrea caudata, in which the tail or beak is exerted, short, reflected; lip unarmed externally. Many species are included in this section; namely, *echinophorum*, *plicatum*, *cornutum*, *rufum*, *tuberosum*, *flammeum*, *testiculus*, *decassatum*, *areola*, *tigrinum*, *undulatum*, *ciatricosum*, *testellatum*, *pennatum*, *maculosum*, *lilineatum*, *gibbum*, *ventricosum*, *strigosum*, *rugosum*, *panderosum*, *recurvirostrum*, *trifasciatum*, *senegalicum*, *ochroleucum*, *ilicatum*, *callosa*, *strigatum*, *tyrrhenum*, and *abbreviatum*.

Gastrea unguiculata. Shells of this family have the posterior part of the lip prickly on the outside, but in other respects resemble those of the last section; the species are *crinaceus*, *glucum*, *vibex*, *testellatum*, *nodulosum*, *limbria*, *papillosum*, and *glans*.

Callosa. These shells have the pillar lip dilated and thickened. The species of this tribe are few; namely, *arcularia*, *pullus*, *gibbosulum*, *mutabile*, and *sericeum*.

Detrita, in which the pillar lip has the appearance of being worn flat; *harpa*, *costatum*, *perficum*, *monodon*, *patulum*, *hemastoma*, *lapis*, *sinuagulus*, *tuba*, *pyrum*, *spadicum*, *umbilicatum*, *candidum*, *scala*, *crassum*, *marginatum*, *labyrinthus*,

rinthus, rusticum, varium, filiosum, coronatum, squalidum, crassum, and fornicatum, are the species of this family.

Lævigata, smooth, and not included in the preceding sections. Spiratum, pyrozonias, læve, ocellatum, pyramidale, glaberrima, strigofum, trifasciatum, leucozonias, cancellatum, obtusum, glabratum, stromboides, praerosum, australe, orbita, and turgitum.

Angulata, angulated, and not included in the foregoing sections. Undosum, aliae, tranquebaricum, vericolor, cruentatum, fulcatum, rumpfi, bezoar, gracile, undatum, ciliatum, viridulum, carinatum, solutum, tænia, lineatum, maclovienfe, foliorum, textum, strigofum, anglicum, porcatum, lævissimum, igneum, plumatum, lyratum, clathratum, reticulatum, niveum, scalare, indicum nodulosum, piscatorium, S. mauritii, armillatum, plicatum, valgatum, foliatum, nanum, exile, chalys, verrucosum, alatum, nigro-punctatum, nitidum, lævigatum, lamellosum, scutalatum, haultorium, ventricosum, testudineum, catarrhæta, tahitense, and lamellatum.

Turrita, smooth and subulate. The species of this kind are maculatum, crenulatum, hedicum, vittatum, stigilatum, duplicatum, lanceatum, dimidiatum, murinum, tigrinum, acus, succinctum, commaculatum, hastatum, aciculatum, phallus, flumineum, asperum, muricinum, tuberculatum, punctulatum, acicula, fasciolatum, niveum, mucronatum, digitellus, obliquum, chalybeum, fluviatile, radiatum, lividum, edentula, pugio, canaliculatum, variosum, cuspidatum, cinereum, virginicum, proximum, monile, cingulatum, and geminum.

The definition of the genus buccinum, as laid down by Linnæus, is liable to objection in several respects. It includes a number of shells so very dissimilar in general form, and ambiguous in their most essential character, that we cannot easily reconcile ourselves to retain the whole within the limits of a single genus. But we are still persuaded that all the species which can conveniently be comprised under either of the subdivisions ought to be retained, and those only to be removed from the buccinum genus which can with more propriety be referred to the other analogous genera of univalves. Bruguière divides the Linnæan shells of this tribe into four distinct genera; to the first of which he gives the name of *buccin*, or buccinum, the others he calls *vis*, *casques*, and *pourpres*. La Marck has innovated farther still on the Linnæan order; or, rather, he has laboured to overthrow the system of the illustrious Swede altogether, and in its place to establish the arrangement of his own. The shells which Bruguière retained under the title of buccin, La Marck divides again into four new genera; namely, buccin, harpe, tonne, and eburne.

The shells of the buccinum kind are commonly furnished with an operculum; the animal, as before observed, a limax or snail, subject to some slight difference in its form in different species. They are oviparous, and the males are said to be smaller and higher in colour than the females.

BUCCIORSERAI, in *Geography*, a town of Hindostan, in the circar of Dooab; 18 miles S.E. of Etaya.

BUCCO, in *Anatomy*, a name given by Riolanus, and some others, to the muscle more usually called *buccinata*, and *contrahens labiorum*.

Bucco, in *Ornithology*, a genus of birds in the *PICÆ* order, distinguished by having the bill sharp edged, compressed on the sides, notched on each side near the apex, bent inwards, with a long slit beneath the eyes. Nostrils covered with incumbent feathers: feet formed for climbing. Gmel.

The species of the bucco genus are tamatia, cayennensis, capensis, elegans, macrorhynchus, melanoleucus, philippinensis, niger, parvus, grandis, viridis, Lathamii, fuscus,

rubricapillus, zeylanicus, dubius, and cinereus; which see.

BUCCULA, in *Anatomy*, the fleshy part under the chin. Some extend the name farther to the whole lower part of the face, comprehending the under part of the lower lip, with the chin and the fleshy part under it.

BUCCULA, in *Antiquity*, denotes the *umbo* of a shield, or the part prominent in the middle thereof.

It is thus called, because usually made in the form of a mouth or face, either of a man or some animal. The like figures were sometimes also found on other parts of armour, especially on the *lorica* and *thoraces*.

BUCENI, in *Geography*, a town of European Turkey, in the province of Moldavia; 38 miles N.N.W. of Galatz.

BUCENTAUR, the name of a large state-vessel, used by the Venetians, in the ceremony of espousing the sea, performed each Ascension-day with much pomp.

The word comes from *βυκενταυρος*; composed of *βς*, a particle of augmentation, used to denote an enormous greatness, and *νενταυρος*, centaur. Justiniani adds two other etymologies: the first from *bis*, and *taurus*, or rather *centaurus*, the name of one of Æneas's vessels in Virgil: the other from *bucentaurus*, for *ducentaurus*, a word forged to signify a vessel capable of holding two hundred men.

P. Justiniani gives a very precise description of the bucentaur, which is adorned with five pillars on both sides, and gilt from the prow to the stern, also covered over head with a kind of tent, made of purple silk; and he adds, that its origin is carried up as high as the year of Christ 1311, though others trace it higher, to the year 1177, when the emperor Frederic Barbarossa came to Venice, to make peace with the republic and the pope: at which time the pope, in consideration of the services the state had done him, in sheltering him in their city, when he had been driven out of his own, granted them several privileges; and made a present to the doge of a gold ring, which is the origin of that, yearly cast by the doge, from the bucentaur, into the sea.

It is on Ascension-day, that the doge, being advanced in the bucentaur a little way into the gulph, throws a gold ring into the sea, and says, "We marry thee, O sea, in token of that true and perpetual dominion which the republic has over thee."

In this vessel the doge receives the great lords, and persons of quality that visit Venice, accompanied with the ambassadors, and counsellors of state, and all the senators seated on benches near him.

The archduchess Maria Josepha, married to the prince of Saxony, on the day of her entry into Dresden, was received in a magnificent galley, finely rigged, and called a *bucentaur*, because built after the model of that of Venice.

A vessel of the same name, as large and magnificent as that of the Venetians, was constructed by order of the elector of Bavaria, and launched in a lake six leagues in length.

BUCEPHALA, in *Entomology*, a species of *BOMBYX*, the anterior wings of which are cinereous, with two ferruginous streaks, and a large yellow terminal spot at the tip. Gmel. &c.; called in English the buff-tip moth. Feeds on the lime, oak, willow, &c.

BUCEPHALA, or *Bucephalia*, in *Ancient Geography*, a town of India, on the west side of the river Hydaspes, built by Alexander on the site of his camp before his engagement with Porus, and so called (as Arrian says) in honour of his horse Bucephalus, which was killed, as some say, in that action, or who died, according to Arrian, of old age, being about 30 years old, and was buried on this spot. Hefychius

says

says, that this horse derived its name from being branded on the buttock with the head of an axe. As he had been long the companion of the toils and dangers of his master, he shared extraordinary tokens of regard. When he was lost for a time in the country of the Uxii, Alexander issued a proclamation, commanding his horse to be restored, and threatening to ravage the whole country with fire and sword. The command was instantly obeyed. "So dear," says Arrian, "was this horse to Alexander, and so terrible was Alexander to the Barbarians." Arrian. de Exped. Alex. lib. v. p. 219, 220. ed. Gronovii.

BUCEPHALA, a name given to a small town on one of the islands of the Grecian Archipelago, now called "La Cavale," which Alexander caused to be built there in honour of his horse Bucephalus.

BUCEPHALA, in *Ornithology*, the name of a species of *ANAS* that inhabits North America. In the *Artic Zoology* it is called the *buffed headed duck*. This kind is of a whitish colour, with the back and wings black: the head large or tumid, silky, and shining.

Buffon calls this *le petit canard à grosse tête*. The bill is short, and either blue or brown: head black, glossed with green, or purple: collar and upper part of the breast white; lower part, with the abdomen, clouded brownish: area of the wing white: tail cinereous: legs fulvous.

BUCEPHALON, in *Botany*. Plam. See **TROPHIS**.

BUCEPHALUS, in *Entomology*, a species of *CRYPTOCEPHALUS* of a cyaneous colour, having the mouth, margin of the thorax, and the legs red. *Fabr.* Called by *Schaller*, *Chrysomela bucephala*.

BUCER, MARTIN, in *Biography*, an eminent German reformer, was born in 1491 at Schelestadt, in the province of Alsace. At the age of seven years he entered into the order of the Dominicans; and having studied logic and philosophy at Heidelberg, he afterwards applied himself to divinity, and became a proficient in the Greek and Hebrew languages. At Heidelberg he held some conferences with Luther in 1521, and having previously perused some of his writings, and also those of Erasmus, he was profelyted to the protestant party. Of his conversion he gave evidence by marrying; and his wife was a converted nun, by whom he had 13 children. He settled at Straßburg, and officiated there both as minister and theological professor for 20 years; and to his labours the progress of the reformation in that city was much indebted. His talents and reputation caused him to be employed in many conferences and negotiations; and in 1548 he was sent for to Augsburg to sign the agreement between the papists and protestants, called the "Interim;" but his opposition to that project involved him in a variety of troubles. At this time he was invited to England by archbishop Cranmer, and appointed a professor of theology in the university of Cambridge. King Edward VI. for whose use he composed a book, entitled "Concerning the Kingdom of Christ," manifested great regard for him; and when he complained of the cold of this climate, presented him with 100 crowns towards purchasing a German dove. He died of a complication of disorders in 1551, and was interred at Cambridge with distinguished funeral honours. In the bigotted reign of queen Mary, his body was dug up and burnt, and his tomb demolished; but it was set up again by order of queen Elizabeth. His erudition was various and extensive; of which he furnished ample evidence by his numerous writings, and by his learned lectures. His style, however, was obscure, nor was it always easy to comprehend his meaning. He was moderate in his temper, and particularly solicitous for preserving unity among the foreign churches. On occasion of the dis-

rences that took place between Luther and Zuinglius, and their respective followers, he inclined to the sentiments of the latter; but by his endeavours to reconcile them, he incurred reproach from the zealots of both parties. His zeal for maintaining peace and concord betrayed him into an ambiguity of language, and conciliatory artifices, which gave offence both to his friends and enemies. He seems to have been inclined to allow the merit of good works, nor was he adverse to episcopacy; and on both these accounts he was regarded with some degree of suspicion by Calvin and his followers. He was much opposed by the popish party at Cambridge; and as he did not possess the talents of an acute and ready disputant, Peter Martyr advised him to avoid all public disputes. Gen. Dict. Musheim's Eccl. Hist. vol. iv.

BUCERAS, in *Botany*. Brown. Jam. See **BUCIDA**.

BUCERAS, Haller. See *TRIGONELLA Fanum Græcum*.

BUCEROS, in *Ornithology*, the name of a genus in the order *PICÆ*, called in English hornbill. Birds of this kind have the bill convex, curved, sharp at the edge, of a large size, and serrated outwardly; a horny or somewhat bony protuberance on the upper mandible, near the front of the head: nostrils behind the base of the bill. Tongue acute and short. Feet gressorial.

Of this genus there are twelve species, namely *bicornis*, *abyssinicus*, *africanus*, *malabaricus*, *hydrocorax*, *rhinoceros*, *galeatus*, *panayensis*, *manillensis*, *nasutus*, *albus*, and *obscurus*. Obs. The last is named *plicatus* by Latham, who also adds four new species to the *buceros* genus, *ginginianus*, *orientalis*, *griseus*, and *viridis*.

BUCHAN, WILLIAM, in *Biography*, doctor in medicine, of a respectable family in Roxburghshire, was born at Ancrum in the year 1729. Having passed through the usual school education, he was sent to the university at Edinburgh. His inclination leading him to mathematics, he became so considerable a proficient in that branch of science, as to be enabled to give private lessons to many of the pupils. Having made choice of medicine for his profession, he attended the lectures of the several professors, necessary to qualify him for practice; and as he continued in the university nine years, and was of a studious turn of mind, his progress in knowledge may be supposed to have been equal to his application. He now removed to Sheffield in Yorkshire, where he commenced practitioner, in conjunction with another gentleman, who had invited him thither. Soon after he became a candidate, and succeeded in gaining the appointment of physician to the Foundling Hospital at Ackworth. From the opportunity he enjoyed here of seeing, and attending to the diseases of children, he was probably induced to give for his inaugural thesis, on his taking the degree of doctor in medicine, "*De infantum vita conservanda*." It was then much approved, and the substance of it now forms a section in his "*Domestic Medicine*." He is said from the regulations introduced by him for the management of the children in the hospital, to have considerably reduced the proportionate number of deaths of the children supported by that institution. This, however, did not prevent government from withdrawing their support to the hospital, which was in consequence given up, and the doctor, with his wife and son, removed to Edinburgh, and continued to practice medicine there for several years, during which he employed his leisure hours in completing his "*Domestic Medicine*," a work too well known to need being particularly described. It is written on the plan of Tissot's "*Avis aux Peuples*," to which it is certainly not inferior. It has been said, that by familiarizing the method of treating diseases, as it is attempted to be done by works of this kind, the medical.

medical profession would be degraded, and the professors of the art would lose a portion of their respectability, and of their profits: but experience has shown that none of these events have followed; neither have we much reason for believing that the public are better judges of the merit of their medical advisers since the appearance of this popular work, which is one of the advantages we were taught to expect from it. If it has been profitable to any considerable degree, it may seem rather to have operated as a prophylactic, teaching the method of preventing diseases by regimen, than the art of discriminating them, or the mode of curing them when present. However that may be, since the year 1771, when the "Domestic Medicine" was first published, it has passed through nineteen editions, each of them, we are told, of 5000, or more copies. It has also been translated into all the modern languages, and procured for the author a gold medal, and a commendatory letter, more valuable than the medal, from the empress of Russia. On the death of the late Dr. Gregory, Dr. Buchan offered himself as a candidate for the late professorship, but did not succeed. Mr. Ferguson, teacher of natural philosophy, dying soon after, he left the doctor his apparatus, with which, in conjunction with his son, he gave lectures at Edinburgh twice each season, for three years. In the mean while his fame being extended by the sale of his book, he was induced to come to London about the year 1778. He had now opportunity of superintending the reprinting of his "Domestic Medicine," to which from time to time he made such alterations and additions as increasing experience had enabled him to collect, which entitled him to further remuneration from the booksellers. In 1786 he published "Cautions concerning Cold Bathing, and drinking Mineral Waters," 8vo. This was followed in 1796 by "Observations concerning the Prevention and Cure of the Venereal Disease." The next year he published "Observations concerning the Diet of the Common People." This has been incorporated with his Domestic Medicine. His last work published in 1800, is on "the offices and duties of a mother." He died on the 25th of February, 1805; of a dropsy in the chest, at the house of his son, in Percy street, and was buried in the cloisters, on the west side of Westminster abbey.

BUCHAN, in *Geography*, a district or territory on the east coast of Scotland, lying partly in the county of Aberdeen, and partly in that of Banff. The latter part extends northwards from the Ugie to the sea, and westward as far as Deveron, comprehending a tract of twenty miles in length by nine in breadth. The surface is mostly barren, though some parts of it are well cultivated. The coast is bold and rocky, and in some places presents almost perpendicular precipices. This district formerly belonged to the earl of Buchan; but upon the attainder of that family in 1320, Robert Bruce divided the lands among his friends; and though the title has been renewed in the present family of the Erskines, the present earl of Buchan possesses but little property in the district. See sir John Sinclair's Statistical Account of Scotland.

BUCHANAN, GEORGE, in *Biography*, a famous poet and historian, eminently distinguished among modern writers by the purity and elegance of his Latin style, was the descendant of an ancient family reduced to indigence, and born in the shire of Dumbarton, in Scotland, in 1506. The talents which he manifested in early life induced an uncle to send him to Paris for his education; but after pursuing his studies with singular assiduity for nearly two years, the death of his uncle and his own ill state of health obliged him to return home. Urged, perhaps, more by his necessities than by

inclination, he enlisted as a common soldier in the body of French auxiliaries brought over to Scotland with John duke of Albany; but soon disgusted with their mode of life, he attended the lectures on logic delivered at St. Andrew's by John Major, and accompanied him to Paris. After struggling about two years with indigence and misfortune, he was appointed, in 1526, grammatical professor in the college of St. Barbe; and having remained in this situation three years, he obtained the patronage of Gilbert Kennedy, earl of Cassils, and was introduced into his family as private tutor and domestic companion. In this situation he continued five years; and availing himself of the intervals of leisure which he enjoyed, he translated Linnacre's rudiments of grammar into Latin, which was printed at Paris by Robert Stephens, in 1536. Two years after his return to Scotland his noble patron died; and he was appointed by king James V. preceptor to his natural son James, afterwards the famous regent, earl of Murray. About this time he incurred the resentment of the Franciscan friars by a satirical poem, entitled "Somnium;" but the clamour of these monks served only to increase his prejudice against them, and to strengthen his inclinations towards Lutheranism. As soon as the king discovered, in 1538, that they were forming a conspiracy against himself, he commanded Buchanan to write a poem against them. His first performance was less poignant than the king wished it to have been; and he was commanded a second time to write with greater severity. Accordingly he published his "Franciscanus;" written more in the style of Juvenal than of Horace, and abounding so much with invective and ridicule, that these monks became his irreconcilable enemies, and excited the general indignation of the clergy against him. The king himself was induced to withdraw his protection; so that Buchanan was tried for heresy, and in 1539 committed to prison. However, he soon found an opportunity of making his escape, and fled, first to England, and afterwards to France. But at Paris he dreaded the influence of his avowed enemy, cardinal Beaton, who happened to be then in the city, and he withdrew to Bourdeaux, whither he was invited by Andrew Goveanus, a learned Portuguese, who was principal of a new college in that city. Here he taught for three years in the public schools; and he also composed two tragedies, viz. "Baptistes, five Calumnia," said to have been translated by Milton, and published in 1641, and "Jephthes, five Votum," and translated the "Medea," and "Alcettis" of Euripides. During his residence at Bourdeaux the emperor Charles V. passed through the city, and was presented by Buchanan with an elegant Latin poem, which gave him great satisfaction. Cardinal Beaton made several attempts to render his situation uneasy to him, but they were counteracted by the interposition of his friends. However, in 1543, he left Bourdeaux on account of the pestilence, and for some time took part in the education of Michael de Montaigne, the celebrated author of the "Essays." In the following year he went to Paris, and joined Turnebus and Muretus in conducting the education of the students in the college of Bourbon. In 1547, he accompanied Goveanus to the newly founded university at Coimbra; but the death of his friend, after a happy union of one year, subjected him to the enmity of the bigotted natives, who accused him of heresy, and confined him for a year and a half in the prison of the Inquisition, from whence he was afterwards removed to a monastery. In this situation he began his translation of "David's Psalms" into Latin verse, a work which has contributed in a high degree to his reputation as a poet. His translation of the 104th psalm has been particularly admired. In 1551, he was released, and the king, desirous of retaining him

him in the country, granted him a small pension. But having no strong inducements to prolong his stay in this country, he embarked for England; where, notwithstanding some advantageous offers were made to him, public affairs were in an unsettled state; and he thought it most advisable to remove to France, in 1553. Although he seems to have been fond of this country, he deplores in some of his elegies the miserable condition of those who were employed in the department of instruction at Paris. In 1555, he was entrusted by Marshal de Brisac, who then commanded in Piedmont, with the education of his son; and having continued in this station for five years, he devoted his intervals of leisure to the study of the sacred writings, and also to some poetical compositions, viz. his "Ode" upon the capture of Calais by the duke of Guise, his "Epithalamium," on the marriage of Mary queen of Scots to the dauphin of France, and part of his poem on the "Sphere." In 1560, he returned to Scotland, and avowed his conversion to Protestantism, which was then the established religion of the country. He was soon after appointed principal of St. Leonard's college in the university of St. Andrew's; where he also for some time taught philosophy; and at this period he made a collection of his Latin poems. Such was the respect entertained for his uncommon abilities and learning, that, in 1567, he was appointed, though a layman, moderator of the general assembly of the church of Scotland. When his former pupil, the earl of Murray, came into power, he formed an intimate connection with him and with the party, that was adverse to queen Mary. He accompanied this nobleman to York, and to Hampton court, where he acted as an assistant to the commissioners that were deputed from Scotland to conduct the accusations against the queen. Previous to this period he had been appointed by an assembly of the Scots nobility preceptor to the young king James VI. It was under his tuition, which continued for several years, that James acquired that scholastic knowledge, on which he so much prided himself; and it is said, that when Buchanan was afterwards reproached with having made his majesty a pedant, he replied, "that it was the best he could make of him." It is moreover reported, that Buchanan's reverence for his royal pupil did not prevent his giving him a severe whipping, when he persisted against remonstrance in disturbing him whilst he was reading. In 1571, Buchanan published his "*Detestio Mariæ Reginae*," arraigning the character and conduct of queen Mary, and expressly charging her with being concerned in the murder of her husband, lord Darnly; and of all our historians he alone avowedly accuses the queen of a criminal passion for David Rizzio. On this subject it will be sufficient to observe in this place, that admitting, with the most respectable and impartial judges, the general guilt of Mary, Buchanan discusses the question and enforces the charge alleged against her with the vehemence and acrimony of a partizan. Such was the high estimation in which Buchanan was held, that after the assassination of his patron, the earl of Murray, in 1570, he continued in favour with those who possessed power in the country, and was appointed one of the lords of the council, and lord privy seal. He had also a pension of 100*l.* a year settled on him by queen Elizabeth; which can hardly be considered as an adequate recompence for the services rendered by him, or suitable to the high offices which he sustained, and of which his tenure was precarious and of no long continuance. In 1579, he published his famous treatise "*De Jure Regni apud Scotos*," written in the form of a dialogue, and containing an explicit avowal of the right of subjects to decide upon and controul the conduct of their rulers. This work, as we may

naturally imagine, was highly extolled by some, and as violently censured and condemned by others. The author, however, ventured to dedicate it to his royal pupil, although the doctrine it contains was not very conformable to his views and inclinations. Whatever may be thought by contending parties of the principles which Buchanan has advanced in this publication, the avowal of them precludes the suspicion of his having been actuated by mercenary motives. During the last twelve or thirteen years of his life he was employed in composing his history of Scotland; and for the sake of obtaining greater leisure he retired from court and passed some of his last years at Stirling. This work, entitled "*Rerum Scotticarum Historia*," and comprised in 20 books, was published at Edinburgh in 1582, not long before his death, which happened on the 5th of December in the same year. Towards the close of his life, his circumstances were much reduced; and it is said, that when he was dying, he ordered the small sum of money that remained, and which was insufficient for defraying the expences of his funeral, to be given to the poor, expressing at the same time great indifference about the fate of his corpse. Accordingly, he was buried at the expence of the city of Edinburgh. The manner of his death has given occasion to his enemies for calumniating him as a libertine and an atheist; but for charges of this kind, chiefly adduced by bigotted Catholics, there is no just foundation. Sir James Melvil, differing with him in his political sentiments and connections, has nevertheless done him the justice to declare, that he died a sincere member of the reformed church. Against his moral character, it has been alledged, that he reduced himself by extravagance and debauchery to penury and indigence, at the close of his life; but to this charge it has been replied, that his inattention to pecuniary matters, and the profuseness of his charity, might account for his indigence, without ascribing it to culpable prodigality. His advocates, however, allow, that when he possessed wealth, he was, to an extreme degree, careless of the future, and that he made no provision for the season of dotage and helplessness. It has been further urged against him, that several of his poems indicate indelicacy and licentiousness; but his advocates have sought an apology for him from the age in which he lived, the taste of which was in this respect very different from that of a later period. The ancient satirists, says Mr. Hume, often used great liberties in their expressions; but their freedom no more resembles the licentiousness of Rochester, than the nakedness of an Indian does that of a common prostitute. With regard to his temper, Buchanan seems to have been harsh and unamiable; and, as a party-man, virulent and little inclined to indulge scruples. The persecutions of priests, and the oppression of misfortune, served to augment the natural fretfulness and asperity of his disposition, and gave an edge to his spleen. However, in his conduct he frequently exhibits a noble independence; and with respect to the public principles which he adopted, there is no reason to suspect in his avowal of them want of integrity; however he might have been influenced in some degree by partiality to his party, or deceived by the reports of others. The learned John Le Clerc has very ably shewn (*Bibliothèque Choisie*), that there is much reason to conclude, that many of the severe censures which have been thrown out against Buchanan, were the result of ignorance, of prejudice, and of party animosity. Sir John Melvil, who was of the opposite party, allows, that as far as he was concerned in public affairs, he distinguished himself by his probity, and by his moderation. But whatever different opinions may have been entertained by persons of opposite parties concerning his disposition and moral character, all concur in

applauding him as a writer. "His poetical character," says a very competent judge, "stands extremely high; yet his merit does not consist so much in sublimity or lofty flights of the imagination, as in splendour of diction, and harmony and variety of versification. He wrote in almost every species of composition. His "Psalms" are in almost all kinds of measure, and some of them exquisitely beautiful. In tragedy, he is charged with want of elevation, and with familiarity of style approaching to the comic. His didactic poem "On the Sphere," is elegant but unequal. His odes, epigrams, satires, eulogies, and miscellaneous pieces, possess merit of various kinds, not without many defects. They shew, however, extreme facility in the use of language, and an inexhaustible vein of poetical expression." As a poet, says Mr. James Crawford, he imitated Virgil in heroics, Ovid in elegiacs, Lucretius in philosophy, Seneca in tragedies, Martial in epigrams, Horace and Juvenal in satires. As an historian, he is said to have combined the brevity of Sallust with the elegance and perspicuity of Livy. He has been charged, however, with an inclination to fable in his narrative, and with an undue attachment to the party with which he was connected. Of his dialogue "De Jure Regni," it has been said, that, notwithstanding some objectionable sentiments and invectives, it contains rational principles of government; that it displays uncommon acuteness and extent of knowledge; and that it was calculated to enforce sound maxims of civil policy, at a period in which they were little understood. Of his "Scots History," written in his old age, archbishop Spotwood says, it was written with such judgment and eloquence, that no country can shew a better; though he adds, that Buchanan is justly blamed for siding with the factions of the time. The celebrated Thuanus observes, that although, according to the genius of his nation, he sometimes inveighs against crowned heads with severity, yet this work is written with so much purity, spirit, and judgment, that it does not appear to be the production of a man who had passed all his days in the dust of a school, but of one who had been all his life-time conversant in the most important affairs of state. Of Buchanan's history, Dr. Robertson says, (Hist. of Scotland, vol. i. p. 5, 8vo.) that "if his accuracy and impartiality had been, in any degree, equal to the elegance of his taste, and to the purity and vigour of his style, his history might be placed on a level with the most admired compositions of the ancients. But, instead of rejecting the improbable tales of the chronicle writers, he was at the utmost pains to adorn them; and hath clothed, with all the beauties and graces of fiction, those legends, which formerly had only its wildness and extravagance." These two works, as Mr. Mackenzie informs us, were condemned in Scotland by act of parliament. "The happy genius of Buchanan," says the celebrated historian just cited (Hist. of Scotland, vol. ii. p. 302.), "equally formed to excel in prose and in verse, more various, more original, and more elegant, than that of almost any other modern who writes in Latin, reflects, with regard to this particular, the greatest lustre on his country." Of his different works many editions have separately appeared; and a complete collection of them was published at Edinburgh, in 1714, in 2 vols. fol. and reprinted at Leyden, in 1725, in 2 vols. 4to. Biog. Brit.

To the memory of this truly great man an obelisk 100 feet high was erected by subscription, in 1788, at Killearn, the place of his nativity, designed by Mr. J. Craig, nephew to the celebrated poet Thomson.

BUCHAN-NESS, in *Geography*, the easternmost headland in Scotland. N. lat. $57^{\circ} 30'$. W. long. $1^{\circ} 46'$.

BUCHARIA, BUKHARIA, or BOKHARA, an extensive

region of Asia, lying between the river Jihon to the west, and the desert of Cobi and other deserts bordering on China, to the east. It is supposed to derive its name from the city of Bokhara (which see) near the Jihon or ancient Oxus, which was the emporium of the commerce carried on by the Europeans in that quarter; and afterwards extended to the adjoining country, beyond it. Bokhar, or Bukhar, as Abulghazi Khan informs us, was a Mungl or Mogul word, importing a "learned man;" and as all those who formerly withed to be instructed in the languages and sciences went, for that purpose, into Bukharia, the name was originally given to it by the Moguls, who conquered this country in the time of Genghis Khan. This extensive region is divided into two parts, called *Great* and *Little Buchar*, corresponding to the southern districts of the two ancient Scythias, which were separated by the ridge of mountains denominated the "Imaus," and called by Sherefeddin the "Karangoutac" mountains.

BUCHARIA, *Great*, is that extensive and important region of Independent Tartary, which comprehends part of the Touran or Turan of the ancient Persians, and was chiefly known to the Greeks and Romans by the names of Sogdiana and Bactriana; the former being the Arab "Maweral-nahar," or country beyond the river, i. e. the Jihon or Oxus, and corresponding to "Transoxana," the name anciently given to those provinces which lay beyond this river; while Bactriana corresponds with Balk, and accordingly belongs to Iran, and not to Touran. Major Rennell cautions us against confounding, as some geographers have done, the modern Buchar with the ancient Bactria. Buchar, he says, is situated beyond the Oxus or Jihon, and is the country anciently named "Sogdiana," from "Sogd" the valley, a beautiful valley in which Samarcand (anciently Maracanda) is situated: whereas Bactria or Bactriana lay on the south of the Oxus, and comprehended the present provinces of Balk and Gaur, and probably part of Korasan.

Great Buchar extends more than 700 British miles in length from north to south, by a medial breadth, if Fergana be included, of about 350; thus rather exceeding Great Britain in size, but much inferior to the country named Little Buchar. On the north it is bounded by the mountains of Argun and Kara Tau; on the west by a desert, the river Amu, and other deserts, which divide it from Kharasm and Khorasan; and on the south, if it be extended so as to include Balk, by the mountains of Gaur or Paropamisus, and the Hindooch Koh; and on the east by the chain of Belur. According to these boundaries, it is situated between about 35° and 42° N. lat. and between about 60° and 70° E. long. The original population of this country was Scythian; and the natives are still denominated by the same Tartaric name of "Tadjiks," which the barbarous victors assigned to the Persians. The Persian monarchs were often engaged in wars with those of Touran, or the Scythians on this side and beyond the Imaus, whose queen, Thomyris, is said to have slain Cyrus in battle. After the progress of Alexander as far as Cogend on the river Sihon (or ancient Jaxartes), this country became better known, being probably the furthest limit of his course towards the north. When Genghis Khan died, A. D. 1227, he bequeathed Great Buchar to his second son Jagatay Khan, and it took the name of Jaghatay or Zagatay in honour of its new proprietor: which name it retained as long as the Khans descended from him reigned in these parts. But in 1498, sultan Babur, a descendant of Timur, was expelled with his Monguls from Great Buchar; and the Tartarian victors, called Uzbeks, established a powerful monarchy in the country. Successive Khans held the sceptre from 1498 to 1658; and soon after this period

the extensive and fertile country of Bucharia seems to have been divided into several governments, under numerous Khans. All the great towns, both of Great and Little Bucharia, from the borders of Khorasan as far as China, are inhabited by the Bukharians, or descendants of the ancient possessors, called by the Tartars, Tadjiks. These are well made and very fair, allowance being made for the climate; they have generally large, black, and lively eyes; their countenances are open, their noses aquiline, their hair black, and their beards bushy. The women are generally tall, and well-shaped, with fine complexions, and very beautiful features. Both men and women wear calico shifts and drawers; over which the men wear a vest of quilted silk, or calico, reaching to the mid-leg, and tied about the middle with a silk-crape girdle or sash. In winter they are covered with a long cloth gown, faced and lined with fur. The head is covered with a round cloth bonnet, having a large fur border; and some wear turbans. Their boots resemble the Persian buskins, and they possess a singular art of preparing horse-hides for this use. The women wear long gowns that are full and loose; their hair hangs in tresses, and is adorned with pearls and other jewels. Their bonnets are small, flat, and coloured. The Bucharians are a commercial people; and their caravans travel through the whole continent of Asia, and traffic with Russia, Thibet, China, India, and Persia. Russia contains several colonies of Bucharians, who are settled in many large towns of the southern provinces, and maintain a constant communication with the merchants of their own country. Their principal marts are Tomik, Kiakta, and Orenburg, which is the most considerable. Their caravans are exposed to pillage from the Kirgise Tartars, through whose country they are obliged to pass. Their exports are gold and silver, chiefly in Persian coins and Indian rupees, gold-dust found in the sand of the rivers of Bucharia, precious stones, particularly rubies, lapis lazuli, spun and raw cotton, cotton stuffs in great abundance, both Indian and Bucharian, half-silks, unprepared nitre, native sal-ammoniac, lamb-skins, raw silk in small quantities, rhubarb, and large droves of sheep and horses, which are bought for sale by the Kirgise Tartars. Pallas says, that above 60,000 sheep and 10,000 horses are yearly sold at Orenburg. The Bucharians receive in return cloth, leather, beads, and trinkets, hardware, indigo, cochineal, &c. The Bucharians never bear arms; but on this account they are despised by the Tartars, as a cowardly and weak people. The Jagotay Tartars, who are the descendants of the Tartars who first possessed this region, are now comprised under the general name of Uzbeks. The Uzbeks are commonly reputed the most civilized of all the Mohammedan Tartars, although, like the rest, they are great robbers. Both men and women are clothed, like the Persians, as low as their boots; and the chiefs wear plumes of white heron feathers on their turbans. Their most delicious dishes consist of "pillaw," which is rice stewed in broth, and horse-flesh. Their common drink is kumiss and arak, both made of mare's milk. Their language is a mixture of the Turkish, Persian, and Mongolian tongues. Their arms consist of the sabre, dart, lance, and bow, of a larger size than ordinary, which they manage with much strength and dexterity. For some time past they have used muskets. When they go to war, many of their cavalry wear coats of mail, and a little buckler for defence. They value themselves on being the most robust and valiant of all the Tartars; and even their women, who surpass the other Tartars in beauty, are not averse from warfare, but will sometimes attend their husbands to the field. Although many of these inhabitants of Bucharia reside in huts in the summer, yet in winter they inhabit the towns and villages. The religion of the Uzbeks

and Bucharians is the Mahometan of the Sunni sect; and the government of the Khans is despotic. The amount of their population is not precisely ascertained; but it is probable that upon an emergency an army of 100,000 men might be mustered. We have no accurate statement of the revenue of these fertile provinces; but it is not improbable that the revenue of Great Bucharia is at least equal to that of Khorasan, which, by Mr. Hamway's account, is equal to half a million sterling annually. The climate in general appears to be excellent; the heat even of the southern provinces being tempered by the high mountains capped with perpetual snow; and the proximity of the Siberian deserts and the lofty Alps, renders the sun much more temperate than that of other countries, such as Spain, Greece, and Asiatic Turkey in the same parallel. The face of the country presents a great variety; but though there are numerous rivers, hills, and mountains, there seems to be a deficiency of wood. Near the rivers the soil is productive, so that the grass sometimes exceeds a man's height; and in some parts considerable industry is shewn in the cultivation of rice and other grain. In the hands of any other persons besides those of the Tartars, this country might rival any European region. There is not a more flourishing or a more delightful country, says a famous Arabian geographer, than this, especially the district of Bokhara. From the ancient castle of this city a scene of luxuriant and beautiful verdure presents itself on every side of the country; so that the spectator would imagine the green of the earth and the azure of the heavens were united; and as there are green fields in every quarter, so there are villas interspersed among the green fields. In all Khorasan and Mawarannah there are not any people more long-lived than those of Bokhara. The rivers and lakes of this country are numerous and considerable in size; and its mountains are lofty and extensive. For the principal rivers, see AMU, SOGD, MORGAB, KISILE-DARIA, DEHASH, &c.; and for the principal range of mountains, see BELUR.

The cities in Great Bucharia generally give name to the provinces, or receive their appellation from them. In the north is the province of Fergana, the capital of which is Andegan. The other chief provinces are the western part of Shash, and a district called by M. d'Anville Ofrushna, from a town of the same name, and by Ebn Haukal, Setruhtah. The most fertile province is Sogd; and next to this are Vash, Kotlan, and Kilan. The Alpine region that separates this country from Little Bucharia, is Belur; and the most southern provinces are Tokarestan and Gaur. The chief city of Great Bucharia is Samarcand, and vying with this for dignity is Bokhara. See each of these articles respectively. See also BALK, ZOUF, BADAKSHAN, TERMED, &c.

BUCHARIA, *Little*, is so called, not because it is more limited in extent than Great Bucharia, being in reality much larger; but because it is inferior to it as to the number and importance of its cities, the quality of its soil, and the amount of its population. This country corresponds to the "Scythia extra Imaum" of the ancients, and to the "Serica" of Ptolemy. The Scythians beyond the Imaus are described by this geographer as restricted to a confined strip of territory on the eastern side of the Imaus, and divided by an imaginary line from the Seres, who were undoubtedly the people of Little Bucharia. But as ancient knowledge here terminated, it is probable that the Scythians beyond the Imaus not only held the eastern ridges of these mountains, as a barbarous race continues to do without molesting the industry of the distant plains, but that they were diffused along the ridge of

Alak, and the wide region called Geté, extending as far as the mountains of Bogdo, till they were expelled or subdued by more numerous or powerful nations from the east. But as it is now allowed by all geographers that the range called Belur Tag represents the Imaus, and that this range runs from north to south, forming the eastern boundary of Great Bucharia, it will be evident from Ptolemy's description and maps that "Serica" can be no other country but Little Bucharia, always possessed by an intelligent and industrious race of men; not only the ridge of Imaus, but the remarkable course of two considerable rivers towards the north-east, while all his other Asiatic streams have very different directions, sufficiently indicate Little Bucharia, in which the rivers correspond with Ptolemy's delineation; the Oechardes being probably the Orankash of modern maps, or perhaps the river of Yarcand; while his Bautisus may be the river of Koten, or that of Karia. The knowledge of Ptolemy does not appear to have extended eastward further than 80° from Greenwich; and, therefore, few comparisons can be instituted between the modern names and situations and those of Ptolemy. M. D'Anville supposes that the mountains of Annabi are those of Altai; whereas they are those of Alak, called by some Musart, on the north of Little Bucharia. The mountains on the south correspond with those of Mus Tag, or the mountains of Ice on the north of Thibet. To the south also lies the sandy desert of Cobi, of unascertained extent, but supposed by some to reach westward as far as the northern snowy mountains of Thibet already mentioned. The southern part of Little Bucharia contains several large provinces, as Koten and Karia or Kereja, so called from their capital cities; and the intelligent Strahlenberg has denominated Koten a kingdom, and has inserted several names of rivers and towns. On the east Little Bucharia is bounded by deserts and provinces of Mongolia, and particularly by the province of Hami or Chamiel belonging to China. The western and northern parts of this country are more accurately known by means of various accounts, and by the maps of D'Anville and Islenieff. To the north is the Alak mountain, and beyond it Soongaria, and in the west the Belur Tag, which separates it from Great Bucharia. In Rennell's map, however, the western boundary is that ridge of the ancient Imaus, denominated by Sherefeddin the Karangoutac mountains, and between this and the Belur ridge is Baltistan or Little Thibet. The chief rivers of Little Bucharia are the Bulanghir, probably the Polonkir of the Jesuitic maps, flowing into the lake Lock-nor, the Chaidu and Yarcand Darija issuing from it, and supplying several branches as the Koten, Orankash, &c., and the Kareja proceeding from a lake in the desert of Sultus. The principal towns are Cashgar, Yarcand, Aksu, Chialish, Turfan, Koten, and Karia, which see respectively. Independently of the regions to the north, the extent of Little Bucharia, from the confines of Hami to the mountains of Belur, is more than 1000 British miles; and the breadth, from the mountains of Thibet to those of Alak, more than 500. It is of course comprehended between 36° and 43° N. lat., and about 72° and 87° E. long. As the land is much elevated and abounding in mountains, the climate is cold; and, in contradiction to the usual course of nature, the southern part bordering on the Alps of Thibet is colder than the northern, which is protected by the lower ridge of Alak. Among its hills are several fertile plains; but the population is not extensive. Between the cities in this country there are no villages; and in travelling a whole day from one to another, there is not a house of entertainment to be found. From Du Halde's atlas it may be

deduced that the Containh, or Great Khan, could raise 20,000 men from this province, taking one man from 10 families; and hence the number of families would be 200,000, which would yield a population of one million. The inhabitants, who are for the most part descendants of Bucharians, with a great mixture of Tartars or Turcomans, and a few Kalmuks, are generally swarthy and black-haired, although some of them are very fair, handsome, and well made. They are said to be polite and benevolent; and their language is probably that called the Zagathian or Turkish, which has supplanted their native tongue. The dress of the men resembles that of the Tartars, reaching no lower than the calf of the leg, and bound with girdles like those of the Poles. The garments of the females are of the same kind, commonly quilted with cotton; and they wear long ear-rings, twist their hair in tresses, lengthened by decorated ribbands and tassels of silk and silver, so as to hang down to their heels. Their necklaces are ornamented with pearls, small pieces of coin, and several gilded or silvered baubles. Some of them tinge their nails with henna. Persons of both sexes wear trowsers, with light boots of Russia leather, and occasionally high-heeled slippers. The head-dress resembles that of the Turks. Married women are distinguished from those that are single by a long piece of linen worn under their bonnets, which is folded round the neck and tied in a knot behind, so that one end of it hangs down to the waist. Both sexes carry about them prayers written by their priests, and kept in a small purse, under the form of relics. Their houses are commonly of stone, well built, and decorated with some articles of china. When they go to sleep, they throw off every garment; they are cleanly in the preparation and use of their food, which is usually minced-meat, and their general drink is tea, which they prepare with milk, salt, and butter. At their meals they use neither chairs nor tables, knives nor forks, but sit crossed-legged on the ground, and when the meat is served up ready cut, they take it up with their fingers or wooden ladles. Their wives are purchased, so that a person who has many daughters is accounted rich. The ceremonies of marriage differ little from those of other Mahometans, and polygamy, though regarded among the Bucharians as a kind of sin, is generally practised. Their children are named on the third day after birth, and circumcised on the 7th, 8th, or 9th day. In sickness the mullah or priest has great influence; and when a person dies, he lays a koran on his breast, and recites some prayers, after which the body is interred in some pleasant wood and inclosed with a hedge or paliisade. Their money consists of copper kopeiks, weighing nearly one-third of an ounce; and in passing silver or gold, they weigh it, like the Chinese. The prevailing religion is the Mahometan; and the Kalmuks or Eluths allow unlimited toleration. The government, before the Chinese took possession of the country, was first of all administered by a Khan, and afterwards by the containh of the Kalmuks, who appointed inferior magistrates. The soil of Bucharia is in many parts of it fertile and productive, and yields various kinds of fruits, and particularly wine. It is also rich in mines of gold and silver, but neither the natives nor Kalmuks are sufficiently skilful to work them; and out of the torrents, which flow from the mountains when the snow melts, they collect gold-dust, which they carry to India, China, and Siberia. Precious stones and diamonds are also found in this country, and the southern mountains near Thibet furnish musk. As the dress is chiefly cotton, the plant probably abounds in this country; though from their proximity to China the Seres might easily have transmitted silk to ancient Europe. Pallas speaking

speaking of Bucharia, but probably meaning Great Bucharia, mentions raw silk as a product of the country, very fine lamb-skins, the hair of camels, and an excellent rhubarb, which latter article grows in the south-east part of Little Bucharia.

In more ancient times, Little Bucharia, as we have already observed, was the country of the Seres; but it seems to have been but little known before the time of Genghis Khan, upon whose death this country, as well as Great Bucharia, became the portion of his son Jagatay, or Zagathai, and was occasionally called by his name, but more generally known by the appellation of Cashgar. It was then considered as a part of Mogulistan, or Mongolia; and the northern provinces belonged to the country of Geté. It had a succession of Khans, separate from Great Bucharia, till about the beginning of the 14th century. From that time it seems to have been governed by a succession of the descendants of Timur, till the year 1683, when it was subdued by the Eluths, or Kalmuks. To them it remained subject, till at a recent period it was conquered by the Chinese. In 1759, Kiang Long, or Chin Lung, completely vanquished these people; and thus annexed an extensive territory to his dominions.

BUCHAU, a free imperial town of Germany, in the circle of Swabia, seated on the Feder lake; 24 miles S.W. of Ulm. N. lat. 48° 6'. E. long. 9° 37'.

BUCHAU, a small country of Germany, in the circle of the Upper Rhine, comprehending the estate of the abbey of Fulda, of which Fulda is the capital.

BUCHEN, a small town of Germany, in the circle of the Lower Rhine, and electorate of Mentz; 22 miles E. of Heidelberg.

BUCHENBERG, a town of Germany, in the circle of Swabia, and territory of the abbey of Kempten; 5 miles W.S.W. of Kempten.

BUCHERI, a town of Italy, in the valley of Noto; 3 miles N.E. of Monte-Rosso.

BUCHHOLZ, a small town of Germany, in the circle of Upper Saxony, and Middle Mark of Brandenburg; 23 miles S.S.E. of Berlin.—Also, a small mine-town of Germany, in the circle of Erzgebirg, having a seat and voice at the Land-diets. At this place considerable quantities of lace are made.

BUCHIGLIERA, a town of Naples, in the province of Calabria Citra; 11 miles W.N.W. of Umbriatico.

BUCHLOE, or BUCHLAKE, a town of Germany, in the circle of Swabia, and bishopric of Augsburg; 18 miles S.S.W. of Augsburg.

BUCHNER, ANDREW ELIAS, in *Biography*, physician and aulic counsellor to the king of Prussia, and professor of medicine, first at Erfurt, and afterwards at Hall in Saxony, published, in 1755, in 4to.; "Historia Academiæ Naturæ Curiosorum," of which he was several years president; "Fundamenta Materiæ Medicæ, Simplicium Historiam, Viros et Præparata exhibentia," Hall, 1754, 8vo.; "Syllabus Materiæ Medicæ selectioris, cum designatione ponderis, &c." Hall, 1755, 8vo. He was also author of several ingenious dissertations published in the *Miscell. Nat. Curios.* and of a number of dissertations, or inaugural theses, on botanical subjects. Among these, Haller particularly notices the "Disputatio de genuinis viribus Tabaci, ex ejus principiiis constitutivis demonstratis; et de genuinis Opii effectibus in Corpore Humano;" each of them containing several ingenious experiments made on animals, with the view of ascertaining the properties of these drugs; also a method of instructing deaf persons. He died in the year 1769. Hall. Bib. Bot.

BUCHNER, J. GOTTFRIED, of whom we have no biogra-

phical memoirs, has left some curious and useful works in botany, of which the following are the titles: "Dissertationes Epistolice de Memorabilibus Voigtlandiæ: 1. De arbore una nocte virente, et florem simulque fructus, tempore hiemali proferente; 2. De arboribus et plantis infolito tempore florentibus; 3. De arbore quovis ætate binis vicibus, et flores et fructus protrudente; 4. De arboribus diversi generis fructus in uno stipite proferentibus; 5. De frumentis spicis proliferis, aliisque plantis monstrosis; 6. De aloe Americana majori, aliisque plantis exoticis Voigtlandiæ;" 4to. 1743. The remainder of his writings, consisting of dissertations on similar subjects, is published in the second, fourth, fifth, and seventh volumes of the *Miscel. Nat. Curios.* Haller. Bib. Botan.

BUCHNERA, in *Botany* (in honour of A. E. Buchner, a German naturalist). Linn. gen. 772. Reich. 833. Schreb. 1035. Willd. 1174. Gært. 323. Juss. 100. Class and order, *didynamia angiospermia*. Nat. Ord. *Perispermata*, Linn.; *Pedicularales*, Juss.

Gen. Char. *Calyx* of one leaf, five-toothed, permanent. *Cor.* monopetalous; tube rather long, bored; border flat, short, five-cleft, nearly regular. *Stam.* four, very short; anthers oblong, obtuse. *Pist.* germ ovate-oblong; style thread-shaped, the length of the tube; stigma obtuse. *Peric.* capsule acuminate, two-celled, many-seeded, opening at the top in two divisions; partition contrary. *Seeds* angular; receptacle fastened to the middle of the partition.

Ess. Char. *Cal.* five-toothed. *Cor.* funnel-shaped; border five-cleft, nearly equal. *Stam.* four unequal. *Caps.* two-celled; partition simple, contrary to the valves. *Seeds* numerous, small. Gært.

Sp. 1. *B. Americana*, Linn. Syst. Nat. "Leaves toothed, lanceolate, three-nerved." Stem scarcely branched. *Spikes* with flowers remote from each other. *Stamens*, two in the throat of the corolla; two in the middle of the tube. The plant grows black with drying. Native of Virginia and Canada. 2. *B. elongata*, Willd. "Leaves nearly linear-lanceolate, entire; calyx a little hairy, longer than the capsule." Swartz. A native of Jamaica, Vera Cruz, and Guiana. 3. *B. cernua*, Linn. Mant. "Leaves cuneate, five-toothed, smooth; flowers spiked; stem shrubby." Stem half a foot high, regularly branched, a little jointed by the scars of the leaves, purplish. *Leaves* opposite, often ternate, sessile, with two acute serratures on each side the tip, even. *Spikes* terminal, solitary, oblong. *Flowers* sessile, erect, with a linear acute bractee shorter than the calyx, and two shorter lateral bristles. *Calyx* tubular, oblong, semiquinquefid, equal; segments connected by a membrane. *Corol.* white; tube filiform, twice as long as the calyx, recurved; border flat, five-cleft; segments subovate. *Antib.* below the jaw; stigma inclosed, reflex, rather thick. On mountains at the cape of Good Hope. 4. *B. cuneifolia*, Linn. Supp. "Leaves wedge-shaped, smooth, seven-toothed at the tip." Found by Thunberg at the Cape of Good Hope. 5. *B. cordifolia*, Linn. Supp. "Stem four-cornered; leaves opposite, heart-shaped, three-nerved, serrated; racemes terminal, approaching to spikes." Referred to this genus by the younger Linnæus, though very different in habit, and more resembling a vervain, on the authority of Kœnig, who found it about Tanjour. 6. *B. grandiflora*, Linn. Supp. "Scabrous; leaves opposite, sessile, oblong, entire; peduncles axillary, one-flowered, two-leaved; calyx funnel-shaped." A very beautiful plant. *Stem* erect, smooth, very simple. *Leaves* five-nerved. *Peduncles* toward the summit of the stem, solitary, shorter than the leaves, with two opposite linear-subulate bractees about the middle. *Calyx* five-toothed, long, but shorter by half than the tube of the corolla, which gradually

gradually enlarges into a large, flat border, with five rounded lobes. *Obf.* The younger Linnæus, not having seen the fruit, was not certain of the genus, especially as it has some resemblance to the *gerardias*, and, like them, becomes entirely black in drying. Native of South America. Mutis. 7. *B. atropurpurea*, Linn. Mant. "Leaves three-toothed; flowers peduncled; stem rather shrubby." Stem half a foot high, much branched. Leaves opposite, sessile, lanceolate, about the size of those of *polygnum aviculare*, generally with a tooth on each side near the tip. Flowers toward the top of the branches, lateral, opposite; peduncles one-flowered, longer than the leaves, erect. Calyx monophyllous, five-toothed, a little hispid. Corolla yellow, twice as long as the tube of the calyx. Capsule bilocular, ovate-oblong, scarcely longer than the calyx. 8. *B. viscosa*, Hort. Kew. "Leaves linear-lanceolate, distantly toothed, a little glutinous; flowers peduncled; stem shrubby." Native of the cape of Good Hope. Found by Masson, and introduced into England 1774. 9. *B. capensis*, Linn. Mant. "Leaves toothed, linear, alternate; calyx pubescent." Stem annual, about five inches high, straight, with four or five simple branches near the top. Leaves generally alternate. Flowers sessile, in short, terminal spikes. Calyx a little inflated. Corol. yellow; tube slender, slightly villous; two of the stamens projecting a little beyond the throat of the corolla. Stem, branches, leaves, and calyxes clothed with a somewhat viscous down. La Marck, from a dried specimen. Allied to *rhinanthus capensis*, Linn. Native of the Cape. 10. *B. asiatica*, Linn. Spec. Plant. "Leaves very entire, linear; calyx scabrous." Stem obtusely four-cornered; branches alternate, with the habit of an *euphrasia*. Leaves linear; upper ones alternate, lower opposite. Tube of the corolla filiform, inclosing the stamens; border two-cleft, one segment nearly upright and trifid, the other open and heart-shaped. Vahl. (Symb. 3. p. 81.) describes the leaves as covered on the upper surface, and at the rib and margin of the lower, with numerous white scales, producing very small, solitary hairs; and the calyxes as solitary, nearly sessile, striated; the striæ toothed with numerous minute, rigid hairs. La Marck has, in his Herbarium, a plant resembling *euphrasia India Orientalis* of Plukenet, and which he presumes is *buchnera asiatica*. It is rough to the touch; and the calyxes are striated in a very remarkable manner. Native of Ceylon and China. 11. *B. euphrasiodes*, Willd. "Leaves linear, very entire, scabrous with hairs; segments of the corolla linear, obtuse." Vahl. Resembles *euphrasia longiflora*. Stem acutely four-cornered, branched; branches opposite, higher than the stem, pressed close to it, and almost imbricated. Leaves short, opposite and remote below, alternate and crowded above. Calyx sessile, axillary, about the length of the leaves. Tube of the corolla villous; segments linear. Vahl. Native of the East Indies. 12. *B. gesnerioides*, Willd. "Leaves oblong, ciliated, pressed close to the stem, squamiform; tube of the corolla curved." Stem half a foot high, branched at the base, at first light appearing naked. Leaves very minute. Flowers sessile, axillary, longer than the leaf, furnished on each side with a linear, obtuse bract, ciliated at the margin. Calyx five-cleft; segments lanceolate, ciliated. Corolla nearly of *euphrasia longiflora*; tube smooth; segments of the border oblong. Capsule oblong, obtuse, bilocular. Willdenow, from a dried specimen. Native of the East Indies. 13. *B. pinnatifida*, Linn. Suppl. "Leaves pinnatifid, smooth." Found at the cape of Good Hope by Thunberg. *Obf.* La Marck is inclined to think that *buchnera manulea*, and *erinus*, are properly only one genus. They differ from *hebenstreitia* and *sclago* in having a two-celled, polyspermous capsule.

BUCHNERA humifusa (Forsk.) See *BROWALLIA*, where, on Forsk. authority, it is placed by La Marck, and said to have a one-celled capsule; but Vahl, on the other hand, ascribes to it a bilocular capsule with a partition opposite to the valves, very like that of *buchnera asiatica*, from which plant, he says, it differs only in its prostrate stem and obovate leaves. It does not appear, that either La Marck or Willdenow had seen a specimen.

BUCHODZ, PETER JOSEPH, in *Biography*, a physician, who rose by his merit to the first rank, in eminence, in his profession, was born at Mentz, about the year 1736. After receiving a liberal classical education, in which he is said to have made a more than ordinary proficiency, he was sent to Pont-a-Mousson, and was admitted to the degree of doctor in medicine at the university there, in 1759. Being soon distinguished for superior abilities and industry, he was in succession made physician to Stanislaus, king of Poland, to the duke of Lorraine, &c. and teacher or demonstrator in botany to the Royal College of Physicians at Nancy. He was also associated as foreign member to most of the medical and philosophical academies on the continent, to which he from time to time communicated his observations. His works are numerous, all on botanical subjects. The titles of a few of them follow: "Discours sur la Botanique," Paris, 1760. "Traité historique des Plantes qui croissent dans la Lorraine, et les trois évêchés," Nancy, 8vo. from 1763 to 1769, 9 vols. The work was abruptly broken off incomplete. He was assisted in forming it, by the papers and the Hortus Siccus of his father-in-law, Marquet, to which he made large additions. The first volume contains discourses on botany, with explications of the systems of Tournefort and of Linnæus; the second, purging; the third, pectoral; the fourth, sternutatory; the fifth, emmenagogue; the sixth, plants exciting perspiration. In each volume are engravings of the most remarkable plants in each class, with occasional experiments to ascertain their properties. "Médecine rurale et pratique," Paris, 1768, 12mo. containing useful information, and enabling the poor to select proper remedies for their complaints. "Secrets de la Nature et de l'Art pour les Alimens, la Médecine, la Vétérinaire, avec un Traité sur les Plantes qui peuvent servir à la Teinture, &c." Paris, 1769, 12mo. 4 vols. "Dictionnaire raisonné des Plantes et des Arbustes de France," Paris, 1770, 4 tom. For the titles of the remainder of his works, see Haller. Bib. Botan.

BUCHOLTZ, in *Geography*, a town of Germany, in the circle of Westphalia, and county of Verden: 18 miles E.N.E. of Verden.

BUCHOREST. See BUCHAREST.

BUCHORN, an imperial town of Germany, in the circle of Swabia, seated on the north side of the lake of Constance. The inhabitants are Lutherans. Here are warehouses for goods consigned to it for the passage of the lake. It is distant 13 miles E. from Constance. N. lat. 47° 41'. E. long. 9° 20'.

BUCHOV, a town of Hungary; 2 miles W. of Bolesko.

BUCHOW. See BUCK.

BUCHWALD, BALTHAZAR, JOHN, in *Biography*, a German physician, published, in 1720, "Specimen Medicopracticum Botanicum," 4to Hafniae, containing the descriptions and accounts of the medical properties of many of the common plants, with dried specimens of the plants affixed to the leaves. "De Diabetis Curatione, præprimis per Rharbarbarum, 4to 1737," also "Visci Analysis, ejusque in diversis Morbis Usus," 4to 1753." Haller. Bib. Botan.

BUCHY,

BUCHY, in *Geography*, a town of France, in the department of the Lower Seine, and chief place of a canton, in the district of Rouen, $4\frac{1}{2}$ leagues N.E. of it. The town contains 673, and the canton 9260 inhabitants; the territory comprehends 162 $\frac{1}{2}$ kilometres and 30 communes.

BUCIDA, in *Botany* (originally called by Brown, *Buceras*, ox-horned, but changed by Linnæus into *Bucida*, without assigning a reason). Linn. Sp. Pl. Reich. 602. Schreb. 758. Willd. 881. Jussieu 75. Class and order *decandria monogynia*. Nat. ord. *Holoraceæ* Linn. *Eleagni* Juss.

Gen. char. *Cal.* Perianth one-leaved, pitcher-shaped, obsoletely five-toothed, superior, permanent. *Cer.* none. *Stam* filaments ten, capillary, longer than the calyx and inserted into its base. *Anth* upright, heart-shaped. *Pist.* germ inferior, ovate; style the length of the filaments: stigma obtuse. *Peric.* berry dry, ovate, one celled, crowned with the calyx. *Seed* one, ovate.

Essent. char. *Cal.* fine toothed, superior. *Cer.* berry one-seeded.

Spec. 1. *B. Buceras*. Olive bark tree, Linn. Brown Jam. t. 23. f. 1. Sleane Jam. t. 189. f. 3. La Marek. pl. 356. "Spikes elongate; leaves wedge-shaped, smooth." Vahl. *Stem.* a tree, thirty feet high, about one in diameter. *Branches* divaricate, or flexuose, roundish, smooth, and even. *Leaves* only at the divarications and summits of the branches, crowded together, petioled, obovate or ridge-shaped, obtuse, very entire, veined, smooth, near two inches long. *Spikes*, or rather spike-like racemes numerous, simple, peduncled, axillary near the ends of the branches, about the length of the leaves. *Flowers* small, yellowish, alternate, sessile, hoary without, tomentose within. The style or upper part of the germ, especially at the extremity of the raceme is sometimes extended to the length of an inch or more, and curved somewhat in the form of a bull's horn; whence Linnæus and other authors have observed its affinity to *rhizophora*. Described by La Marek from a dried specimen. A native of the West-Indies and South America. In Jamaica it is called black olive; in Antigua, French oak; and in the French islands, Grignon. Its bark is used for tanning leather: and its wood is excellent for chests of drawers and other kinds of cabinet-makers' work, as it is seldom attacked by worms. 2. *B. capitata*. Willd. "Flowers with capitate spikes; leaves ridge-shaped, ciliated." Vahl.

BUCINO, in *Geography*, a town of Naples; 6 miles W.N.W. of Cangiano.

BUCIOCHE, in *Commerce*, a sort of woollen cloth manufactured at Provence in France, which the French ships carry to Alexandria and Cairo.

BUCK, in *Zoology*, a male horned beast of venery or chase, whose female is denominated a *doe*. A buck the first year is called a *faun*, the second a *pricket*, the third a *forel*, the fourth a *fore*, the fifth a *buck of the first head*, and the sixth a *great buck*. See **DEER** and **HUNTING**.

Buck is also applied to the males of the hare and rabbit kind. Hares commonly go to *buck* in January, February, and March, and sometimes all the warm months; sometimes they seek the buck seven or eight miles from the place where they sit. The *buck* rabbit is said to kill all the young he can come at; on which account the doe is careful to hide her offspring in some remote corner, out of his way. The doe coney goes to buck as soon as she has kindled. She cannot suckle her young till she has been with the buck. When he has bucked, he usually falls backward, and lies as in a trance half dead, at which time he is easily taken.

Buck, or **Busk**, in *Geography*, a town of Poland, in the palatinate of Beltz, 24 miles S.S.E. of Beltz.

Buck, or **Buchow**, a town of Germany, in the circle of Upper Saxony, and old mark of Brandenburg, 23 miles N.W. of it.

BUCK-bean, in *Botany*, a corruption of bogbean, one of the English names of *menyanthes trifoliata*, derived from the place of its growth, and from a slight resemblance of its leaflets to those of the common cultivated bean.

Buck island, in *Geography*, one of the smaller Virgin isles in the West Indies, situate on the coast of St. Thomas, in St. James's passage. N. lat. 18° 15'. W. long. 63° 30'.

Buck-mast, in *Botany*, is used by some for the mast or fruit of the beech tree.

Buck-skins. See **SKINS**.

Buck-stall, in our *Ancient Law Books*, a toil wherein to take deer. By an ancient statute, no person is allowed to keep a *buck-stall*, who has not a park of his own. Stat. 19. Hen. VII.

BUCKEBURG, in *Geography, a town of Germany, in the circle of Westphalia, and county of Schauenburg, surrounded with walls, and having a castle, where the tribunal of justice is held. It contains one church, two colleges, and a house of orphans; 3 miles east of Minden.*

BUCKEBERG, a bailliage of the canton of Soleure in Switzerland, on the east side of the Aar; its average annual value is 1661.; the inhabitants of this bailliage profess the reformed religion, and in ecclesiastical affairs they are under the protection of Bern. They take the oath of fidelity every third year to the government of Soleure: but if aggrieved in their religious establishment, have recourse to Bern. The senate of Bern nominates to the vacant benefices, but the priests are under the necessity of obtaining the confirmation of the chapter of Soleure. Bern also enjoys supreme jurisdiction in criminal affairs. If a criminal is arrested for any capital offence, he is tried by the bailiff of Buckeberg and the jury of the bailliage; but if condemned to death, he is delivered for execution to Bern, provided that republic discharges the expence of the trial. Soleure enjoys all the other rights of sovereignty. N. lat. 47° 9'. E. long. 7° 20'.

BUCKEN, a town of Germany, in the circle of Westphalia and county of Hoya; 2 miles S. of Hoya.

BUCKENHAM, or **NEW BUCKENHAM**, a small town in the county of Norfolk, England, is seated on the river Warency. It obtains the appellation of New, to distinguish it from another place of the same name, which is more ancient, and is called Old Buckenham. Both these places have been of some note, but both have greatly declined. Henry I. created this a distinct parish, and William d'Albany built a handsome church here. At Buckenham was formerly a splendid castle, the site of which was subsequently occupied by a priory. The lords of the manor are butlers at the coronation of our kings. Here are two annual fairs, but the market has been discontinued. The parish contains 125 houses and 664 inhabitants. Blomefield's History of Norfolk.

BUCKET, in *Hydraulics*, a kind of vessel or recipient chiefly of use for the raising or conveyance of water from wells, and other places. The word is formed from the French *baquet*, a *pail* or *tub*. In an army, buckets are carried with the artillery, in the fire-workers stores. Town buckets, for extinguishing fires, are made of thick leather, strongly soaked and boiled. One method of raising water, described by hydraulic writers, is by the means of a chain of buckets.

BUCKET, *sea-gage*. See *SEA-GAGE*.

BUCKHAVEN, in *Geography*, a village on the coast of Fifeshire, in the parish of Wemyss, in Scotland. This place is wholly inhabited by persons engaged in the fisheries, as this part of the coast is much frequented by haddocks. About 50 years back these fish were caught here in such abundance, that they were sold at the rates of sixpence and ten-pence per hundred. The first inhabitants of this place are said to have been some Dutch fishermen, whose vessel was stranded here in the reign of Philip II. In the year 1791, the village contained 601 inhabitants. Sinclair's Statistical Account of Scotland.

BUCKIE, a considerable fishing village in the parish of Rathven, county of Bamff, Scotland. Here is a tolerable harbour, to which belong 6 sloops, 14 boats, and 1 yawl. It is seated at the mouth of a river of the same name, and contained, in 1793, 703 inhabitants. The property of the place belongs about equally to the duke of Gordon and the honourable baron Gordon. Sinclair's Statistical Account of Scotland.

BUCKING, among *Miners*. See *ORE*.

BUCKING, an operation performed on linen cloth, cotton, and yarn, to render them somewhat white, by working them with lie made of ashes. Bucking of cloth is the first step or degree of whitening it. See *BLEACHING*.

To drive a buck of yarn, they first cover the bottom of the bucking-tub with fine ashes of the ash-tree, then spread the yarn thereon, then cover it again with ashes, and thus *stratum super stratum*, till the yarn is all in; when they cover the whole with a bucking-cloth, and lay on it more ashes, and pour in warm water, till the tub be full, and let it stand all night. Next morning they let the lye run into another vessel, and, as it wastes, fill up the tub with warm water from a kettle, and, as this wastes, fill it up with the lye that runs from the bucking tub, still observing to make the lye hotter and hotter, till it boils. Thus are both the tub and kettle to be supplied for at least four hours, which is called *driving a buck of yarn*.

BUCKINGHAM, in *Geography*, the county town of Buckinghamshire, England, appears to be a place of considerable antiquity, and has been the scene of some particular historical events. According to bishop Kennet, it was at or near this town that the Roman general, Aulus Plautius, surprised and routed the Britons, under the command of Caractacus and Togodumnus, the sons of Cunobeline. In the early Saxon times, it became celebrated as the burial-place of the infant saint Rumbald, who was born at King's Sutton in Northamptonshire, and is reported, by catholic fabulists, to have lived but three days, during which period he professed himself a Christian, and wrought many miracles. According to the Saxon Chronicle, Edward the Elder resided here in the year 918, and built two forts to repel the incursions of the Danes. The town was ravaged by the Danish soldiers in 941, and again in 1010, when, having plundered the adjacent country, they retreated hither to secure their spoils. At the time of the Norman conquest, Buckingham is stated to be the only borough in the county; yet it was then but an inconsiderable place. In the reign of Edward III. its importance was increased by that monarch making it a mart for wool; but the trade being removed to Calais, it again declined; and in the 27th of Henry VIII. Buckingham was in the list of decayed cities and towns which were relieved by act of parliament. The removal of the assizes to Aylesbury still lessened the consequence of Buckingham; and in 1724, a dreadful fire completed its misfortunes, when, out of 387 houses, 138 were consumed,

besides outhouses and manufactories. The damage was estimated at 40,000*l*. Since that period the trade has in a small degree revived, part of the county business being restored, and the assizes fixed here by act of parliament in 1758, in which year a gaol was erected. The town-hall is a large brick building, surmounted by a gilt swan, the arms of the borough. But the most conspicuous and principal ornament of the town is the church, which stands on the summit of an artificial mount, which was anciently occupied by a castle. This stately fabric was begun in 1777, and completed in 4 years, at the expence of about 7000*l*.; the greater part of which was contributed by the late earl Temple. The church is built of stone, and has a handsome square tower attached to its west end, ornamented with pinnacles, embrasures, and a light tapering spire, which rises to the height of 150 feet from the ground. The interior is constructed on the same plan as Portland chapel in London. A large gallery, supported by Doric columns, projects from three of its sides. From the gallery rise twelve more columns of the Ionic order, sustaining a richly decorated ceiling. The corporation consists of a bailiff and twelve burgesses, in whom is vested the right of election for members of parliament. It does not appear that this town sent members previous to 36 Hen. VIII. though three persons were sent, as early as 11 Edward III. to a council of trade held by that monarch at Westminster. A free-school was founded here, about 1540, by Isabel Denton; the endowment of which has been increased by successive donations: and a Sunday school has been lately established for the children of the poor. The extent of the town and parish is computed at 3800 acres. The houses, which are chiefly brick, and irregularly built, are estimated at 545, and the inhabitants at 2605, who are divided into several religious sects; the presbyterians, quakers, and methodists have each a place of worship. Lace-making is carried on to a considerable extent; for as it requires but little ingenuity, and cheap materials, there is scarcely a female who is not provided with a lace-pillow and its necessary implements. The profits of the business depend on the facility of execution; and the daily earnings are therefore different. Some women can gain from eighteen-pence to two shillings a day; but others not more than one shilling. Their receipts have lately experienced a considerable drawback, from the establishment of a manufactory at Nottingham, where lace is made by *machinery*, and being quicker executed, is retailed at a lower price; but its quality is not so good as that made by hand. Buckingham is situated 57 miles N. W. from London. It has a market on Saturdays, and seven annual fairs.

About two miles north of Buckingham are the magnificent mansion and celebrated gardens of Stowe, the chief ornament of the county, and principal seat of George Grenville Nugent Temple, marquis of Buckingham. Domesday book contains the earliest account of this manor, and states, that in the reign of Edward the Confessor its value was 60*s*. and that it was held by Robert d'Oyly and Roger Ivory of the bishop of Baieux. The present mansion is a large handsome structure, seated on a high spot of ground, which slopes, in a southerly direction, to a fine lake of water. The interior of this house is furnished in the most elegant style, and contains a large collection of pictures, and a very spacious library filled with choice books, numerous manuscripts, &c. The pleasure grounds, which consist of about 400 acres, are ornamented with numerous plantations, temples, &c. and are diversified with various inequalities of ground. Beauties of England and Wales, vol. i. "A Description of the House and Gardens at Stowe," 8vo. 1797.

BUCKINGHAM, a county of America, in the state of Virginia, bounded N. by James' river, S.E. by Cumberland, S.W. by Campbell, and S. by Appamattox river; 65 miles long and 30 broad; containing 7053 free inhabitants, and 6336 slaves. Its court-house is 223 miles from Washington.

BUCKINGHAM House, the most westerly of the settlements belonging to the Hudson bay company in New South Wales, lies north-westerly from Hudson-house on the northern side of Sleskawayn river, near its source. N. lat. 54°. W. long. 110° 20'.

BUCKINGHAMSHIRE, one of the inland counties of England, appears to have been mostly peopled at the time of the Roman invasion, by a class of the Britons, which the historians of that period named *Cattienchiani*. When the Romans had subjugated the island, this part of it was included in that division named *FLAVIA CAESARIENSIS*. After their departure, it became the theatre of many battles and revolutions, and, at length, in the Saxon dynasty, constituted a part of Mercia, to whose monarchs it became subject during the continuance of that kingdom. Buckinghamshire is bounded on the north by Northamptonshire; on the east by the counties of Bedford, Hertford, and Middlesex; on the south by Berkshire; and on the west by Oxfordshire. Its extent has been variously estimated; but the most correct computation has been given in the General View of its Agriculture; wherein it is said to be 45 miles in length, 18 in breadth, and 1,8 in circumference. It contains about 518,400 acres of land, and is divided into 8 hundreds, including 16 market-towns, 185 parishes, about 21,000 houses, and about 117,400 inhabitants. Its limits are mostly artificial, the river Coln bounding only a small portion on the east side, and the Thames separating it from Berkshire.

The face of this county is much varied. The southern parts are occupied by the Chiltern hills and their appendages. These eminences are chiefly composed of chalk intermixed with flints, and though very inferior to the northern district, with respect to richness of soil, have been rendered extremely productive from the great attention given to the cultivation and improvement of the land. The prolific *Vale of Aylesbury* spreads through the middle of the county, and furnishes a rich pasturage to vast numbers of cattle, its amazing fertility being chiefly employed in the support of the dairy and grazing systems. The more northern parts are diversified with gentle sand-hills, which enter from Bedfordshire. In the vicinity of the Chiltern hills, where the soil is light, and inimical to production without much labour, the most sedulous care is bestowed, and every mode of improvement adopted. In the vale of Aylesbury, and the more northern divisions of the county, the astonishing produce of the meadows rendering exertion less necessary, the farmer turns a deaf ear to every argument of an improvident tendency.

The soil of this county is principally composed of rich loam, strong clay, chalk, and loam upon gravel. Its chief application in the Chiltern district is to the growth of wheat, barley, oats, beans, and sainfoin; the northern division, as we have already intimated, is chiefly applied to pasture and meadow, with a very small proportion of arable. The great quantities of butter annually made on the dairy farms, are mostly purchased by the London dealers, who contract for it half-yearly. The average weight produced weekly from each cow, is eight pounds in summer, and six pounds in winter. In some of the dairies, a very useful machine, called a mill-churn, has lately been introduced, by which the fat-gauging operation of churning is greatly facilitated, the mill being worked by a horse. In other dairies a barrel-churn is used with two handles, turned by two men, who

make from six to six score pounds of butter at one churning. The skim and butter-milk are made use of to fatten swine. In the neighbourhood of Medmenham, Great and Little Hampton, &c. many calves are suckled; and at Aylesbury, and its vicinity, great attention is given to the rearing of ducks, to supply the markets of the metropolis. For ploughing, and other laborious operations of agriculture, horses are preferred to oxen. The latter have frequently been tried, but the stintiness of some parts of the soil, and the very heavy quality of others, have caused the farmer to decide in favour of the horse. In the southern parts, the swing and high wheel ploughs are chiefly used, and are drawn by four horses ranged two abreast. In the northern division the loose handle swing and low wheel ploughs, worked by five or six horses in a line, are principally used. The progress of agricultural improvement is considerably checked on many estates, by the restrictive conditions on which they are leased; the tenants being confined to two or three crops and a fallow; with a prohibition to the growth of clover and green food. The manures are principally marl, peat-ash, yard and rabbit dung. On some of the strong and cold soils, hair and hoofs are strewn with much advantage. Soot and ashes are equally beneficial to the wheat and young clover. Farms are generally let from 60l. to 250l. a year; some amount to 500l.; and two or three to 1000l. In the Agricultural View of the County, the common fields were estimated at 91 900 acres, but a large proportion has since been inclosed. The waste lands are but inconsiderable, their extent not being more than 6000 acres, the greatest part contained in the heaths of Iver, Fulmer, Stoke, and Wycombe. The southern division of the county produces large quantities of fine beech: near a sixth part of the land between the road to Oxford and the Thames is supposed to be covered with that wood. On Wavendon heath (now the property of the duke of Bedford) several flourishing plantations of Scotch firs have been made since its inclosure, about the year 1778. In the coppices on Whaddon chase are numbers of fine oak and ash trees. The chief manufactures are those of paper and lace. The latter affords employment for nearly all the lower class of females in the county.

The principal rivers are the Ouse and the Thame. The Ouse enters Buckinghamshire on the western side, passes Water Stratford, and flows in a devious course to Buckingham; thence winding to the north through a rich tract of meadow land, pursues its way to Stony Stratford, Newport-Pagnell, and Olney; soon afterwards, turning suddenly to the east, it leaves the county near Brayfield. The Thame rises near the borders of the county in Hertfordshire, and flowing through the vale of Aylesbury from east to west, receives the waters of several smaller streams, and enters Oxfordshire near the town of Thame. The interchange of traffic has been much facilitated of late years by the Grand Junction canal, which enters this county near Wolverton, and running eastward, goes within a mile of Newport-Pagnell; thence, flowing to the south, it passes Fenny Stratford, Stoke Hammond, Linslade, and Ivinghoe, into Hertfordshire, near Bulbourne. From a branch of the canal at Old Stratford, a cut has been made to Buckingham, and another from Bulbourne to Wendover.

Buckinghamshire is in the diocese of Lincoln, with the exception of six parishes belonging to the see of Canterbury, and four to the diocese of London. It sends fourteen members to parliament; viz. two for the county, two for Buckingham, two for Aylesbury, two for High Wycombe, two for Amersham, two for Wendover, and two for Great Mar-

low. It pays twelve parts of the land tax, provides the militia with 560 men, and is in the Norfolk circuit. General View of the Agriculture of the County of Buckingham.

BUCKINGHAMSHIRE, a county of America, in the district of Three Rivers, in Lower Canada, on the south side of the St. Lawrence river.

BUCKLAND, a township of America, in Hampshire county, and state of Massachusetts, containing 1041 inhabitants; 106 miles W. from Bolton.—Also a post-town in Prince William county, Virginia; 42 miles S.W. from Washington.

BUCKLE, in *Matters of Trade*, a little metalline machine, whereby to retain and keep fast certain parts of the habit, as well as of the harness of horses, &c.

The word is formed from the French *boucle*, and that, according to Casseneuve, from the barbarous Latin *plufcula*, which signified the same: According to Menage, from *bucula*, the *ansa*, or handle of a buckler. The buckle is a part of modern dress corresponding to the *fibula*, among the ancients. Buckles are of divers sorts, as shoe and garter buckles; some round, others square, or oval, or cut, each of which have their respective artificers by whom they are made. The like may be said of the great variety of buckles belonging to the pack and hackney saddles.

BUCKLE, *girth*, among *Saddlers*, is a four-square hood, with a tongue, which is made steady, by going through a hole of leather, and fastened with narrow thongs.

BUCKLER, a piece of defensive armour, used by the ancients to screen their bodies from the blows of their enemies.

The word comes from the barbarous Latin *bucularium*; of *bucula*, the umbo or middle point of this weapon, which had usually a head or mouth, represented prominent thereon.

The buckler is the same with what we otherwise call shield or target; and by the one or the other we indifferently render what among the ancients were denominated *clypeus*, *scutum*, and *parma*: though the three latter were different from each other.

The *scutum* was an oblong shield with an iron boss or umbo projecting from the middle; 4 feet long and 2½ broad, made of wood, joined together with small plates of iron, and wholly covered with a bull's hide. The *clypeus* was a round shield of a smaller size. The *parma* was a round buckler made of wood, and covered with leather.

The buckler of Achilles is described in Homer, that of Æneas in Virgil, that of Hercules in Hesiod; Ajax's buckler was lined with seven bulls' hides.

The buckler among the Greeks, called *Ασπίς*, was sometimes composed of wicker-work, and sometimes of the wood of fig, willow, beech, or poplar; but most commonly of hides, which were doubled into folds, and fortified with pieces of metal. In the middle of the buckler was a boss, upon which was fixed another prominence. A thong of leather, and sometimes a rod of metal, reached across the buckler and served for hanging it on the shoulders. Sometimes it was held by little rings; and it had afterwards a handle, composed chiefly of small iron bars crossing each other, in the form of the letter X. When the wars were ended, and the bucklers suspended in the temples of the gods, they took off the handles, that they might become unfit for immediate use. Little bells were sometimes hung upon bucklers to strike terror into the enemy. They were often adorned with various figures of beasts and birds, of the celestial bodies, and of the works of nature. The bucklers of the Argives seem to have been longer than the rest, and to have covered the whole body. Their form was usually round. Phil. Trans. N° 241, p. 206. See SHIELD. See also ARMOR, and ARMS.

The ancients were particularly solicitous to preserve their bucklers in fight; it being highly infamous, and even penal to return without them. It was on their bucklers that they carried off the bodies of their slain, especially those of distinction.

The Spaniards still retain the sword and buckler in their night-walks.

Bucklers on medals, are either used to signify public vows, rendered to the gods for the safety of a prince; or that he is esteemed the defender and protector of his people.—These were particularly called *votive bucklers*, and were hung at altars, &c.

BUCKLER, in *Heraldry*. See SHIELD.

BUCKLER of a *case*, denotes a moveable head, whereby to compress the contents of it.

In this sense we say, a buckler of pilchards.

BUCKLER *Mustard*, in *Botany*. See BISCUTELLA and CLYPEOLA *Fontblaspi*.

BUCKOVINA, in *Geography*, a part of the ancient province of Dacia, became subject to Austria in 1777, and was annexed to Galitz, vulgarly denominated Galicia. It contains no town of any consequence; but Czernowitz is reckoned the principal. Hoeck estimates the number of inhabitants at 130,000; they speak Polish and German; and their religion is the Roman Catholic. The annual revenue is reckoned at 400,000 florins.

BUCKRAH, a town of Hindoostan, in the Soubah of Oude; 18 miles N.W. of Goorackpour.—Also, a town of Hindoostan, in the country of Bahar; 25 miles N. of Patna.

BUCKRAM, a thick sort of linen or hempen cloth, stiffened with gum or glue, used in the linings of cloths, to sustain and make them keep their form.

Of buckram are also made wrappers for covering cloth and other commodities, in order to preserve them from being soiled, and their colours from fading. Buckram is sold wholesale by the dozen of small pieces, each about four ells long, and of breadth corresponding to the piece from which they are cut.

BUCKS, in *Geography*, a county of Pennsylvania, in America, lying N.N.E. from Philadelphia, separated from Jersey by the river Delaware on the south-east and north-east, and having Northampton county on the north-west. It contains 27,496 inhabitants. Bucks is a well cultivated county, containing 411,900 acres of land, and comprehends 28 townships, the chief of which is Newtown. It abounds with lime-stone, and in some places are found iron and lead ore. At the north end of the county is a remarkable hill called Haycock, situate in a township of the same name. This hill is 15 miles in circumference, with a gradual ascent, and commands from its summit a very delightful prospect. The waters of Tohickon creek wash it on all sides except the west.

Buck's Harbour, a bay of the Atlantic, on the south coast of the district of Maine, in America. N. lat. 44° 42' W. long. 63° 34'.

BUCKSHORN, in *Botany*. See PLANTAGO *Coronopus*.

BUCKSTOWN, in *Geography*, a town of America, in Hancock county, and district of Maine, on the east side of Penobscot river, containing 624 inhabitants, 260 miles N.E. from Boston.

BUCKTHORN, in *Botany*. See RHAMNUS.

BUCKTHORN, *sea*. See HIPPOPHÆ, *rhamnoides*.

BUCKTOWN, in *Geography*, a town of America, in Dorchester county, Maryland, situate between Blackwater and Tranquacking creeks, 12 miles from their mouths at Fishing bay, and 8½ miles S.E. from Cambridge.—Also, a township

township in Cumberland county, and district of Maine, near Portland, containing 453 inhabitants.

BUCK-WHEAT, in *Betany*. See *POLYGONUM sagopyrum*.

BUCK-WHEAT, in *Agriculture*, is a sort of grain much cultivated in the field in some districts. It is earnestly recommended to farmers by Mr. Young, in his excellent *Calendar of Husbandry*, as being yet only known by name in nineteen parishes out of twenty throughout the kingdom. It possesses as many excellencies to good farmers, he supposes, as any other sorts of grain or pulse that are employed in cultivation; having the property of ameliorating the land, as well as that of preparing it for wheat or any other crop. It is equally valuable with barley, and where known sells at nearly the same price; and, besides its utility in fattening some sorts of animals, is the best of all crops for sowing grass seeds with, as it affords them the same shelter as barley or oats, without depriving them of their necessary support. The time of sowing it has likewise an advantage in affording a full opportunity for getting the soil into a proper condition. And there is scarcely one-fourth of the expence of a barley crop incurred in the seed.

It is said by some to thrive well on any soil, even those of the poorest kinds; and that in most of the arable districts it is sown on the inferior sorts of land, as when cultivated on the richer kinds, it is found to run too much to straw.

Mr. Bannister, however, observes, in his *Synopsis of Husbandry*, that it delights in land which has been reduced into good order by tillage, and has likewise partaken liberally of the dung cart, for which reason it often succeeds a crop of turnips; and there is this advantage attending the cultivation of it, that as, from the tender nature of the plant, it requires to be sown late, it may follow a crop of turnips that has been fed off at a time when it would be highly imprudent to sow the ground with barley.

Mr. Young considers this as a very profitable crop on all sorts of land, except the very heavy kinds, that require late sowing, and where barley cannot be put in at a sufficiently early period; as he suspects there are not many soils on which a buck-wheat crop sown in May will not be more valuable than one of barley sown at the same time, though it is the common practice in many districts to put that crop in at so late a season.

The lands intended for this grain should undergo a proper tillage in April, so as to render them fine and perfectly clean from weeds, especially where grass-seeds are to be sown with it.

The proper time for sowing buck-wheat, Mr. Bannister observes, is in May, "when there is no longer any danger to be apprehended from the frosts; for so tender is this vegetable at its first appearance, as to be unable at an earlier period to withstand the vernal cold; and the slightest frost, in their infant state, would infallibly cut off the young shoots; and, as from this circumstance it must be sown at a season when dry weather may be expected, the crop does on that account not unfrequently miscarry." And Mr. Young asserts that it often succeeds well, when put into the ground in June, and even the beginning of July, which is considered as an advantage in a crop that prepares the land for wheat.

But the author of the *Synopsis of Husbandry* remarks, that "being sown late, the harvest likewise falls out very backward, by which the greater part of the crop is often devoured by the hogs in the field; as this grain seldom ripens till towards Michaelmas, when the other corn fields have been long open. Add to this, the injury likely to accrue from rain, which may be expected to fall in great abundance

at this season, so that the haulm, being extremely succulent, does in the most kindly harvest require a great deal of field room: but in a wet autumn it is a very difficult matter to get the crop home in good order; and in such years he has known the swaths of buck-wheat lying abroad throughout the greatest part of November." Hence there is evidently great hazard in this grain, not only from its being exposed to the ravages of the hogs, when cultivated in open fields, as before mentioned, but from the shedding of the seed; circumstances which will cause the returns to be very trifling when threshed. To this may be added the inferior value of the straw, chaff, &c. when compared with an oat or barley crop.

The proportion of seed which is necessary, must vary in some measure according to the nature of the land; but, in general, a bushel to the acre is fully sufficient. It should be well harrowed in with a light short-tined harrow.

This grain generally, as has been seen, bears a price equal to that of barley, and is used for fattening of swine, poultry, and other domestic animals. "In its external form," Mr. Bannister says, "it bears not the smallest resemblance to wheat; and the method of culture, and the progress of its growth, are totally different from that grain: but, when ground, it produces a white flour, whence it may probably have gained the appellation. In Hertfordshire and Buckinghamshire, it is a common mode of husbandry to sow turnip seed with buck wheat; but the Kentish farmers usually sow their woad or weld on their buck-wheat lands; and as the seeds of either covet a light bed, and both of them require to be sown late, the woad generally succeeds well when raised among buck-wheat; and sometimes buck-wheat, turnips, and woad are crowded together in one season." This is, however, a practice by no means to be generally adopted.

The proper quantity of this grain, according to this writer, "to sow on an acre, is half a bushel; and such is the uncertainty of the return, that five quarters have been produced from an acre in some years, while in others not so much as five bushels."

"The green haulm of buck-wheat has a peculiar inebriating effect on swine. He has seen hogs, which have fed heartily on it, come home in such a state of intoxication, as to be unable to walk without reeling."

This sort of grain is likewise, he says, sometimes "sown on stiff lands, for the purpose of ploughing in the stalks as a manure. On fallows, where the land has a clayey bottom, this method may be pursued to advantage; but it is to be noted, that the ground should be in pretty good heart, so as to throw out a large burthen of haulm, otherwise no benefit can accrue from this mode of husbandry." At the stirring of the fallow in May, in this mode of culture, the seed should be sown pretty thick; and when the stalks have arrived to their full growth, they should be laid flat with the roller, and afterwards turned in with the plough; and when the ground has continued in this state till towards Michaelmas, by which time the stalks of the buck-wheat will be rotted, the seed furrows for the succeeding crop should be begun. "This method of ploughing-in the green stalks of buck-wheat contributes, it is observed, much toward the melioration of stiff soils, and disposes them to work more kindly than they would otherwise have done, by overcoming that adhesion, which is the greatest evil that attends this species of land."

The author of the "New Farmer's Calendar," who assures us that he speaks from much actual experience, says, that "the invariable result has shewn its inferiority to every other grain, but superiority over other vegetable food, namely

carrots, potatoes, and the like. In the state of herbage, cattle, he knows, will eat it; but it is from Hobson's choice, as a hundred trials have convinced him. Its fitness for ploughing into the land is undoubted, on account both of its bulk and succulence. The juice of it, however, is watry, and far enough from nutritious. Hogs, he has found from numerous trials, fatten neither so fast with it, nor is the flesh so firm as that which has been fattened upon corn. He has used it in large quantities ground, with hard-working horses, both draught and saddle, but the difference of price by no means compensated for its inferiority to oats and beans; and besides, it did not always agree with them, as he sometimes fancied it had a kind of stupefying effect. In nutriment, however, he confesses, that it is superior to carrots for working-horses. He tried it with a stock of several hundred head of poultry; and it was in the same degree inferior both in the fattening and laying stock. He does not hear that it is very highly prized even in the distillery." In fine, he concludes, "that buck-wheat is valuable upon land that will grow nothing else, and where it is produced with small expence; and that when ready, its best application is to the market." The experience of other practical farmers, however, affords a more favourable opinion of the utility of this grain.

It has been said, the same writer further observes, that this grain being black cannot be discoloured by wet; which is by no means a practical remark, since its discolour consists in the loss of its fine black; beside which, the grain feels cold and damp, to the great injury of the sample. Wet or dry, the only use for the haulm is under foot. To those who expect to get money by buck-wheat, he recommends early sowing, and even to allow it the manure necessary for a following wheat crop; he should think, by such management, five, perhaps ten, quarters might be obtained from an acre of good land, which would remain in excellent order for wheat. This necessarily supposes land in no want of late spring-tillage. In this case, should a suspicion be entertained of the crop running too much to haulm, it might, he thinks, be advantageously rowed and hoed.

In the "Rural Economy of Norfolk," Mr. Marshall remarks, that "buck wheat is propagated as grain, and as a manure; and that, as the main intention of its propagation, whether as a crop or as a melioration of the soil is the same, namely, the cleansing of foul land, it may be convenient to keep the two objects in nearly the same point of view. With respect to species there is only one; this grain having not yet, he believes, run into any varieties sufficiently striking to have distinguishing names appropriated to them. It is sown almost indiscriminately on all species of soils; he, however, thinks that light poor land has the preference; it is, says he, to this species of soil that buck seems most especially adapted. It likewise succeeds every species of crop; the state of the soil as to foulness and poverty being generally more attended to than either the nature of the soil or the crop it bore last. The soil-process depends upon the state of the land, and the intention jointly; if the soil be tolerably clean, and the buck be intended to be ploughed under as manure, it is sown on one ploughing; but, in general, the ground is broken, as for barley or peas, to forward the fallow, and secure the crop.

The seed-process is the same for both intentions; excepting that, for a crop, the seed is sown first, namely, immediately after barley-feed; and that intended to be ploughed under is sown as soon afterwards as the ground is in a state fit to receive the seed. It is universally sown above-furrow. The quantity of seed, six pecks to two bushels an acre. The growth of buck is so rapid as to outstrip and smother

almost every species of weeds; an excellency peculiar to this crop. The method of ploughing buck under, and the after-management of buck-fallows, are nearly as for wheat. The harvest-process is like that of barley, as is that of its farmery and management; except that the straw being fit for litter only, and the grain being wanted for the fattening of pigs in autumn and the beginning of winter, it is frequently threshed out immediately after harvest, before the live stock are taken into the farm-yard."

Mr. Mosely of Suffolk cultivated this crop after tares, finding it highly advantageous as a preparation for wheat, by preserving the land after that crop had been removed, from the dissipating effects of the sun till the period of the wheat being sown. This is a combination of crops by which much is effected in the opinion of Mr. Young; "a coat of manure is gained at no expence, the year carried through from Michaelmas to Michaelmas, and three crops put in on three ploughings, viz. tares, buck-wheat, and wheat." It is not, he says, easy to form a more complete system.

It is recommended in the first volume of the Annals of Agriculture, in feeding horses, to try the efficacy of buck-wheat mixed with bran, chaff, or grains, either in the whole, or broken in a mill; as a bushel of it, which goes further than two bushels of oats, even with beans, mixed with at least four times as much bran, will be full feed for any horse a week, and much less hay will do. It is also further remarked, that in fattening hogs eight bushels of buck-wheat meal will go as far as twelve bushels of barley-meal. In the feeding of poultry and pigeons it is likewise highly useful and advantageous, as they eat it with great avidity, and thrive well upon it.

BUCOLICA, is used by some for the art of managing, feeding, and breeding cattle.

BUCOLICS, in *Ancient Poetry, Pastorals*; a kind of poems relating to shepherds and their flocks. The word is derived from βους, and κολον, *cibus, meat*; hence βουκολιω, *to feed cattle*, and βουκολος, *bubulcus, a herdsman*.

Bucolic poetry is the most ancient of all the kinds of poetry; and is supposed to have had its origin in Sicily, amidst the mirth and diversions of the shepherds; and to have been inspired by love and idleness: by degrees, their rural gallantries were brought under rules, and became an art. The concerns of the flocks, the beauties of nature, and the pleasures of a country life, were their principal subjects. Moschus, Bion, and Theocritus were the most agreeable among the ancient bucolic poets.

Fontenelle observes, that Theocritus's style is sometimes a little too bucolic. Some authors attribute the invention of bucolic poetry to a shepherd called *Daphnis*; and others to Bucolius, son of Laomedon: but this appears all fiction. Some ascribe the invention of bucolic poetry to the herdsmen of Laconia, who not being able to hold the customary feast of virgins in honour of Diana Caryatis, by reason of the war with Xerxes, instituted βουκολιασμοι, or bucolic exercises in lieu thereof.

Hence also the origin of a sort of poetical champions, called βουκολισται, by the Latins *ludiones*, who went about the country, contending for the prizes frequently proposed for the conquerors in this kind of combat; of which rank Daphnis was the most distinguished. They not only rehearsed their verses, but played on a kind of *ffistula*, or pipe, called *syrix*. Scal. Poet. lib. i. cap. 4. Pott. Arch. lib. ii. cap. 20. Hist. Acad. Inscr. tom. iii. p. 123, & 131, &c.

Bucolic poetry is by some called *Asirabic*, as being supposed to have first commenced among the ancient herdsmen riding a sort of waggon called *asirabes*. It is usually divided into *monoprosopium*, or monologue, wherein only a single per-

son speaks, and *amaleum*, or dialogue, wherein are several interlocutors.

Bucolics, says Vossius, bear some resemblance to comedy, as they are both pictures and imitations of ordinary life; but with this difference, that comedy represents the manners of the inhabitants of cities; whereas bucolics exhibit rural occupations. Sometimes this kind of poetry has action, and sometimes only narration, and it is sometimes composed of both. The hexameter verse is the most proper for bucolics in the Greek and Latin languages.

Theocritus' IDYLLS, and Virgil's ECLOGUES, are the chief of the ancient bucolics now extant. The first modern Latin bucolics are those of Petrarca, about 12 in number, written about the year 1352. Their number multiplied to soon, that a collection of 38 modern bucolic poets in Latin was printed at Basil in 1546. These writers judged this indirect and disguised mode of dialogue, consisting of simple characters which spoke freely and plainly, the most safe and convenient vehicle for abusing the corruptions of the church. The eclogues of Mantuan, which appeared about the year 1400, were the model of Alexander Barclay (see BARCLAY), and became so popular, that Mantuan acquired the estimation of a classic, and was taught in schools. But although Barclay copies Mantuan, the recent and separate publication in England of Virgil's bucolics, by Wynkyn de Worde, might partly suggest the idea of this new kind of poetry. See Wharton's Hist. of Eng. Poetry, vol. ii. p. 256.

BUCORTA, in *Geography*, a river of Italy, which runs into the sea near Pagliapoli, in Calabria Ultra.

BUCQUET, JOHN BAPTISTE MICHEL, in *Biography*, was born at Paris, February the 18th, 1746. After passing through the usual school education, in the course of which he had eminently distinguished himself, he was sent by his father to be instructed in jurisprudence; but his disposition leading him to the study of natural philosophy, he soon quitted the law, and applied himself with zeal to acquire a knowledge of anatomy, botany, chemistry, and mineralogy, attending the lectures of the most celebrated masters, and with such assiduity, that he was soon qualified to become a teacher. His first course was on mineralogy and chemistry conjointly. These he treated in a familiar manner; and as he had made himself perfectly acquainted with the subjects of his lecture, and had a peculiar facility in communicating the knowledge he had acquired, he soon became a popular teacher. This procured him the intimacy of the celebrated Lavoisier, with whom he went through a series of experiments, to ascertain the properties of heat; they also analysed a variety of minerals, at that time but little known. To enable his pupils the more easily to profit by his lectures, he published an "Introduction to the Analysis of the Vegetable Kingdom." He also sent to the Royal Academy accounts of various chemical experiments, which were published with their memoirs. He had now acquired so much reputation, that on the death of M. Bourdin, he was admitted a member of this academy. He had before, viz. in the year 1776, become a member of a society, instituted at Paris, for the improvement of medicine. To this society he sent the account of a process for making opium transparent; for making lapis causticus; and a memoir on the action of volatile alkali in the deliquium, caused by carbonic acid. By these various labours, pursued with ardour and intemperance, he had now, though a young man, so impaired his health, as to render him incapable of performing his duties without having recourse to powerful stimulants, which, while they gave a momentary vigour, still farther sapped his constitution. But as he was married, and had several children, for whom he had made but slender provision, he determined to persevere.

He has been known, his biographer says, to take two pints of æther and an hundred grains of opium in a day. In this way, something similar to that practised by John Brown of Edinburgh, he passed the latter months of his life. His last memoir, read to the academy was on inflammable air, and the means of rendering the hydrogen gas of marshes as pure as that obtained during the solution of metals. He died on the 24th of January, 1780, escaping, by this early and premature dissolution, the keen and bitter pang he must have felt at seeing his friend Lavoisier hurried to the guillotine, an event which took place, to the regret of all lovers of science, a few years after. Gen. Biog.

BUCKETIUS, DANIEL, a physician of eminence of Brussels, was initiated into the knowledge of anatomy and medicine under Spigelius, who, a little before his death, entrusted him with his papers, containing his system of anatomy, with directions to publish them. This office BUCKETIUS performed with diligence, supplying such parts as were not completed, partly from his own observations and labour, and partly from the plates of Julius Caperius. Having completed this work, which was published in royal folio, at Padua, in 1626, he went to Paris, and attended for some months the dissections of Riolan. Riolan complaining to him, that Spigelius had introduced into his work many observations, taken from his books, without making any acknowledgment from whence he had received them, BUCKETIUS confessed he had done it, to do honour to his master. Sometime after he retired into a monastery, where he died of a dysentery, about the year 1630. Douglas. Bibliog. Anat.

BUCTION, in *Anatomy*, a word used by Severinus, and some others, as a name for that part of the *pubendum muliebne* commonly called the HYMEN.

BUCY LE LONG in *Geography*, a town of France, in the department of the Aisne, and district of Soissons, 1 league N.E. from it.

BUZA, a town of Lithuania, in the palatinate of Brzesc, 90 miles E. of Brzesc.

BUD, in *Botany*, in its strict and most usual acceptation, as an English word, denotes the protuberances which appear in the axils of the leaves of trees and shrubs, and sometimes when there is an excess of vegetative power, on the trunks themselves, unaccompanied by a leaf; and which contain the rudiments either of separate leaves and flowers, or of both together, on an elongated receptacle, which gradually shoots out into a young branch. But, as a scientific term, it is convenient to include in it all the means employed by nature for the renewal of plants, without the intervention of fertilized seeds. A bud, taken in this extensive sense, is seated either on the ascending caudex, or on the descending caudex, or on a tuberous radicle. On the ascending caudex, it is either a gem, or a cauline bulb: on the descending caudex, it is either a root bulb or a tuno: on the tuberous radicle, it is usually called an eye. See those words.

BUD, in *Vegetable Anatomy*. The transpiration of the leaves, during their exposure to the light and heat, determines the course of the juices of the vegetable powerfully towards their points of attachment. The tubes, which convey the sap, elaborate it; the cambium is gradually formed, and deposited around the base of the leaves: it there gives birth to new tubes, which obeying the impulse communicated to them, elongate towards the bark, and penetrate it. As the spring is the season most favourable to the production of new parts, it is then that we first perceive what is called the *eye* of the *bud*, within the axilla of the leaves, or that angle formed between their base and the branch. In the course of the summer, the eye enlarges,

enlarges, and becomes a bud : it continues to increase during the autumn, and in the winter falls into a state of torpidity ; in the ensuing spring, however, it revives, and expands into a *shoot*, or succulent branch, which acquires solidity in the summer, and becomes clothed with leaves or flowers.

The period required for the evolution of the buds is subject to vary : it is sometimes retarded for five years ; at other times accidental causes accelerate this process. Thus, if the leaves, which accompany the buds, happen to perish, their development is so much more rapid, that these buds produce branches sustaining leaves and flowers in autumn, which, in the ordinary course of vegetation, would not appear before the ensuing spring. These untimely productions, however, are destroyed by the first frost.

The buds of the same tree are not all developed in the same time, some being more exposed than others to the action of air and light. In general, those situated at the extremity of the branches are the first to unfold themselves.

The position and figure of the buds are peculiar in each genus, and often even serve to characterize the species of plants. A knowledge of these distinctions is found very useful by those who rear trees in nurseries.

Bonnet arranged buds into five orders, according to their position upon the branch. In the first they occur alternately as in the *filbert tree*. In the second, they arise opposite to each other as on the *ash*. The third mode of arrangement is, when the buds surround the branches in a ring : the example of this which Mr. Bonnet quotes, is the *pomegranate* ; but all the young branches of this tree have the buds placed opposite. The fourth position of the buds is, where they form, with respect to each other, quincunxes, and, when taken together, compose a spiral figure, which surrounds the branches in the manner of a cork-screw. This takes place in many *fruit-trees*, but more especially in the *plum-tree*. In the fifth order are those trees which have the leaves surrounding the branches in a double spire, as they appear in the *pine*. The true buds of the pines do not, however, grow in the axillæ of the leaves, but on the extremity of the branches.

In the trees with opposite buds, the extremities of the branches are usually furnished with three buds, the one in the middle being much the largest ; and when the buds are placed alternately, the branch is commonly terminated by a single bud.

The direction of the buds is different in different species ; sometimes they stand out so much from the branch, that they form with it almost a right angle, as may be seen in the *lilac* : in other instances, as the *cornel-tree*, they are closely applied in all their length to the side of the branch. In the *Euonymus Europæus*, the buds at the extremity of the branches are laid close, as those of the *cornel-tree* ; whilst those on the other parts of the branch are directed outwards.

There are numerous other peculiarities in the form and appearance of the buds, which, although useful for the gardener to know, it would be tedious to enumerate in this place.

No annual plant can, with propriety, be considered as possessing buds ; these parts being intended to survive the winter, and contain the rudiments of the branches and flowers which are to be developed on the return of the season of vegetation. The true bud ought not, therefore, to be confounded with those small cones found in the axillæ of herbaceous plants, and which are converted into branches in a few days. The lilaceous plants, and other monocotyledons with bulbous roots, do not produce buds in the axilla of their leaves : the bulbs of these vegetables perform all the functions of buds, and have, therefore, very properly

been ranked as such, and called by some writer *subterraneous buds*. Although we acknowledge the similitude of these two parts to each other in the fullest extent, we prefer giving the description of bulbs under their proper name. See BULB.

Besides the varieties of buds which serve to distinguish different genera, and sometimes the species of plants, there are other peculiarities which characterize the nature and offices of different buds upon the same tree : some buds being intended to develop the leaves and branches ; others to contain only the parts of fructification ; and others again give origin to both leaves and flowers. Those of the first kind are called the *leaf-buds*, or *buds with wood* ; the second, the *flower* or *fruit-buds* ; and the last are termed the *mixed buds*. The cultivators of fruit trees are careful to discriminate the different kinds of buds, as a guide in the various operations of grafting, pruning, &c. The leaf-buds, compared with the others, are slender, long, and pointed ; the fruit-buds are thick, short, and round ; and those of a mixed nature, have an intermediate form, being neither so pointed as the one, nor so round as the other.

In a great number of trees, the flower buds are situated upon the extremity of the little ramifications, called fruit-branches. See BRANCHES. Fig. 9. of Plate II. in *Vegetable Anatomy*, represents a fruit-bud of the *pear-tree*, sustained by one of these little branches ; *a* the branch ; *b* the bud ; and on the neighbouring branch upon which this one grows, is seen a wood-bud, indicated by *c*.

In the *peach-tree*, and many others of the same family, the wood and fruit-buds arise together from the same branch : this is shewn by fig. 10. of Plate II. in *Vegetable Anatomy* : *a* is a short portion of a branch of the *peach-tree*, on which are placed three buds ; *b*, *b*, the two external buds contain the flowers, &c. the intermediate one is the wood-bud.

When the male and female flowers are situated upon different parts of the same plant, or upon separate individuals, it is proper to distinguish the flower-buds into two kinds ; as in many species, the buds, which furnish the catkins, are very unlike those which produce the fruits : thus, in the *walnut-tree*, the fruits owe their origin to the buds placed along the length of the branches, whilst the catkins proceed from other buds so very small that they are hardly perceptible, and which are situated at the side of those which furnish the fruits.

The buds of almost every vegetable which is congenial to a northern climate, are clothed with a number of scales, and a cotton-like substance. The scales are laid upon each other in an imbricated manner, or like the tiles of a house. Those situated most externally are strong, hard, and dry, and generally of a brown colour, but the scales which are covered by others are more pliant, tender, and succulent ; and the nearer they approach to the centre of the bud, they acquire more of the herbaceous texture of young leaves : the internal scales are usually of a pale green or white colour. The scales are very generally lined with a downy or cotton-like substance. This becomes dry and coloured upon the external scales ; but where it is shielded from the action of the air, it remains soft and white, not unlike the downy surface of satin. The form of each scale is that of a spoon or shallow oval cup, with one extremity more thin and pointed than the other. The surfaces of the scales are usually besmeared with a viscid matter, of a gum resinous nature ; this becomes involved in the down, and forms a perfect barrier to the transmission of air or moisture to the internal parts of the bud ; and not unfrequently the resinous matter is so abundant, that it exudes upon the external surface of the bud, giving it all the appearance of being

coated with varnish, as may be observed on the buds of the *horse-chestnut*, the *tacamahaca*, &c.

If those buds, which have their superficies imbued by a resinous substance, be removed from their situation, and if the surface which unites them to the branch be covered with wax, they may be suffered to lie in water for several months, without experiencing any alteration; nay, it is stated by Mirbel, that this experiment has been prolonged for some years, without the least injury to the buds.

On prosecuting the dissection of the bud to its centre, we discover either the rudiments of the future branch, or the parts of the fructification in extreme miniature. In the wood-buds the embryo of the branch consists of some succulent filaments, or imperfectly formed leaves, folded together and supported upon a tender footstalk, very similar to the plumule of the trunk contained in the grain; and in the fruit-buds, the parts composing the flower can be discerned at a very early period, although in a very soft and half organized state.

Both the rudiments of the branch and flower undergo a continual, though secret development, during their existence in the bud; which has been ascertained by dissections of the buds, instituted at different periods of their growth. The little plumule of the branch can be discovered as soon as the bud is fairly formed, and continues gradually to acquire more perfect organization, until it bursts from its nidus in the full season of vegetation. The rudiments of the blossoms of the *pear-tree* are to be seen in the month of January, in a group of eight or ten flowers, attached by filaments to a common peduncle. In the midst of these little flowers there are several minute, thin leaves, of various forms and of a pale green colour, which Duhamel conceives are designed to perform the same offices, with respect to the embryo flower, that the seminal leaves answer in the seed. The stamina may be observed, at this period, within the flowers, but as yet almost transparent. The petals are hardly discernible, and the pistils cannot be detected. In the month of March the tops of the stamina are red; the petals, although small, may be clearly perceived, and even the pistils may be distinguished; they are white, and each nourished by a particular filament: it is probable, that the pistils, and all the essential parts of the fructification, are coeval with the bud itself, although their softness and transparency prevent their being distinguished: so just was the observation of Grew, that the flowers of the spring were formed in the preceding year.

The structure of the wood and flower-buds is exemplified in Plate II. in *Vegetable Anatomy*. Fig. 11. exhibits the external appearance of the bud of the *horse-chestnut*, which is selected for the sake of its great size. The scales are seen laid over each other, like the tiles of a house; their more pointed extremities being turned upwards, and all their edges in close contact, as the bud appears in winter. At the base of the bud may be seen some projecting rugæ, and immediately beneath these the impressions left from the attachment of the former leaves. Fig. 12. shows a longitudinal section of the same bud; *a*, the brown scales which form the external envelope; *b*, the tender scales situated more internally, and becoming more thin, pliant, and folded, the nearer they are to the centre; *c*, the imperfectly-formed leaves of the young branch compressed together, and involved by the white down or cotton-like substance; *d*, the bark of the branch which sustains the bud; *e*, the ligneous portion of it; *f*, its pith. Fig. 13. represents a bud of the *horse-chestnut*, despoiled of its scales in order to bring into view the total branch, which has its parts separated a little, and cleaned from the down which envelopes them, that they

may be more distinctly observed. The marks appearing beneath the plumule, point out the attachments of the scales, which have been removed.

The fourteenth, fifteenth, sixteenth, and seventeenth figures in Plate II. in *Vegetable Anatomy*, are intended to explain the structure of the fruit-bud. Fig. 14. is the fruit-bud of the *peach-tree*, divided longitudinally, and considerably magnified; *a, a*, indicate the imbricated scales which compose the external envelope of the bud; *b, b*, refer to the cut edge of the calyx of the flower, which, in the embryo state, forms a complete cell, including the parts of fructification; *c, c*, are the stamina, almost pellucid; *d*, the pistil. Fig. 15. exhibits one of the scales abstracted from its situation, and highly magnified; it appears entirely covered by villous processes. Fig. 16. shews the flower-bud of the *peach tree*, a little larger than the natural size, as it appears when divested of its scaly coverings; *a*, is the calyx, with its edges applied to each other, so as to form a perfect cyst. Fig. 17. is the same calyx drawn a little larger, and with its leaflets separate from each other, and turned back to expose the stamina; and in the pistil within the calyx may also be seen the rudiments of the petals.

The buds of the *pine* differ in many respects from those of other trees. According to Mr. Tschudi, who has described these buds, they are placed always on the extremity of the branches; they are commonly numerous, the bud, which is at the extremity, being succeeded by others much smaller than itself; they are all contained in one membranous sheath, formed of many cylindrical pieces, adjusted the one to the other, and accompanying the development of the bud. When it first appears it is about two fingers in length; it then continues to extend, soon becomes large, and the little leaves which have been hitherto sealed up, unfold themselves, and the branch comes forth. It is possible to discover, a long time before the buds are matured, those which are to appear upon the extremity of the branch.

It is difficult to decide with certainty what are the parts of the branch from which the buds, in the first instance, are derived. When the bud makes its appearance, it is so imperfectly organized, that it scarcely admits of dissection, or of being distinguished into those parts which it is ultimately to exhibit. Accordingly, we find, that anatomists have held very different opinions upon this subject. Pontedera conceived that the rudiments of the buds were lodged in the wood alone. Duhamel supposed that all the parts of the branch were continued into the bud; the internal part of the bark being prolonged to form the scales, and the bark of the plumule; the ligneous fibres giving rise to those of the embryo branch, and the pith being extended into the interior of the different parts of the bud. On the contrary, Hill and others assert, that the buds are formed exclusively by the parenchyma. The scales of the bud, however, appear to be leaves which have never arrived at maturity: this is the opinion of Mirbel, which he illustrates with much ingenuity; he supposes that the leaves, which afterwards appear as the scales of the bud, are rendered abortive, by the abatement in the circulation of the sap, which takes place on the approach of winter; for, if the motion of the sap were to be either totally suspended, or not impeded at all, no scales would form, which is exactly what may be observed in a few trees which inhabit cold countries, and in most plants that are natives of hot climates. It, also, the top of a tree be cut off before the evolution of the buds, those which are afterwards developed are unfurnished with scales.

Around the base of the bud there is always a degree of tumefaction of the branch, which is called a *burr*; this is formed at the eruption of the bud, and enlarges in all directions,

tions before the scales fall, and the parts contained in the bud are unfolded. The *burr* is supposed to answer two very important purposes; with respect to the bud, the first is to supply the place of the leaves, by collecting a greater portion of the sap around the root of the bud, and thus supporting it during its hybernation, and yielding, during the season of interrupted vegetation, a degree of provisional nourishment to the embryo branch or flower, which is necessary for the secret development they are known to experience. The other use of the *burr* appears to be to separate the scales of the bud from each other previous to the expansion of the shoot; this is accomplished by the enlargement of the *burr* on the return of spring. It is evident, the slightest separation of the scales, at their origin, must cause a considerable one of their unattached edges; without the assistance derived from the growth of the *burr*, it seems quite impossible that the tender plumule of the branch or the embryo flower should ever be able to force asunder the hard and unyielding scales that encase them, more especially in those instances where the scales are agglutinated to each other by the gum-resinous matter.

In some experiments which were undertaken by Senebier upon the buds of the *chestnut*, *apple*, and *pear* trees, he found, that by depriving the flower-buds of their scales and little leaves, he did not interrupt the evolution of the flower, nor prevent their going on to produce fruits. Senebier accounts for the flowers surviving the privation of their scales, by supposing that the *burr* in some degree might supply their place.

The most extraordinary circumstances in the history of buds, are the conversion of flower-buds into wood-buds, and that of wood-buds into flower-buds. The former is related as being effected by Mariotte in this manner: he deprived, in the latter part of the month of August, a rose-tree of its branches and all its leaves, and suffered to remain only the buds, which ought to produce flowers the ensuing spring; these buds continued to grow, but when the period of their development arrived, instead of furnishing flowers they put forth leaves and branches.

The conversion of the wood-buds into those bearing fruit is accomplished by a variety of means, practised by common gardeners. Thus, if the upper part of a branch be cut away, the buds near the extremity of the remaining stem, from acquiring a greater proportional supply of nutriment, will produce leaves and wood, which might otherwise have been flowering buds; and, on the contrary, if a vigorous branch of a wall tree, which was expected to bear only leaf-buds, be bent down to the horizon, or lower, it will bear flower-buds, with weaker leaf-buds. On this circumstance chiefly depends the management of wall-fruit trees, and of espaliers. For the purpose of converting leaf-buds into flower-buds it has been also recommended to bind some of the most vigorous shoots with strong wire, and even some of the large roots. Some gardeners score the bark in a spiral direction, or cut off an entire cylinder of the bark, three or four inches long, and replace it with a proper bandage.

The bud appears to fulfil nearly the same purposes in the vegetable economy as the seed. It contains the embryo of the branch or of the flower, and shields it from the operation of the air, the light, and moisture, and the vicissitudes of temperature, until it is enabled to withstand these influences by a full exercise of the functions of vegetable life. By this means the internal parts of the bud are capable of gradually, though invisibly, developing themselves, like the plantule of the seed, independently of the vegetable from which they have drawn their existence. The bud also, like the grain, admits of removal from its original connexions; of having its actions suspended for an indefinite period, and afterwards of having

them renewed at pleasure; of deriving, by transplantation or engrafting, its sustenance from different sources; and, lastly, on being laid in the earth, of producing an interior plant in a similar manner as the seed, when placed in the same circumstances. As the seeds are the oviparous progeny of vegetables, the buds may be considered as the viviparous offspring. They appear to differ chiefly in this circumstance, that the seeds always result from a sexual congress, and partake of the properties of both parents; whereas the buds proceed directly from one parent, to which their productions afterwards bear a perfect resemblance.

BUD is used, in *Country Language*, for a weaned calf of the first year; so called, because the horns are then in the bud.

BUDA, in *Geography*, called by the Germans *Ofen*, the ancient metropolis of Hungary, is seated on an eminence on the west side of the Danube, and is connected with Pesth, situate on the opposite side of the river, by a bridge of boats about $\frac{1}{4}$ ths of a mile in length, and consisting of 63 large pontoons. The old city is seated on a plain extending itself from the suburbs of New Buda to the space that lies between the Pilis mountains and the Danube, and was formerly called "Sicambria." But this is now a wretched place, and affords nothing remarkable besides the ruins of an old aqueduct, built either by the Romans or Hungarians. A wide subterraneous passage has been discovered, with which the Turks seem to have been well acquainted, and which leads from this place to the chanel of Buda. New Buda is a royal free town. It was formerly the capital of the kingdom, and, in its connection with Pesth, the largest and finest of all the Hungarian towns, and the residence of the kings. The houses are mostly constructed of square stone; but since the Turks took possession of it, they suffered the finest buildings to sink into decay. The lower part of the city, called the "Jews town," extends like suburbs from the upper city to the Danube. The higher town occupies the declivity of a mountain, and is fortified with walls and towers. The castle, seated on an eminence towards the east side, commands the greatest part of it, is encompassed by a deep moat, and is defended by an old fashioned tower, to which some new fortifications have been added. One suburb is enclosed with hedges. The most sumptuous of its present structures are the caravanseras, mosques, bridges, and baths. The chief public and private buildings are in Pesth, and within the fortress; the royal palace in particular is a large and stately edifice. The form of Pesth is quadrangular; and it has, besides the royal palace, a military hospital, with several churches and convents. At a little distance from it is a field, in which many diets have been held, and where the states of Hungary formerly met on horseback, and in arms, to elect their king. Among the decayed buildings of Buda, the church of the Ascension of the Virgin Mary is the principal, near which the Jesuits have an academical college and seminary. The Carmelite nuns have a convent, and the Franciscans have churches. Both Catholics and Calvinists are allowed the free exercise of their religion; and the Jews have a synagogue near the cattle garden. But the most famous edifices of Buda are its baths; of which there are two sorts, the upper or Trinity baths, and those of Mustapha, who was governor of the place, and built them with stone, covering them with lead. Some of these waters are of such moderate temperature, that they may be used in their natural state either for drinking or bathing; but others are so hot, that they must be mixed with cold water, or conveyed to cool in other baths, before they can be used. The adjacent country is fertile, though not well cultivated; and affords good red wine and excellent melons.

This

This city was the residence of the Hungarian monarchs, till it was taken by the Turks, under the Sultan Solymán, in 1526; but though they were dispossessed of it the next year by Ferdinand, archduke of Austria, they recovered it again in 1529. Although it was afterwards frequently besieged, it continued under the dominion of the Turks till the year 1686, when it was besieged and taken, after an obstinate resistance and great slaughter, by the duke of Lorraine. From this time it has remained under the dominion of the house of Austria. In 1784, the seat of the provincial government, and the public offices, were restored from Pressburg to Buda; and, therefore, this city, joined with Pesth, may still be regarded as the capital of Hungary. The population of Buda is estimated at 20,000; but if Pesth be included, it may be computed at 34,000. Dr. Townson, (*Travels in Hungary*, 4to. 1796.) states it at 38,000. The university of Buda, as we are informed by this traveller, possesses an income of about 20,000*l.* sterling, of which only 4000*l.* are applied towards paying the salaries of the professors. Besides the usual chairs which exist in every university, there are those of natural history, botany, and economy. The instruments for natural philosophy, and the models of machines are good; and the museum of natural history, which contains the collection of the late professor Piller, besides that of the university, may be ranked among the fine collections of Europe. Buda is distant 125 miles E.S.E. from Vienna, and 15° N. N. W. from Belgrade. N. lat. 47° 30'. E. long. 19° 10'.

BUDA, a town of Lithuania, in the palatinate of Wilna; 80 miles E. of Wilna.

BUDÆUS, WILLIAM, in *Biography*, one of the most learned men of the 15th century, and a descendant of an ancient and honourable family, was born at Paris, in 1467; and having passed through the grammar schools at Paris, and having spent three years at Orleans, in the study of the law, to little or no purpose, he conceived a disgust at the prevalent barbarism of literature, and devoted himself wholly to youthful pleasures. At length, however, he was seized with an ardent passion for literary pursuits, which induced him to abandon every amusement, and to dedicate his whole time and attention to study, so that he scarcely allowed himself the necessary intervals for his meals and rest. By means of unwearied assiduity, first without any assistance, whence he called himself *αὐμαδὸς*, and *εἰμαδὸς*, i. e. *self-taught*, and *late taught*, and afterwards with the advantage of instructions from Hieronymus, whom he retained at a large salary, and from Lascaris in Greek, and James de Fevre in mathematics, he acquired singular reputation as a scholar, and particularly for an acquaintance with the Latin and Greek languages. He had reason, however, to regret that want of early practice, which is adapted to form ease and elegance of language; and hence his style, both in French and Latin, though strong and lofty, was harsh and perplexed. His first literary performances were translations of some treatises of Plutarch; and, in 1508, he published "Notes on the Pandects." But his principal reputation among the learned was owing to his treatise "De Assé," which contributed in a very eminent degree to facilitate the study of the ancient coins, weights, and measures. The same which he thus established, excited envy among his contemporaries; and Erasmus, though he acknowledged his merit, became jealous of him, so that a disagreement took place between these two distinguished persons, which prevented Budæus's citing Erasmus in his works. By avoiding the topics which might occasion a suspicion of his faith, he precluded those objections to the revival of learning, to which the interested and the ignorant were at that time disposed to recur. Upon

his first introduction to the French court, he was employed by Lewis XII. in two embassies to Italy, and appointed the king's secretary; and in the reign of Francis I. who distinguished himself by his patronage of learned persons, he obtained the place of master of requests, together with the office of librarian and secretary to the king; and was deputed on an embassy to Leo X. He was also chosen provost of the merchants of Paris. At his suggestion, in concurrence with that of Du Bellay, Francis founded the Royal College for giving instruction in the languages and sciences. During his progress with the king in Normandy, in 1540, he was seized with a fever, and this terminated in his death, after his return to Paris, in the 73d year of his age. His funeral was performed, in conformity to his express orders, privately, and by night; and this circumstance gave his enemies occasion to charge him with having adopted the sentiments of the reformers, though he had explicitly, and even acrimoniously condemned them in some of his publications. He had also occasionally declaimed with vehemence against the court of Rome, and the corruptions of the clergy. The suspicion, however, was confirmed by the removal of his widow to Geneva, where she, and two of his sons, avowed themselves protestants. Of his character it is said, that it was fair and honourable; though Bayle observes concerning him, that he was more feared than beloved in the republic of letters; and that in his disputes with Erasmus he was the least moderate of the two. His works were collected and printed at Basil, in 1557, in 4 vols. fol. Besides the treatises already mentioned, he wrote "Commentaries on the Greek and Latin Languages;" and a "Treatise on the Instruction of a Prince," dedicated to Francis I. Gen. Dict.

BUDARIN, in *Geography*, a town of Russian Tartary, in the government of Caucasus, on the west side of the Ural; 36 miles S.S.W. of Uralsk.

BUDAWUN, a town of Hindoostan, in the country of Malwa; 240 miles S. of Delhi, and 132 N.E. of Ougein.

BUDAYEON, a town of Hindoostan in the country of Oude; 24 miles S.W. of Bereilly, and 70 N.E. of Agra.

BUDDÆUS, JOHN-FRANCIS, in *Biography*, a learned and diligent professor and writer, was born at Anclam, in Pomerania, in 1667; and after having acquired a large fund of learning in the languages, as well as in philosophy and divinity, he first gave private lectures at Jena, and in 1692, was appointed professor of Greek and Latin at Coburg. From thence, he was removed by the invitation of Frederic, elector of Brandenburg, to the chair of moral and political professor in his newly founded university of Halle. After continuing in this station 12 years, he re-assumed the professorship of theology at Jena, where he died, in 1729. Besides the diligent discharge of his professional duties, he maintained an extensive correspondence, and wrote many works. Of these the principal are, "Elementa Philosophiæ prædictæ, instrumentalis et theoreticæ," 3 vols. 8vo., which served for a long time as a text-book in the protestant German universities; "A System of Theology," 2 vols. 4to. much esteemed by the Lutherans; "The great German Historical Dictionary," 2 vols. fol.; "A Treatise on Atheism and Superstition," 8vo., translated into French; and "Miscellanea Sacra," 3 vols. 4to. Nouv. Dict. Hist.

BUDDEKANO, in *Geography*, a town of Hindoostan, in the country of Agimere, seated on the river Pudder; 87 miles W. of Oudipour, and 100 N. of Amedabad. N. lat. 24° 30'. E. long. 72° 50'.

BUDDENBORG, a town of Germany, in the circle of Westphalia, and county of Marek; 2 miles N.W. of Lünen.

BUDDESDALE. See BOTESDALE.

BUDDING.

BUDDING, in *Gardening*, is a method of propagation, practised for various sorts of trees, but particularly those of the fruit kinds. It is the only method which can be had recourse to with certainty, for continuing and multiplying the approved varieties of many sorts of fruit and other trees: as although their seeds readily grow, and become trees, not one out of a hundred, so raised, produces any thing like the original; and but very few that are good. But trees or stocks raised in this manner; or being budded with the proper sorts, the buds produce invariably the same kind of tree, fruit, flower, &c. continuing unalterably the same afterwards.

This mode of propagation is particularly useful for peaches, nectarines, and apricots, which succeed better by budding than grafting; and are usually worked upon plum stocks, raised from seed, and sometimes, from those raised from suckers, layers, and cuttings. These sorts of trees are often likewise budded upon stocks raised from the kernels of these kinds of fruit; they are, however, more strong and durable, in general, when grafted upon plum stocks. Plum and cherry trees are also often propagated by budding, as well as grafting; the second sort is, however, generally the most prosperous by the latter method, as being more apt to gum and go off by budding. These different trees being of the same genus, grow upon stocks of each other, but much the best upon their own stocks, as plum upon plum, and cherry upon cherry stocks.

Apples and pears may likewise be propagated by the budding method, as well as by grafting; but as they grow freely by grafting, which is the most easy and expeditious, they are more commonly increased in that method. In short most kinds of fruit trees, as well as others, that are capable of being propagated by grafting, also succeed by budding; grafting is, however, more adapted to some sorts, and budding to others. Various sorts of forest and flowering trees, deciduous as well as evergreen, may likewise be propagated by budding, which is a certain method to continue particular varieties, such as many of the variegated leaved kinds, as the variegated hollies, and many other sorts. The budding in almost all sorts, is performed on young trees raised from seed, suckers, layers, &c. which when raised purposely for budding and grafting upon, are called stocks, and which after becoming about half an inch thick in the bottoms of the stems, or a little more or less, according to circumstances, are of a proper size for the purpose, though it may be performed upon stocks from the size of a goose quill to an inch or more, being mostly done upon stocks or trees of the same genus.

The stocks for this use, are commonly, as has been observed, raised from seed, as the kernels or stones of these different sorts of fruit, &c. sown in autumn or spring in beds in the nursery an inch or two deep, which, when a year or two old should be transplanted into nursery rows, two feet asunder, and fifteen or eighteen inches distant in the rows, to stand for budding upon, keeping them to one stem, and suffering their tops to run up entire; when of two or three year's growth, or about the size of the little finger at bottom, or a little more, they are as has been seen of due size for budding upon. Stocks raised, from suckers arising from the roots of the trees of these different sorts, layers, and cuttings of them, are also made use of; but they are not so good for the purpose. Budding may likewise be performed occasionally upon trees that already bear fruit, when intended to change the sorts, or have different sorts on the same tree, or to renew any particular branch of a tree; the operation being performed on the young shoots of the year, or of one or two years' growth only.

The most proper season for performing the operation of budding, is from about the middle of June, until the middle or latter end of August; some, however, begin to bud in June, but the buds inserted so early are apt to shoot in the same year, and these not having time to harden, are liable to be killed in winter. The buds for this use should in general be taken only from the young shoots of the year, as those of the same summer's growth, which must be cut from the trees of the sorts intended to be propagated, always choosing them from healthy thriving trees; and if fruit trees, from such as bear the finest fruit of their respective kinds and varieties. A quantity of the best moderately strong young shoots should be cut each day as they are wanted; and as they are gathered, the leaves cut off, but not quite close, reserving about a quarter of an inch of their foot-stalks, trimming off also the soft unripened top end of each cutting, covering them from the sun and air, and taking them out as wanted. As each cutting furnishes many buds, they are to be cut off about an inch and a half long, one at a time, as they are inserted in the stocks. Those in the middle part of the cutting are preferable to those towards each end, though in cases of scarcity of cuttings, every one of them may be used. One bud only is in general inserted in each stock; some, however, place two on each side opposite each other.

The most proper height to bud stocks varies according to the intention, but from about three or four inches to six feet or more from the ground is practised. To have dwarf trees for walls and espaliers, &c. they must be budded from within about three to six inches from the bottom, that they may first furnish branches near the ground; for half standards, at the height of three or four feet; and for full standards, at from about five to six or seven feet high; the stocks being trained accordingly.

The necessary implements and materials for this purpose, are a small budding knife for preparing the stocks and buds for insertion, having a flat thin haft to open the bark of the stocks in order to admit the buds; and a quantity of new bass strings well moistened, to tie them with.

In performing the operation of budding, the head of the stock is not to be cut off, as in grafting, but the bud inserted into the side, the head remaining entire till the spring afterwards, and then cut off. A smooth part on the side of the stocks at the proper height, rather on the north side, away from the sun, should be chosen; and then with the knife, an horizontal cut made across the rind, and from the middle of that cut, a slit downwards about two inches in length, in the form of the letter T, being careful lest the stock be wounded. Then having cut off the leaf from the bud, leaving the foot-stalk remaining, make a cross cut about half an inch below the eye, and with the knife slit off the bud with part of the wood to it, somewhat in the form of an escutcheon, pulling off that part of the wood which was taken with the bud, being careful that the eye of the bud be left with it, as all those buds which lose their eyes in stripping, should be thrown away as good for nothing; then having gently raised the bark of the stock where the cross incision was made with the flat haft of the knife clear to the wood, thrust the bud in, placing it smoothly between the rind and the wood of the stock, cutting off any part of the rind belonging to the bud, which may be too long for the slit; and after having exactly fitted the bud to the stock, tie them closely round with bass string, beginning at the under part of the slit, and proceed to the top, taking care not to bind round the eye of the bud, which should be left open and at liberty. When the buds have been inserted about three weeks or a month, examine which of them have taken;

taken; those which appear shrivelled and black being dead, but such as remain fresh and plump are joined; and at this time, loosen the bandage, which, if not done in time, is apt to pinch the stock, and greatly injure, if not destroy the bud. The March following, cut off the stock about three inches above the bud, sloping it that the wet may pass off, and not enter into the stock. To the part of the stock which is left, some fasten the shoot which proceeds from the bud, to prevent the danger of its being blown out, but this must continue no longer than one year; after which, it must be cut off close above the bud, that the stock may be covered by it. Some advise it to be cut close at first, which is probably the best practice.

But though it is the ordinary practice to divest the bud of that part of the wood which was taken from the shoot with it, yet in many sorts of tender trees, it is better to preserve a little wood to the buds, without which they often miscarry. The not observing of this, has occasioned some to imagine, that some sorts of trees are not to be propagated by budding, which, if performed in this method, might have succeeded. Where this has been done, the whole effort of the stocks being directed to the inserted buds, they soon push forth strongly, one shoot from each; many shoots also arise from the stocks, but these must be constantly rubbed off as often as they appear, that all the power of the stocks may be collected for the vigorous growth of the bud shoots, which now commence trees; and which, by the end of the summer, will, in some sorts, be advanced three or four feet in height. In the autumn or spring following, the young trees may be transplanted into the places where they are to remain, or remain longer in the nursery, according to the purpose for which they are designed. In trees that are designed for fruit on walls, espaliers, or as dwarfs, the first shoots from the buds should, in the spring after they are produced, be headed down to four or five eyes to force out some shoots near the bottom; but if designed for half or full standards, and budded at proper heights, the first shoots of the buds may either be shortened as above, to four or five eyes to provide lateral branches near the top of the stem, to form a spreading head, or be suffered to grow up in height, and branch out in their natural way, by which they will form more erect heads of loftier growth. Such full or half standards as are designed for walls, and were budded high on the stocks, must also necessarily have the first shoots headed down in the spring following, to force out lateral shoots to furnish the allotted space of walling; and on the other hand, where trees are designed for any sort of standards, and budded low on the stocks, the first shoots of the buds should be trained up for them to a proper height before they are stopped, and then topped to throw out shoots to form heads of the desired heights. See INOCULATION.

BUDDLE, in *Mineralogy*, a name given by the English dressers of the ores of metals, to a sort of frame made to receive the ore after its first separation from its grossest foulness.

The ore is first beaten to powder in wooden troughs, through which there runs a continual stream of water, which carries away such of it as is fine enough to pass a grating, which is placed at one end of the trough; this falls into a long square receiver of wood, called the *launder*: the heaviest and purest of the ore falling at the head of the launder, is taken out separately, and requires little more care or trouble; but the other part, which spreads over the middle and lower end of the launder, is thrown into the buddle, which is a long square frame of boards, about four feet deep, six long, and three wide; in this there stands a man barefooted, with a trampling shovel in his hand, to cast up the

ore about an inch thick, upon a square board placed before him as high as his middle; this is termed the *buddle-head*; and the man dexterously, with one edge of his shovel, cuts and divides it longwise, in respect of himself, about half an inch asunder, in these little cuts; the water coming gently from the edge of an upper plain board, carries away the filth and lighter part of the prepared ore first, and then the metalline part immediately after, all falling down in the buddle, where, with his bare feet, he strokes it and smooths it, that the water and other heterogeneous matter may the sooner pass off from it.

When the buddle by this means becomes full, the ore is taken out; that at the head part, being the finest and purest, is taken out separate from the rest, as from the launder. The rest is again trampled in the same buddle; but the head, or, as it is called the forehead, of this buddle, and of the launder, are mixed together, and carried to another buddle, and trampled as at first. The foreheads of this last buddle, that is, that part of the ore which has fallen at the head, is carried to what they call a drawing buddle, whose difference from the rest is only this, that it has no tye, but only a plain sloping board, on which it is once more washed with the trampling shovel. Tin-ore, when it is taken from this, is called black tin, and this is found to be completely ready for the blowing-house. Phil. Trans. N^o 69. See *Dressing of Ore*.

BUDDLEA, in *Botany* (in honour of Adam Buddle, an eminent English botanist at the latter end of the 17th century, whose Herbarium is now deposited in the British Museum) Linn. gen. 140. Reich. 146. Schreb. 184. Willd. 220. Gært. 275. Juss. 118. La Marck. Illust. 182. Class and order, *tetrandria monogynia*.

Nat. ord. *Scrophularia* Juss. *Perfonate* Vent.

Gen. char. *Cal*. Perianth very small, four-cleft, acute, erect, permanent. *Cor*. one-petalled, bell or funnel-shaped, four-cleft, erect, longer than the calyx, segments ovate or obtuse. *Stam*. Filaments four, very short, inserted below the divisions of the corolla: anthers very short, simple. *Pist*. Germ superior, ovate: stigma obtuse or bifid. *Caps*. ovate, two-furrowed, two-celled, two-valved (each finally dividing into two, Juss. partition double, parallel to the valves, Gært.)

Essen. char. *Cal*. four-cleft. *Cor*. four-cleft. *Stam*. from the divisions. *Caps*. two-celled, two-furrowed, many-seeded.

Species 1. *B. americana*. Linn. Brown. Jam. 144. Sloan. Jam. 139. Hill. 2. p. 29. T. 173. f. 1. "Leaves ovate, serrated; spikes panicled, terminal." La Marck. A shrub, nine or ten feet high. Branches tomentose. Leaves opposite, acute, narrowing at their base into the petiole, green above, whitish beneath. Flowers yellow, small, bell-shaped, sessile on the common peduncles. Lam. A native of the West Indies, sent to Sir Hans Sloane from Jamaica by Dr. Houstoun in 1750. 2. *B. occidentalis*. Linn. Pluk. t. 210. f. 1. is referred to by Linnaeus, but La Marck thinks that that figure does not express any species of this genus. Gært. t. 49. f. 7. Lam. Illust. Pl. 69. f. 1. "Leaves lanceolate, acuminate, slightly serrated; spikes interrupted, somewhat panicled." Lam. It differs from the preceding in having longer, narrower, and less serrated leaves, white flowers, and interrupted spikes. Lam. Swartz doubts whether it be more than a variety. Miller in addition to the distinctions mentioned by La Marck, says that it has long, narrow, spear-shaped leaves beneath the spikes; whereas those of the former species are naked. Sent to Mr. Miller from Carthage by Dr. Houstoun. 3. *B. luteicafolia* Lam. Illust. "Leaves ovate-oblong, slightly scolloped, much

much wrinkled; spikes interrupted, panicle." Leaves petioled, obtuse. Jof. Juff. Native of South America. 4. *B. thyrsoides*. Lam. Illuf. "Leaves lanceolate-linear, ferrated, sessile; raceme spike-like, terminal." Leaves erect, tomentose beneath. Commer. Native of Monte Video. 5. *B. virgata*. Linn. Jun. Supp. Thunb. Prod. 30. "Leaves linear-oblong, obtuse, entire, or obscurely toothed; branches slender, erect; racemes terminal. Habit of Hyssop. Branches and leaves hoary, with a fine down. Linn. Jun. Leaves like those of lavender; the upper ones growing gradually smaller. Lam. Found by Thunberg at the Cape of Good Hope. 6. *B. salicina*. Lam. Illuf. "Leaves oblong-lanceolate, a little toothed, petioled, white, with down beneath; spikes slender, terminal." Native of India, specific character formed from a specimen without flowers in the Herbarium of Jussieu. It is probably the same as the *B. salicifolia* of Willdenow taken up from Vahl with the following specific character. "Leaves lanceolate, ferrated outwards, tomentose beneath; racemes terminal; pedicels many-flowered; flowers nodding." 7. *B. volubilis*. Lam. Ill. "Leaves linear, acute, very entire; stem twining; cymes axillary, downy-ferruginous." Found by Commerfon in the Isle of Bourbon. 8. *B. globosa*. Hort. Kew. V. 1. p. 150. Lam. Willd. (*B. capitata*, Jac. ic. rar. 2. p. 332. Palquin. Feuille. peruv. 2. p. 71. tab. 38.) "Leaves lanceolate, sharp-pointed, scolloped, downy beneath; heads globose." Lam. A branched, ever-green shrub, from eight to ten feet high. Leaves about five inches long, finely scolloped at their edges, narrowed at the base, opposite, connate, reticulated with veins like those of the common sage. Flowers small, bell-shaped, yellow, of a pleasing smell, on a common globular receptacle. Heads of flowers peduncled, axillary and terminal. A native of Chili, introduced into England by Messrs. Kennedy and Lee in 1774. 9. *B. madagascariensis*, La Marck, tab. 69. fig. 3. Willd. "Leaves lanceolate, entire, petioled, tomentose beneath; flowers in terminal racemes." Leaves opposite, entire. Racemes compound. Flowers several together, on common peduncles, which gradually diminish in length, till the flowers become sessile near the top of the raceme. Calyx short. Corolla funnel-shaped. A native of Madagascar, found by Sonnerat, and described by Lamarck from a dried specimen in the Herbarium of Commerfon. 10. *B. salvifolia*. Hort. Kew. Lam. Willd. (*Lantana salvifolia*, Linn.) "Leaves ovate-lanceolate, scolloped, wrinkled, nearly sessile; racemes compound." La Marck. A shrub five or six feet high. Branches tomentose, four-cornered. Leaves opposite, sometimes ternate, sharp-pointed, wrinkled and reticulated like those of sage, a little tomentose. Stipules sub-ovate, in pairs. Racemes terminal, and axillary on the upper part of the branches. Flowers in small, tomentose, opposite, peduncled fascicles or corymbs, with bractes at their base, and at the base of the common peduncles. Calyx very short. Corolla tubular, slender, pale purple, covered with a mealy down, tube three times longer than the calyx; border with very short divisions. A native of the Cape of Good Hope; cultivated by Mr. Miller in 1760. The fruit was unknown to Linnæus; and does not appear to have been seen by any succeeding botanist, not having been brought to perfection in any of the English or French gardens. La Marck was induced to place it in this genus by the similarity of its flowers to those of *B. madagascariensis*. 11. *B. diversifolia*, Willd. (*B. indica*, Lam.) "Leaves ovate, entire, petioled; corymbs axillary, very short, clothed with a ferruginous down." A shrub. Leaves opposite, on short petioles, a little tomentose, and ferruginous on their lower surface. Flowers from six to nine; in small, opposite corymbs, shorter than the leaves. Calyx tomentose, very short, and

almost truncate. Corolla tubular, tomentose on the outside, slender. Style the length of the corolla. Fruit unknown. A native of Java, communicated by M. Sonnerat, and described by La Marck from a dried specimen. 12. *B. incompta*. Linn. jun. Supplement. Willd. La Marck Dict. but omitted in the subsequent illustrations. "Leaves fasciculated, ovate, hoary; branches zig-zag, stiff; racemes terminal." Found by Thunberg at the Cape of Good Hope. 13. *B. africana*. Martyn's Miller. Lour. Coch. "Leaves lanceolate linear, wrinkled, smooth, spikes full." Stem suffruticose, three feet high, with ascending branches. Leaves long, not interrupted. Calyx with awl-shaped, upright segments. Corolla with rounded divisions. Style equal to the stamens. Stigma longish, bifid. Native of Cochinchina. 14. *B. ternata*. Martyn's Miller. Lour. Coch. "Leaves ternate, acuminate; peduncles one flowered." Stem suffruticose, two feet high, upright, round, branched. Leaflets lanceolate, ferrated. Flower white, axillary. Segments of the calyx converging. Nectary hairy. Stigma bifid. Native of Cochinchina.

Propagation and culture. The americana, occidentalis, globosa, and salvifolia, are the only species which have hitherto been cultivated in Europe. The americana and occidentalis must be raised from seed sent in their capsules from their native country, which should be sowed in small pots, and very lightly covered with rich, light earth. The pots should be plunged into a moderate hot-bed, and gently watered every third or fourth day. If the seeds are fresh and good, and sown in the spring, the plants will come up in about six weeks, and may generally be transplanted in about two months after. They should then be planted separately in similar pots and earth, shaded from the sun, and occasionally watered. After they have taken root, they should have fresh air every day, according to the warmth of the season, and be moderately supplied with water. About the middle of August it will be proper to shift them into larger pots, and to turn over the tan in the bed, that the heat may be renewed. In the autumn they must be removed into the stove, where they must constantly remain plunged in the tan-bed. In the winter they should have little water, and must be kept warm; but in summer they should have fresh air, and be frequently sprinkled all over with water. They will flower about the fourth year from the seeds.

The globosa and salvifolia may be propagated by cuttings on an old hot-bed in July, covered with a bell-glass, and shaded from the sun. In a month they may be planted in pots; and when they have taken fresh root, should be removed to a sheltered situation till the winter, when they must be preserved in the conservatory, or dry stove. The globosa will flower well, and live through a mild winter out of doors in a warm sheltered border.

BUDDLING of *calamine*, denotes the operation of cleansing it from filth, by washing and picking it, preparatory to the baking of it in the oven. Phil. Trans. N° 198. p. 675. See *CALAMINE*.

BUDDLING dish, a small, shallow vessel, like the basons of a pair of scales, for the washing of ores of metals by the hand.

BUDDRA, in *Geography*, a river of the peninsula of India, which rises in the Mysore country, and joining the Toom near the county of Hooley-Onore forms the Toom-buddra river.

BUDDRINANT, or **BADRENAUT**, a town of Thibet, on the east side of the river Alikmundra, or Aluknundra. N. lat. 32°. E. long. 80° 20'.

BUDDS VALLEY, a place in the county of Morris, and state of New Jersey, in America, situate on the head waters of Rariton.

BUDE river and *haven*, lie on the north coast of Cornwall, about S.S.W. and S. $\frac{1}{2}$ W. from Hartland point, on the coast of Devon.

BUDEA, or **BUDACUM**, in *Ancient Geography*, a town of Magnesia.—Also, a town of Asia Minor in Phrygia. Steph. Byz. *Budea* was one of the appellations given to Minerva.

BUDEL (*Ridger*), in *Zoology*, the water-dog: (*CANIS*) variety *aquaticus*.

BUDELICH, in *Geography*, a town of Germany, in the circle of the Lower Rhine, and electorate of Treves; or by the French arrangement, in the department of the Sarre, and chief place of a canton, in the district of Treves; 11 miles E. of Treves; the town contains 195, and the canton 6560 inhabitants; and the territory comprehends 24 communes. N. lat. 49° 52'. E. long. 6° 55'.

BUDERICH. See **BURICH**.

BUDESHEIM, a town of Germany, in the circle of the Lower Rhine, and electorate of Mentz; one mile E. of Bingen.

BUDETIN, a town of Hungary; 16 miles E. N. E. of Bolsko.

BUDGE, in *Law*. See *BOUCHE of court*.

BUDGE-barrels, are small barrels well hooped, with only one head, the other end having nailed on it a piece of leather, to draw together upon strings, like a purse.

Budge-barrels are used for carrying powder along with a gun or mortar; as being less dangerous, and also easier than whole barrels. They are also used upon batteries of mortars, for holding meal-powder.

BUDGEELL, **EUSTACE**, in *Biography*, the relation and friend of Addison, and an ingenious writer, was the son of Gilbert Budgell, D. D. of St. Thomas near Exeter, and was born about the year 1685. He was educated as a gentleman commoner at Christchurch College, Oxford, and afterwards entered at the Inner Temple, London, with a view to the profession of the law. But an inclination to pleasure, and also to polite literature, diverted his attention from studies appropriate to the bar; and in 1710, he accompanied Addison to Ireland, as one of his clerks. By associating with persons of taste and fashion, and cultivating an acquaintance with the best writers, ancient and modern, he acquired the accomplishments of the gentleman and scholar. But though he was distinguished by a lively imagination, tenacious memory, genteel address, and graceful elocution, his consummate vanity depreciated his other talents, and became a prominent feature of his character through life. His first exhibition as an author was in the *Spectator*; and the papers marked X in the first seven volumes are attributed to him. The eighth volume is said to have been wholly conducted by Addison and Budgell. Dr. Johnson, however, says that his papers were either written by Addison, or so much improved by him, as to be rendered in a manner his own; and, it is observed, that their style resembles that of Addison. The humorous and admired epilogue to the *Distressed Mother*, usually ascribed to Budgell, is also said to have been the composition of Addison. About this time, Budgell wrote several epigrams and songs, which together with Addison's sincere attachment to him, recommended him to general notice and esteem. But, notwithstanding his literary connections and engagements, and his accession to a family estate, encumbered indeed with debts, of 950*l.* a year, he was unremitting in his attention to the duties of his office. In the preface to the *Guardian*, he is represented as having a concern in that work, in connection with Addison and sir Richard Steele; but his papers are not now discriminated. In 1714, he published a translation from the Greek, of "The Characters of Theophrastus,"

which was commended by Addison, and which appears to have been executed with ingenuity and elegance. In this year, he was advanced to the offices of under secretary to the lord lieutenant, chief secretary to the lords justices of Ireland, and deputy clerk of the council in that kingdom. To these was added the honour of a seat in the Irish parliament, where he distinguished himself as a speaker. When the rebellion broke out in 1715, he was entrusted with the charge of transporting troops to Scotland, which he executed in a manner equally able and disinterested. In the beginning of the year 1717, when Addison became secretary of state, he was promoted, under his patronage, to the office of accountant and comptroller general of Ireland. But this tide of prosperity took an unfavourable turn soon after this latter appointment, when the duke of Bolton was appointed to the vice-royalty. When the duke's secretary insisted on quartering upon him a friend, his indignation was roused; and he attacked both the secretary and the lord lieutenant in a virulent lampoon, which he published against the advice and remonstrance of Addison, and which caused him to be deprived of his place as accountant. Upon his return to England, he determined, in opposition to the counsel of his best friends, to publish his case, and, by this second act of indiscretion, he increased the resentment of his enemies. By a popular pamphlet written in 1719 against the famous peerage bill, he incensed the earl of Sunderland; and, at this time, the death of Addison, his steady friend and faithful counsellor, terminated all his expectations from the court. His circumstances, however, were easy and affluent, and he might have lived with dignity and independence. But deluded by the infatuation of the fatal year 1720, he embarked in the South Sea scheme, and lost 20,000*l.* Having taken an active part in the concerns and debates of the company, and published pamphlets on the occasion, that were well received, he attracted the notice of the duke of Portland, who had been a sufferer in this bubble as well as himself; and he was taken under his special patronage, with the promise of accompanying him as his secretary to Jamaica, of which island he was appointed governor. But the implacable resentment of the court frustrated his expectations, for the duke was expressly forbidden to take him out as his secretary. This cruel treatment irritated his temper; and with a view of giving importance to his opposition, he spent nearly 5000*l.* in various unsuccessful efforts for obtaining a seat in parliament; and he was aided by the duchess-dowager of Marlborough in 1727 with the sum of 1000*l.* for this purpose. His attempts failed; his affairs of course became deranged; and he involved himself in a variety of quarrels and law-suits, which entailed upon him distresses that disgraced and embittered the close of his life. In 1732, he published an historical work, entitled "Memoirs of the Life and Character of the late Earl of Orrery, and of the Family of the Boyles," which, whatever valuable information it may contain, does not bear the character of impartiality. It is needless to mention his other publications, which, though well received, are now forgotten, or to add that he contributed several papers to the "Craftsman," and that he established a weekly pamphlet called the "Bee," which had no long duration. His reputation was sunk very low; and a circumstance occurred which totally ruined it. On the death of Dr. Matthew Tindall, the author of "Christianity as old as the Creation," in the publication of which he was thought to have had some concern; a bequest to Budgell of 2100*l.* appeared in his will. This legacy, so disproportionate to Tindall's circumstances, so injurious to his nephew, the Rev. Nicholas Tindall, the translator of Rapiu, and so contrary to his

known

known intentions and conduct, surprised those who heard of it, and excited a suspicion of unfair dealing, very reproachful to Budgell. The will was contested and set aside. To this transaction, Pope, who has introduced Budgell into the Dunciad, and satirized him in several parts of his works, evidently alludes in one of his epistles:

"Let Budgell charge low Grub-street on my quill,
And write whatever he please except my will."

At length, this unfortunate man, unable to struggle any longer with his embarrassed circumstances and indelible disgrace, adopted the resolution, strengthened by the pride of his temper, and his disbelief of revelation, to put an end to his life; and on May 4th, 1737, he took a boat at Somerset stairs, and having ordered the waterman to shoot the bridge, he threw himself overboard, with stones in his pockets, and immediately sunk. He had previously attempted to persuade a natural daughter to share his fate; but she, preferring a continued life to this shocking mode of terminating it, became afterwards an actress at Drury Lane theatre. On the bureau of Budgell was found a slip of paper, on which were written these words:

"What Cato did, and Addison approv'd,
Cannot be wrong."

But this charge against Addison is wholly groundless; for he attempted to obviate the ill effects that might be supposed to arise from Cato's example by a dying disapprobation of his own conduct. Biog. Brit.

BUDGERONS, in *Geography*. See BOESEROONS.

BUDGEROWS, in *Sea Language*, the denomination given to travelling boats, or pleasure barges, used by the Europeans as well as by the principal natives in Bengal. On the outside they are constructed like the BURS; but within, they are much better adapted for convenience. The space from the middle to the stern is occupied by one or two apartments, having windows on the sides, and from six to seven feet high; and some of them 14 feet wide: the sternmost of them is the bed room. These budgerows are of various sizes; from 25 to 60 feet in length, and longer. They are rowed by a number of men, from 6 to 20, with oars, which are long poles, to the end of which a little oval board is nailed, in lieu of a leaf, and which do not strike the water cross-ways, but obliquely backwards. They are steered by a large paddle or oar, extending 10 feet from the stern; and forwards stands a mast, upon which is hoisted a square sail, when they go before the wind; and they have likewise a top-mast with a square top-sail for fine-weather. When they have a side wind, they drive down athwart the stream, not having a keel or timber enough under water, as they are flat-bottomed, and draw scarcely a foot, or a foot and a half of water. Some of them draw from four to five feet. The English gentlemen in Bengal have much improved the budgerows, by introducing a broad flat floor, square sterns, and broad bows. They are thus rendered much safer, fail near, and keep their wind; and there is no danger attending their taking the ground. Besides, they are adapted for carrying more sail. The motion acquired by the oars of a large budgerow hardly exceeds eight miles a day, at ordinary times. A gentleman in his budgerow is usually attended by a "pulwah" for the accommodation of the kitchen, and a small boat, called a "paunchway," for conveying him either on shore, or on board, as it often happens that the budgerow cannot come close to the place where he wishes to land, or to embark.

BUDHA, in *Mythology*. See BOONH.

BUDHURS, or BUDDAGHS, in *Ichthyology*, a provincial name given by the Irish to a large sort of trout that is

found chiefly in the vast waters, *Lough-Neagh*, in Ireland. These are sometimes taken of thirty pounds weight each.

The budhurs appear to be nothing more than the common trout, *Salmo Fario*, that have attained to this vast size, of which we have instances in other waters besides that of Lough Neagh. A trout, to the full as large as the budhurs are in common, namely of twenty-four pounds weight, was captured very lately in the river Thames near Hampton. Don. Brit. Fish.

BUDIN, or BUDYN, in *Geography*, a town of Bohemia, in the circle of Schlan; eight miles N. of Schlan.

BUDINGEN, a town of Germany, in the circle of the Upper Rhine, and county of Isenburg; 10 miles E. N. E. of Frankfort on the Mayne.

BUDINI, probably the BUDENI of Ptolemy, in *Ancient Geography*, a people placed by Herodotus in European Scythia, adjoining to the Sauromates. These people were very numerous, and remarkable for their red hair and blue eyes. Their food was flesh and milk. Herodotus says, that their principal city was Gélone, built in a wood, where temples were consecrated to the gods of Greece, and in which were celebrated triennial feasts in honour of Bacchus. The inhabitants of this city were of Greek origin, and their language was a mixture of Greek and Scythian. Of these Budini the Scythians demanded succour for opposing the army of Darius.

BUDINUM, or BUDINUS, the ancient name of a mountain of European Sarmatia. Ptolemy.

BUDISSEN, in *Geography*. See BAUTZEN.

BUDLANIOW, a town of Poland, in the palatinate of Podolia; 36 miles N. W. of Kamieniec.

BUDNÆANS, in *Ecclesiastical History*, a sect of Polish Unitarians, so called from the name of their leader, Simon Budnæus. They not only denied all kinds of religious worship to Jesus Christ, but asserted, that he was not begotten by any extraordinary act of divine power; being born, like other men, in a natural way. Budnæus, after having profelyted a great number of persons in Lithuania and Russian Poland, was deposed from his ministerial functions in the year 1584, and publicly excommunicated, with all his disciples; but afterwards abandoning his peculiar sentiments, he was re-admitted to the communion of the Socinian sect. Crellius ascribes the origin of the above opinion to Adam Neuser. Mosh. Eccl. Hist. vol. iv. p. 525.

BUDOA, or BUDUA, in *Geography*, a fortified sea-port town of Dalmatia, subject to the Venetians; the see of a bishop, suffragan of Antivari. It is seated between the gulf of Cattaro and the town of Dulcigno, on the coast of Albany. It was unsuccessfully besieged by the Turks in 1686. N. lat. 42° 12'. E. long. 19° 22'.

BUDRIO, a small town of Italy in the Bolognese, the vicinity of which produces large quantities of fine hemp; 10 miles N. of Bologna. N. lat. 44° 27'. E. long. 11° 35'.

BUDRUN, a fortified town of Asiatic Turkey, in the province of Natolia, near the sea coast, with a harbour in the gulf of Stanchio.

BUDSDO, in the *History of Mythology*, one of the two principal sects in the island of Japan, the other being denominated *Sinto*. The sect of Budfdo was imported from Hindoostan, and is supposed to be the same with that of Budha or BOONH, reported to have been born in Ceylon, about 1000 years before the birth of Christ. Passing through China and Corea, it has been mingled with foreign maxims, but the tenet of the metempsychosis remains; wicked souls being supposed to migrate into the bodies of animals, till they have undergone a due purgation.

BUDUN, is the name of one of the Ceylonesse gods: he is supposed to have arrived at supremacy, after successive transmi-

transmigration, from the lowest state of an insect, through the various species of living animals. There have been three deities of this name, each of which is supposed to reign as long as a bird removes a hill of sand, half a mile high, and six miles round, by a single grain in a thousand years. See *SARRADAWENDRA*: see also *BOODH*.

BUDWEIS, or **BUDEGOWICE**, in *Geography*, a royal and well fortified city of Bohemia, in the circle of Beshin, seated on the river Moldaw, enjoying the staple-rights of salt, and having in its vicinity mines of gold and silver; and, as it is said, pearls, which are fished for in the river Moldaw. It was erected into a bishopric by the emperor, in 1787. The king of Prussia laid siege to it with 8000 men, under general Nassau in 1744, and took it; but did not long retain it; 66 miles S. of Prague. N. lat. 42° 13'. E. long. 14° 19'.

BUDWIZ, a town of Moravia, in the circle of Znaym, 84 miles S. E. of Prague.

BUDZADGEH, a town of Asiatic Turkey, in the province of Natolia; 40 miles N. E. of Iznick.

BUDZIAC *Tartary*. See *BESSARABIA*.

BUDZIENICZE, or **BUDZENICE**, a town of Lithuania, in the palatinate of Minsk; 56 miles W. of Rohaczow. N. lat. 52° 40'. E. long. 28° 20'.

BUECH, a river of France, which runs into the Durance, near Sisteron, in the department of the Lower Alps.

BUEIB, a town or village of Egypt, called the "Strait," seated on a mountain in the road of the pilgrims; 30 miles N. E. of Cairo.

BUEIB, called the "Narrows," a town or village of Upper Egypt, seated on the west side of the Nile; 32 miles S. E. of Asna or *Esfneh*.

BUELA, a town of Persia, in the province of Korassan; about 313 miles N. W. of Herat. N. lat. 37° 40'. E. long. 57° 2'.

BUENAYRE. See *BONAIRE*.

BUENA-VISTA. See *BONAVISTA*.

BUENE-VENTURA. See *BONAVENTURE*.

BUENOS AYRES, so called on account of the peculiar salubrity of its climate, a Spanish territory or vice-royalty of South America, established as such in 1776, is reckoned by Ulloa the fifth bishopric belonging to the audience of Charcas. This name comprehends the whole country from the eastern and southern coast of that part of America, to Cordova and Tucuman on the west, to Paraguay on the north, and on the south to the sea and the Terra Magellanica or Patagonia, the vertex of that triangular point of land which forms South America. This country is watered by the great river La Plata, first discovered in 1515, by Juan Diaz de Solis, who, with his two attendants, was massacred by the natives; and partly subdued, in 1526, by Sebastian Gabor. Buenos Ayres abounds with horned cattle and wild horses, which find a shelter from the heat of the sun, and an ample supply of food in the immense plain, called by the Spaniards "Pampas," which commences about 20 miles from the capital, and extends 100 miles westward to the foot of the mountains, and about 500 miles southward towards Chili. This plain is wholly covered with very high grass, and is for the most part uninhabited and destitute of trees. From the travels of Helms we learn, that the largest tamed ox is sold for one piastre, or about 3s. 6d., and that a good horse may be purchased for two piales. The hides of these animals constitute a principal article of trade in this country. The rivers and sea supply all kinds of fish; the country abounds with game; and fruits of every quarter of the globe grow here in the utmost perfection; so that with regard to the salubrity of the air and the various enjoyments

of life, a finer country cannot be imagined. Although the climate is healthy and pleasant, there is a great difference in the seasons. In the summer the air is serene, and the excessive heat of the sun is moderated by breezes which blow every morning. In the winter storms often occur, with rain and dreadful lightning and thunder. The capital of this country is Buenos Ayres, and within its government are three other cities, viz. Santa Fe, Las Corientes, and Monte-video.

BUENOS AYRES, *Nuestra Senora de*, the capital of the country of the same name, and of the kingdom of La Plata, was founded by Don Pedro de Mendoza in 1535, who was at that time governor, on a spot called Cape Blanco, on the south side of Rio de la Plata, adjoining to a small river; from which the plain on which it stands, ascends gently. Soon after its first establishment, it was abandoned; but rebuilt in 1582, and erected into a bishopric in 1620. It is said to contain about 4000 houses, and from 24 to 30 thousand inhabitants, who are chiefly Spaniards and native Americans. It is well fortified and defended by a numerous artillery. Although the breadth of this city, like other towns situated on rivers, is not proportional to its length, its streets are straight and of a proper width. The principal square is very large, and built near the small river; and in the front of it is a cattle, where the governor constantly resides. The houses, which were formerly constructed with mud-walls, thatched with straw, and very low, are now much improved; some being built with chalk, and others with brick, most of them tiled, and having one story besides the ground floor. The cathedral, which is the parish church for the greater number of the inhabitants, is a spacious and elegant structure; and the chapter is composed of the bishop, dean, archdeacon, and two canons. At the farther end of the city is another church appropriated to the Indians. Here are also several convents, and a royal chapel in the cattle where the governor resides. This is the great resort of the merchants of Europe and Peru, who traverse the country from hence by Cordova and Tucuman to Potosi; and for the accommodation of travellers there is an uninterrupted post-road, with post-horses and proper relays of horses and carriages across the continent to Peru. No regular fleet comes to this place; the whole intercourse with Europe being carried on by 2 or 3 register ships. The returns are chiefly gold and silver of Chili and Peru, sugar, and hides. The contraband trade, however, has been found the most advantageous; and this has been principally carried on by the Portuguese, who keep magazines for that purpose in those parts of Brazil which lie nearest to this country. The most valuable commodities are brought here to be exchanged for European goods; such as the Vicugna wool from Peru, copper from Coquimbo, gold from Chili, and silver from Potosi. From Corientes and Paraguay are conveyed hither tobacco, sugar, cotton, thread, yellow wax, and cotton cloth; and from Paraguay, the herb so called, and so highly valued for tea, which is drank every where in South America by the higher classes, and which supplies a branch of trade, amounting, as it is said, to a million of pieces of eight annually, wholly paid in goods, as no money is allowed to pass here. The commerce between Peru and Buenos Ayres is chiefly for cattle and mules, to an immense value. This city is situated about 77 leagues from Cape Santa Maria, which lies on the north coast near the entrance of the river de la Plata; and its little river not having water sufficient for ships of burden to come up to it, they anchor in one of the two bays on the same coast. That farthest to the eastward is called Maldonado, 9 leagues from the above cape, and the other named Monte-video from a mountain near it, and distant 20 leagues from the said cape. The navigation to the city is dangerous for

fer want of depth of water, and on account of shoals and rocks in the river, and the frequent recurrence of storms. It is, therefore, usual to anchor every night, and to have the ship's way founded by a pilot. Within 3 leagues of the town, the goods are removed on board some light vessel; and wait for their cargoes, whilst they are refitting at Icanado de Barragan, situated 7 or 8 leagues below. S. lat. $34^{\circ} 35' 26''$. W. long. $58^{\circ} 31' 15''$.

BUENTO, a town of Africa, in the kingdom of Monomotapa.

BUFETAGE, *bufetagium*, or *bufetaria*, a duty paid to the lord, for the drinking, or rather selling of wine in taverns.

The word is formed from *buwetage*, or *buweterie*, of the French *boire*, to drink. Du-Cange Gloss. Lat. tom. i.

BUFF, in *Commerce*, a sort of leather prepared from the skin of the buffalo, or bubalus; which being dressed in oil, after the manner of shammy, or chamois, makes what we call *buff skin*; anciently much used among the military men for a kind of coats or doublets; and still retained by some of our grenadiers, as well as the French *gens d'armes*, on account of its exceeding thickness and firmness. It is also used for waist-belts, pouches, &c.

Buff skin, or buff-leather, makes a very considerable article in the English, French, and Dutch commerce, at Constantinople, Smyrna, and along the coast of Africa.

The skins of elks, oxen, and other like animals, when dressed in oil, and prepared after the same manner as that of the buffalo, are likewise denominated buff, and used for the same purposes.—In France there are several considerable manufactories employed in the preparation of such skins; particularly at Corbeil, Paris, and Rouen; their first establishment is owing to the Sieur Jabas, a native of Cologne. The manner of preparation see under SHAMMY.

The skin of the American moose deer, when well dressed, makes excellent buff. The Indians make their snow-shoes of this skin. Their way of dressing it, which is reckoned very good, is thus: after they have haired and grained the hide, they make a lather of the moose's brains, in warm water, and, after they have soaked the hide for some time, they stretch and supple it. Phil. Trans. N^o 368.

BUFF river and bay, in *Geography*, lie on the north-east side of Jamaica; within which is Crawford's town, in St. George's parish, and county of Surry. N. lat. $18^{\circ} 27'$. W. long. $76^{\circ} 32'$.

BUFF, see BUFFLES.

BUFFA, see BUFFOON. See GIARDINI.

BUFFALMACCO, BUONAMICO, in *Biography*, an historical painter, was born at Florence in 1262, and was for some years a disciple of Andrea Tassi. He possessed a singular talent for droll humour, and is said to be the first who devised the use of a label drawn from the mouth of a figure for representing that figure as speaking; though sentences wrote over the heads of figures had before been practised by Cimabue. He died in 1340. Pilkington.

BUFFALO, in *Zoology*. See BUBALUS.

BUFFALOE, in *Geography*, a township of America, west of Susquehanna river in Pennsylvania.

BUFFALOE, a river of America, in the Tennessee government, which runs S. W. into Tennessee river, in N. lat. $35^{\circ} 10'$.—Also, a water of the Ohio, which enters it at the south bank, 60 miles above the mouth of the Wabash.

BUFFALOE Creek, a creek of North America in New York, connected with Niagara river near its mouth, opposite to lake Erie. The Seneca Indians have a town 5 miles from its mouth, which is able to furnish 80 warriors. This creek is navigable 8 miles. N. lat. $42^{\circ} 52'$.

BUFFALOE Lake, a lake of North America, situate near Copper-mine river, in the country of the Copper Indians. N. lat. 66° .—Also a lake of North America, which receives the Beaver river, about 25 miles long, and from 2 to 10 wide. N. lat. $55^{\circ} 55'$. W. long. $108^{\circ} 55'$.

BUFFALOE Lick. See GREAT RIDGE.

BUFFALOE Lowlands, a tract of land, in Northumberland county, Pennsylvania, about 88 miles S. E. from Presque isle.

BUFFALOE's Bay, lies within the point of the cape of Good Hope, across which from point to point is a ledge of rocks continuing northward to the south point of the entrance into Simon's bay, on the west side of False bay.

BUFFALOE's Point, lies above Rongusoula river, on the approach to Hugly river in Bengal, about half way in the bight between Jessore and Culpe rivers. Ships stop here which do not venture higher up into the Hugly river.

BUFFAROLO, a town of Italy, in the Milanese; 17 miles W. of Milan.

BÜFFEL, BÜFFELUS, BUFFLE. See BOS BUBALUS.

BUFFET, or BEAUFET, was anciently a small apartment or recess, separated from the rest of the room by means of slender wooden pillars, in which were deposited china, glass-ware, &c. It was sometimes called a cabinet. The term has since been sometimes applied to a large table, more usually called a "side-board," furnished with drawers, and serving either for convenience or show, to receive plate, bottles, glasses, &c. In France, among persons of distinction, the buffet is a detached room, decorated with pictures, exhibiting fountains, cisterns, and vases, and commonly faced with marble or bronze. Among the Italians, the buffet, called "credenza," is inclosed within a balustrade as high as the elbow.

BUFFETTO, in *Geography*, a town of Switzerland, in the Valteine, seated on the south side of the river Adda. N. lat. $46^{\circ} 2'$. E. long. $9^{\circ} 50'$.

BUFFIER, CLAUDE, in *Biography*, an ingenious writer, was born of French parents, in Poland, in 1661, and educated at Rouen. He entered among the Jesuits at Paris in 1679, and afterwards fixed his residence at the college of the society in that city. Besides his engagements with the compilers of the *Memoires de Trevoux*, he wrote a great variety of works, some of which have been much esteemed. But his most celebrated performance is his "Traité de premiers Verités, &c." or treatise of first truths, and of the sources of our judgments; in which the opinions of philosophers on the first notions of things are examined; Paris, 1724, 12mo. The principles of this work are the same with those adopted and expanded in the writings of Drs. Reid, Oswald, and Beattie, under the denomination of *Common Sense*. His "Elements of Metaphysics, made intelligible to all Readers," 1725, 12mo. is a work formed upon the same plan. He was also the author of a "French Grammar upon a new Plan," which was well received. His principal works have been collected and published under the title of "Cours des Sciences sur des Principes nouveaux et simples, &c." or a course of sciences on new and simple principles, for the purpose of forming the language, the understanding, and the heart, in the ordinary commerce of life, 1732, fol. This laborious and useful writer died in 1737. Nouv. Dict. Hist.

BUFFLES, or BUFF, in *Geography*, an island of Africa, on the south coast of Benin, in the mouth of the river Camarones, or Camonoars.

BUFFON, GEORGE-LOUIS LE CLERC, Count of, in *Biography*, an eminent naturalist and writer, was the son of a counsellor of the parliament of Dijon, and born at Montbard in Burgundy,

gundy, September the 7th, 1707. He manifested an early inclination to the sciences, which diverted him from pursuing the profession of the law, to which his first studies at Dijon were devoted, and for which his father had designed him. The science which seems to have engaged his earliest attachment was astronomy; with a view to which he applied with such ardour to the study of geometry, that he always carried in his pocket the elements of Euclid. At the age of 20, he travelled into Italy, and in the course of his tour he directed his attention to the phenomena of nature more than to the productions of art; and at this early period he was also ambitious of acquiring the art of writing with ease and elegance. In 1728 he succeeded to the estate of his mother, estimated at about 12,000*l.* a year; which, by rendering his circumstances affluent and independent, enabled him to indulge his taste in those scientific researches and literary pursuits, to which his future life was devoted. Having concluded his travels, at the age of 25, with a journey to England, he afterwards resided partly at Paris, where, in 1730, he was appointed superintendant of the royal garden and cabinet, and partly on his estate at Montbard. Although he was fond of society, and by no means insensible to the attractions of the fair sex, he was indefatigable in his application, and is said to have employed 14 hours every day in study. We learn from the biographical anecdotes relating to him, collected by Herault de Sechelles, and published in Peltier's "*Paris, pendant l'Année 1795, et l'Année 1796,*" that he would sometimes return from the suppers at Paris at two in the morning, when he was young, and order a boy to call him at five; and if he lingered in bed, to drag him out on the floor. At this early hour it was his custom, at Montbard, to dress, powder, dictate letters, and regulate his domestic concerns. At six he retired to his study, which was a pavilion called the tower of St. Louis, about a furlong from the house, at the extremity of the garden, and which was accommodated only with an ordinary wooden desk and an arm chair. Within this was another sanctuary, denominated by prince Henry of Prussia "*the Cradle of Natural History,*" in which he was accustomed to compose. On this retreat no one was suffered to intrude. At nine his breakfast, which consisted of two glasses of wine and a bit of bread, was brought to his study; and after breakfast he wrote for about two hours, and then returned to his house. At dinner he indulged himself in all the gaieties and trifles which occurred at table, and in a freedom of conversation, which obliged the ladies to withdraw. When dinner was finished, he paid little attention either to his family or guests; but having slept about an hour in his room, he took a solitary walk, and then he would either converse with his friends or sit at his desk, examining papers that were submitted to his judgment. This kind of life he passed for 50 years; and to one who expressed his astonishment at his great reputation, he replied, "*Have not I spent fifty years at my desk?*" At nine he retired to bed. In this course he prolonged his life, notwithstanding excruciating sufferings occasioned by the gravel and stone, which he bore with singular fortitude and patience, to his 81st year; and retained his senses till within a few hours of his dissolution, which happened on the 16th of April, 1788. His body was embalmed, and presented first at St. Medard's church, and afterwards conveyed to Montbard, where he had given orders in his will to be interred in the same vault with his wife. His funeral was attended by a great concourse of academicians, and persons of rank and literary distinction; and a crowd of at least 20,000 spectators assembled in the streets through which the hearse was to pass. When his body was opened, 57 stones were found in his bladder, some of which

were as large as a small bean; and of these 37 were crystallized in a triangular form, weighing altogether 2 ounces and 6 drams. All his other parts were perfectly sound; his brain was found to be larger than the ordinary size; and it was the opinion of the gentlemen of the faculty who examined the body, that the operation of lithotomy might have been performed without the least danger; but to this mode of relief M. Buffon had invincible objections. He left one son, who fell a victim to the atrocities under Robespierre. This son had erected a monument to his father in the gardens of Montbard; which consisted of a simple column, with this inscription:

"*Excelsæ turri humilis columna*

Parenti suo filius BUFFON, 1785."

The father, upon seeing this monument, burst into tears, and said to the young man, "*Son, this will do you honour.*" Buffon was a member of the French Academy, and perpetual treasurer of the Academy of Sciences. With a view to the preservation of his tranquillity, he wisely avoided the intrigues and parties that disgracefully occupied most of the French literati in his time; nor did he ever reply to the attacks that were made upon his works. In 1771 his estate was erected into a comté; and thus the decoration of rank, to which he was by no means indifferent, was annexed to the superior dignity he had acquired as one of the most distinguished members of the republic of letters.

Before we give an account of his works, we shall mention a few particulars relating to his person and character. His figure was noble and manly, and his countenance, even in advanced age, and notwithstanding excruciating pains, which deprived him of sleep sometimes for 16 successive nights, was calm and placid, and exhibited traces of singular intelligence. Vanity, however, which seemed to have been his predominant passion, extended even to his person and to all its exterior ornaments. He was particularly fond of having his hair neatly dressed, and for this purpose he employed the friseur, in old age, twice or thrice a day. To his dress he was peculiarly attentive; and took pleasure in appearing on Sundays before the peasantry of Montbard in laced clothes. At table he indulged in indelicate and licentious pleasures, and he was fond of hearing every gossiping tale which his attendants could relate. In his general intercourse with females he was as lax and unguarded as in his conversation. During the life of his wife, he was chargeable with frequent infidelities; and he proceeded to the very unwarrantable extreme of debauching young women, and even of employing means to procure abortion. His confidence, in the latter period of his life, was almost wholly engrossed by a mademoiselle Blesseau, who lived with him for many years. His vanity betrayed itself on a variety of occasions in relation to his literary performances. These were often the subjects of his discourse, and even of his commendation. When he was recommending the perusal of capital works in every department of taste and science, he added, with singular presumption and self-confidence; "*Capital works are scarce; I know but five great geniuses:—Newton, Bacon, Leibnitz, Montesquieu, and myself.*" He was in the habit of reciting to those who visited him whole pages of his compositions, for he seemed to know them almost all by heart; but notwithstanding his vanity, he listened to objections, entered into a discussion of them, and surrendered his own opinion to that of others, when his judgment was convinced. He expressed himself with rapture concerning the pleasures accruing from study; and he declared his preference of the writings to the conversations of learned men, which almost always disappointed him; and therefore he voluntarily secluded himself from society with such, and in company was fond of trifling. He maintained, however, an extensive correspondence with

several persons of rank and eminence; and particularly with prince Henry of Prussia, and with the late empress of Russia, who ably criticised some of his opinions, and favoured with great zeal in her dominions his researches in natural history. Of his literary vanity he gave evidence even towards the close of life; alleging that he feared not death, and that the hope of immortal renown was the most powerful of death-bed consolations. He took great pains in forming the style of his writings; and as composition was to him a difficult task, he repeatedly revised his works before he published them. Such was his attention to style, that he could not bear the least deviation from accuracy and propriety in the use of language. "The style," said he, "is the man; our poets have no style; they are coerced by the rules of metre, which makes slaves of them." To this circumstance it was owing that he abandoned poetry which he attempted in his youth, and restricted himself to prose. "Two things," says he, "form style, invention and expression. Invention depends on patience; contemplate your subject long; it will gradually unroll and unfold—till a sort of electric spark convulses for a moment the brain, and spreads down to the very heart a glow of irritation. Then are come the luxuries of genius, the true hours for production and composition—hours so delightful, that I have spent 12 and 14 successively at my writing-desk, and still been in a state of pleasure. It is for this gratification, yet more than for glory, that I have toiled. Glory comes if it can, and mostly does come. This pleasure is greater if you consult no books; I have never consulted authors, till I had nothing left to say of my own." Such was his regard to fame, that he destroyed every paper which he thought useless or unfinished; and thus preserved his reputation from being massacred by posthumous publications.

Of the free sentiments which he had imbibed with regard to religion, his works afford ample evidence. They sufficiently indicate his attachment to the system of materialism. "Religion," said he to one who was reading to him verses on the immortality of the soul, "would be a noble present, if all that were true." Notwithstanding the licentiousness of his religious opinions, as well as of his moral conduct, he conformed to the external rituals of religion, adding, as some will say, hypocrisy to his impiety; when he was at Montbard, he received the annual communion in his seignorial chapel, attended high mass every Sunday, and distributed a louis weekly among different descriptions of pious beggars. "There must," he said, "be a religion for the multitude; and we should avoid giving offence." "I have always," he added, in conversation with a friend, "named the Creator; but it is only putting, mentally, in its place, the energy of nature, which results from the two great laws of attraction and impulse. When the Sorbonne plagued me, I gave all the satisfaction which they solicited; it was a form which I despised, but men are silly enough to be so satisfied. For the same reason, when I fall dangerously ill, I shall not hesitate to send for the sacraments. This is due to the public religion. Those who act otherwise are madmen." Thus, as he boasts, he avoided sharing the mischievous attacks which Voltaire, Diderot, Helvetius, and others had made upon religion, whilst, by the avowal of such licentious sentiments in conversation, and by the opinions circulated in his writings, he was perpetually sapping its foundations, and counteracting every obligation of truth and integrity. But let us divert our attention from the principles and character of Buffon, which have been sufficiently developed, and which no reflecting person can contemplate without disgust, to his works. In this view of him he appears with much greater advantage. His first publication was a translation from the English of "Hales's Vegetable Statics," in 1735; which was followed

in 1740 by a translation from the Latin of "Newton's Fluxions." His "Theory of the Earth" was first published in 1744, which was included in his most comprehensive celebrated work entitled "Natural History, general and particular," which commenced in 1749, and at its completion in 1767 extended to 15 vols. 4to. or 31 vols. 12mo. Supplements were afterwards added, amounting to several more volumes. In the anatomical part the author was aided by M. d'Aubenton; but in all the other parts Buffon himself displays his learning, genius, and eloquence, and he also indulges his fancy, in exploring and delineating the whole economy of nature. He begins with a theory of the earth, which, as well as the other planets, he supposes to have been originally a mass of liquefied matter, dashed out of the body of the sun by the violent impact of a comet. He then covers it with ocean, from which he forms strata by deposition, and mountains by the flux and reflux of the tide. Subterraneous fires, eruptions, and earthquakes, produce other changes; and the world we now inhabit is but the ruins of a former world. For a more particular account and examination of his theory, see EARTH and PLANETS. In his account of the population of the earth with living creatures, he investigates the analogies between vegetable and animal life; and in explaining the mystery of animal generation, he allows ample range to his imagination in a variety of hypotheses and conjectures. He conceives certain "living organic molecules," of the same nature with organized beings, to exist equally in animal and vegetable matter; and these, in the process of nutrition, to be received into "internal moulds," of which animal and vegetable bodies are formed, where they are assimilated into the same substance as the parts to which they are transmitted, and thus nourish them. When this nutritive matter superabounds, it is detached from all parts of the body, and deposited in a fluid form in one or more reservoirs. This constitutes a prolific matter, which is ready for producing a new animal or vegetable, of the same species, when it meets with a proper matrix. The supposed seminal animalcules are only these organic particles, which are similar in both sexes, but must unite in order to produce a new animal by the process of generation. See GENERATION. Buffon's natural history of animals commences with that of man; whom he traces from the cradle to the grave, through the development and maturation of his bodily organs and mental powers, the nature and operation of his senses, and the several varieties of his species, introducing and intermixing in the research many curious discussions. He then investigates and unfolds the nature of brute animals in general; and marks the distinction between them and men, by denying them a soul, and a memory, properly so called, and making all their actions to spring from external impressions. The class of quadrupeds occupies the whole remainder of this first work. To his history of quadrupeds he added, in 1776, a supplementary volume, which, besides an ingenious dissertation on mules, contains the history and figures of several new animals, and valuable additions to most of those described in the original publication. Disdaining the arrangements of systematic naturalists, he has rejected all the received principles of classification, and has thrown his subjects into groups, laxly formed from general points of resemblance. Not content with deviating from established modes of distribution, he ridicules the authors of systematic arrangements; and particularly the late ingenious and indefatigable Linnæus, whose zeal and labours in investigating and classing natural objects entitle him to the highest applause. It is hardly necessary to remark, that he has adapted his style to the particular subjects of his discussion. Whilst the mere enumeration of facts, or descriptions of the figure, dimensions, and colour of animals,

imals, admit of no other ornament than that of perspicuity; topics of philosophy and argument require a higher and more figurative expression; and addresses to the passions and finer feelings of men, allow full scope to the exercise of genius and of taste. Of these different species of writing, the works of Buffon afford numerous examples. It has been observed, however, that his style occasionally rises above the level of his subject; and this is particularly the case, when he is painting in glowing colours the manners and habits of the lion, the horse, the elephant, and others of his favourite subjects. By the indulgence of this passion for high painting, he has been betrayed into a deviation from the limits of simple truth, and has been led to wander into the regions of fancy. In particular and minute observation he excels, and by his indefatigable researches he has made a very copious addition to the treasure of authenticated facts. In some cases he has been misled by an undue attachment to theory, as well as by the ambition of distinguished eloquence. "On various topics," says a judicious biographer, "he had formed general theorems, which he was inclined to support against exceptions by denying or neglecting the instances produced on the other side. Farther, he not unfrequently gives the mere inferences from his opinions as if they were known and tried facts; thus dangerously confounding hypothesis with that experience which is the only true basis of all natural knowledge. He often attributes more to the operation of certain causes, such as change of climate, domestication, and the like, than sober reason can warrant; and even, according to the tenor of his argument, sometimes ascribes opposite effects to the very same cause. These blemishes materially lessen the confidence with which his work can be used as authority, and later inquirers are continually detecting errors in his statements. Yet the great mass of matter will probably always remain unimpeached; and certainly no writer has ever done so much to render natural history entertaining, and to elevate its rank among the objects on which the human intellect is employed. In one point, however, he will by many be thought to have derogated from the true dignity and value of his subject. He is every where the enemy of the doctrine of final causes, and substitutes, to a designing and benevolent author, the fortuitous operations of a certain unconscious "Nature," which as often exhibits examples of blunder and defect, as of skillful and happy contrivance." "Studiously to overlook so beautiful a part of the economy of things, as the adaptation of means to ends, is surely as inconsistent with the philosophical as the religious spirit," which may, possibly, in some instances, have betrayed him into error. This "fault" is aggravated in Buffon by the pleasure he occasionally takes in declaiming upon the defects of nature, in a strain which would seem to impute malignity of intention to the Author of being, and which he appears to have derived from the shallow philosophy of his predecessor Pliny. The moral reader of Buffon will likewise be frequently offended with the looseness of his descriptions in all points relative to sex; in which he not only indulges in an anatomical plainness of language, but, what is much worse, adopts a studied sensuality, the object of which is to exalt the value of sexual gratifications, and make a propensity to them one of the indications of nobleness of nature."

After the completion of his history of quadrupeds in 1767, Buffon was interrupted in the progress of his labours by a severe and tedious indisposition; and therefore the two first volumes of his "History of Birds" did not appear till the year 1771. In the composition of the greatest part of these was indebted to the labours of M. Gueneau de Montbeil-

lard, who adhered so closely to Buffon's mode of thinking and of expression, that the public could not perceive any difference. The four subsequent volumes were the joint production of both writers; and each author prefixed his name to his own articles. The three remaining volumes were written by Buffon himself, with the assistance of the abbé Bexon, who formed the nomenclature, drew up most of the descriptions, and communicated several important hints. The work was completed in 1783, but on account of the much greater number of species of birds than of quadrupeds, the want of systematic arrangement is more to be regretted in this than in the other history. A translation of Buffon's "Natural History," by Mr. Smellie of Edinburgh, completed in 8 vols. 8vo. was published in 1781; to which a 9th volume was added in 1786, containing a translation of a supplementary volume of Buffon, and consisting chiefly of curious and interesting facts with regard to the history of the earth. The translator has omitted the anatomical dissections and mensurations of M. D'Aubenton, which greatly enhanced the bulk, as well as the price of the original, and which the author himself had omitted in the last Paris edition of his performance. There are likewise some other omissions, which are not very important; respecting the method of studying natural history, methodical distributions, and the mode of describing animals. These omissions have been amply compensated by the translator's addition of short distinctive descriptions to each species of quadrupeds, of the figures of several new animals, and of the synonyms, as well as the generic and specific characters given by Linnaeus, Klein, Brisson, and other naturalists, together with occasional notes. A translation of Buffon's "History of Birds," in 9 vols. 8vo. with notes and additions, was also published by Mr. Smellie in 1793.

In 1774, Buffon began to publish a "Supplement" to his Natural History, consisting of the "History of Minerals." The first volume contains an account of his *BURNING GLASS*, for which, see that article. These supplemental volumes, of which the 5th, in 4to., appeared in 1778, contain many curious and valuable experiments, as well as much theory, too lax for the rigour of modern science. The concluding volume may be considered as a kind of philosophical romance. It comprehends what the author fancifully denominates the "Epochas of Nature," or those great changes in the state of the earth which he supposes to have successively resulted from his hypothesis of its original formation out of the sun. Of these epochas he enumerates seven, of which six are supposed to have been previous to the creation of man. In the description of these epochas, as to both their causes and effects, the author has indulged the sport of fancy, and formed a sort of fairy tale, which he has contrived to render amusing and instructive. Such as we have recounted are the principal works of this great author, which have been collected and published in 35 vols. 4to. and 62 vols. 12mo.; and of the whole or parts of which new editions occasionally appear. After he had completed his "History of Minerals," he had formed a design of composing the "History of Vegetables;" but this project was defeated by his death. Several of the subjects that occur in his "Natural History," and its supplements, have been discussed in separate memoirs, and may be found in the Memoirs of the Royal Academy of Sciences at Paris, for the years 1737, 1738, 1739, 1741, and 1742. Some account of them will be found in different articles of this dictionary. See particularly *ACCIDENTAL CALORIES*, *HEAT*, *MAGNETISM*, *TIMBER*, &c. *Nouv. Dict. Hist. Encyclopedie Physique*, tom. i. Lett. de Herault Sechelles, *ubi supra*. Smellie's Translations. *Gen. Biog.* BUFFONI, in *Ornithology*, a species of *FALCO*, called by

Latham the *Cayenne ring-tail*, as being an inhabitant of that part of the world. It is specifically distinguished by having the cere blue; legs yellow; body above dark brown, beneath reddish-buff; eye-brows yellow; tail fasciated with pale, and dusky brown. Gmel. &c. Length of this bird two feet.

BUFFOON, a droll, or mimic, who diverts the public by his pleasantries and follies. Menage, after Salmassius, derives the word from *buffo*; a name given to those who appeared on the Roman theatre with their cheeks blown up; that, receiving blows thereon, they might make the greater noise, and set the people a laughing. Others, as Rhodiginus, make the origin of buffoonery more venerable; deriving it from a feast instituted in Attica, by K. Erichtheus, called *BUPHONIA*.

Buffoons are the same with what we otherwise find denominated *scurra*, *gelasiani*, *mimologi*, *minifelli*, *goliardi*, *joculatores*, &c. whose chief scene is laid at the tables of great men. Gallienus never sat down to meat without a second table of buffoons by him. Tillemont also renders *PANTOMIMES* by buffoons; in which sense he observes, the shews of the buffoons were taken away by Domitian, restored by Nerva, and finally abolished by Trajan. Crevier's Hist. of the Emperors, vol. vii. p. 45.

BUFFY COAT, or size of the blood, in *Medicine*. See *BLOOD*, *appearances of*.

BUFO, in *Entomology*, a species of *BOMBEX*, that inhabits Germany. The wings are yellowish, with a broad brown band, and yellow spots. Fabr.

BUFO, a species of *CURCULIO*, that inhabits Siberia. The colour is fuscous; wing-cases slightly reticulated, with a white stripe in the middle. Fabr.

BUFO, in *Zoology*, the specific name of the common toad, *rana bufo* of Linnæus, and other Latin writers. Gmelin adopts the concise description of the Linnæan *Fauna Suecica*, "corpore lurido fuscoque," for this species. But, besides the body of the toad being lurid and fuscous, the back is marked with tubercles, which ought likewise to be distinctly noticed in its specific character. The description given of it by Roefel is not amiss, "Bufo terrestris, dorso tuberculis exasperato, oculis rubris." Hist. Ran.

Authors make three or four varieties of the common toad. The var. β of Gmelin, is *bufo calamita* of Laurenti; the back of this kind is olivaceous with an unequal, clear, yellowish-red, band down each side. γ , another variety, Laurenti describes under the name of *bufo viridis*, the body being marked with confluent green spots, and warts: those warts which rise within the area of the green spots are of the same colour, while the rest, which are situated in the spaces between them, are red, upon a bicoloured ground. δ . *bufo obstetricans* of Laurenti is distinguished by being of a smaller size than either of the preceding. In Act. Paris. 1741, this last variety is described under the title of *bufo terrestris minor*. Independently of these, which may be considered as permanent varieties of the common toad, it should be observed, that different individuals exhibit a great diversity in their general colours, markings, the size of the dorsal tubercles, and other particulars. The olivaceous hues with darker variations prevail most commonly. In the early part of summer they are sometimes found with the shoulders and limbs marked with reddish spots, and the under parts of the limbs and body tinged with yellow.

The toad, says an ingenious writer, is the most deformed and hideous of all animals: the body is broad, the back flat, and covered with a pimply dusky hide, the belly large, swagging, and swelling out, the legs short, and its pace laboured and crawling; its retreat gloomy and filthy: in short, its general appearance is such as to strike one with

disgust and horror. Yet it is said by those who have resolution to view it with attention, that its eyes are fine; to this it seems that Shakspeare alludes, when he makes his Juliet remark, "Some say the lark and loathed toad change eyes," as if they would have been better bestowed on so charming a songster, than on this raucous animal. Pennant. The eyes are uncommonly beautiful, being surrounded by a reddish-gold coloured iris, and the pupil, when in a state of contraction, appearing transverse.

Rana bufo and its varieties appear to be confined exclusively to the European continent. It inhabits woods, gardens, fields, and damp shady places, and frequently makes its way into cellars, or any obscure recesses in which it may occasionally conceal itself; and where it may find a supply of food, or a security from too great a degree of cold. In the early part of spring, like others of this genus, it retires to the waters, where it continues during the breeding season, and deposits its ova or spawn in the form of double necklace-like chains or strings, of beautifully transparent gluten, and of the length of three or four feet, in each of which are disposed the ova in a continued double series throughout the whole length, having the appearance of so many small jet-black globules or beads. These globules are, in reality, no other than the tadpoles, or larvæ convoluted into a globular form, and waiting for the period of their evolution, or hatching, which takes place in the space of about fourteen or fifteen days, when they break from the surrounding gluten, and, like the tadpoles of frogs, swim about in the water, and are nourished by various animalcules, gluten, leaves of aquatic plants, &c. When these have arrived at their full growth, the legs are formed, the tail gradually becomes obliterated, and the animals leave the water, and betake themselves to the surface of the ground. This generally happens early in the autumn.

The time of their propagation is very early in the spring: at which season the females are seen crawling about oppressed by the males, who continue on them for hours, and adhere so fast as to tear the skin from the parts to which they stick. The number of females appears to be greatly disproportionate to that of the males in general. It is asserted by Mr. Arscott, a gentleman of Devonshire, who favoured Mr. Pennant with a circumstantial account of a favourite toad kept for nearly forty years in his house, and a cursory history of the toads, that he has commonly known thirty males to one female: twelve or fourteen of the former he has seen clinging round a single female at one time. But this is even far less remarkable than the observation of the late Mr. John Hunter, who assured Mr. Pennant, that during his residence at Belleisle, he had dissected some hundreds of toads, and yet never met with a single female amongst them.

That the female toad receives the obstetrical assistance of the male on some occasions is a fact established on the best authority. Mr. Demours, in particular, has given a full and accurate account of such a circumstance in the Memoirs of the French Academy, that deserves attention. It has been more than once repeated by later writers, but cannot still, with propriety, be omitted in this place. The memoir is thus translated by Dr. Templeman:

"In the evening of one of the long days in summer, Mr. Demours, being in the king's garden, perceived two toads coupled together at the edge of an hole, which was formed, in part, by a great stone at the top.

"Curiosity drew him to see what was the occasion of the motions he observed, when two facts, equally new, surprised him. The first was the extreme difficulty the female had in laying her eggs, inasmuch that she did not seem

them capable of being delivered of them without some assistance. The second was, that the male was mounted on the back of the female, and exerted all his strength with his hinder feet in pulling out the eggs, whilst his fore-feet embraced her breast.

"In order to apprehend the manner of his working in the delivery of the female, the reader must observe that the paws of these animals, as well those of the fore-feet, as of the hinder, are divided into several toes which can perform the office of fingers.

"It must be remarked, likewise, that the eggs of this species of toads are included each in a membranous coat that is very firm, in which is contained the embryo: and that these eggs, which are oblong, and about two lines in length, being fastened one to another by a short, but very strong cord, form a kind of chaplet, the beads of which are distant from each other about the half of their length. It is by drawing this cord with his paw, that the male performs the functions of a midwife, and acquits himself in it with a dexterity that one would not expect from so lumpish an animal.

"The presence of the observer did not a little discompose the male: for some time he stopped short, and threw on the curious impertinent a fixed look that marked his disquietness and fear; but he soon returned to his work with more precipitation than before, and a moment after he appeared undetermined whether he should continue it or not. The female likewise discovered her uneasiness at the sight of the stranger, by motions that interrupted sometimes the male in his operation. At length, whether the silence and steady posture of the spectator had dissipated their fear, or that the case was urgent, the male resumed his work with the same vigour, and successfully performed his function."

The hideous appearance of the toad, Mr. Pennant remarks, is such as to have rendered it in all ages an object of horror, and the origin of most tremendous inventions. Ælian makes its venom so potent, that, basilisk-like, it conveyed death by its very look and breath; but Juvenal is content with making the Roman ladies who were weary of their husbands, form a potion from its estrails, in order to get rid of the good man:

"Occurrit matrona potens, quæ molle calenum
Porrectura viro miscet sitiente rubetam." Sat. I.

This opinion begat others of a more dreadful nature; for in after times superstition gave it preternatural powers, and made it a principal ingredient in the incantations of nocturnal hags:

"Toad that under the cold stone
Days and nights has, thirty-one,
Swelter'd venom sleeping got,
Boil thou, first i' th' charmed pot."

Shakspeare.

But these, and other similar fables of its venomous properties, Mr. Pennant observes in another place, have been long since exploded. The notion of its being a poisonous animal, he conceives to have arisen from its excessive deformity, joined to the faculty it has of emitting a juice from its pimples, and a dusky liquid from its hind-parts. That it possesses any noxious qualities, this writer was unable to bring forward proofs in the smallest degree satisfactory, though we have heard many strange relations on that point. On the contrary, he knew several of his friends who have taken them into their naked hands, and held them long, without receiving the least injury. It is well known that quacks have eaten them, and have besides squeezed their juices into a glass and drank them with impunity. We may also say, that these reptiles are a common food to many

animals, such as buzzards, owls, Norfolk plovers, ducks, and snakes, neither of which, Mr. Pennant concludes, would touch them were they in any degree noxious.

It appears, however, from the experiments of Laurenti, that although the toad does not possess any poisonous properties, it is not perfectly innoxious to the smaller tribe of animals. He found that small lizards, on biting the common toad, were for some time disordered and paralytic, and even appeared dead, though they completely recovered afterwards. He also observed, that dogs, on seizing a toad, and carrying it for some little time in their mouth, will appear to be affected with a very slight swelling of the lips, accompanied by an increased evacuation of saliva; the mere effect of the slightly acrimonious fluid which the toad, on irritation, exudes from its skin, and which seems at least to be productive of no dangerous symptoms in such animals as happen to taste or swallow it. For a further account of this creature, see the articles TOAD, and RANA.

BUFONIA, in Botany, said by Dr. Smith, in English Botany, to have been so named by Linnaeus after the celebrated Count Buffon at the instigation of Sauvage, but with the invidious addition of the trivial name tenuifolia, to express the *slenderness* of that great zoologist's claim to a botanical honour, and with the malicious omission of one *f* in the generic name; whence it seems rather to be derived from the Latin word *Bufo* which signifies a toad. Ventenat actually adopts this etymology, and says the name was given it on account of its growing in *marshy* places. Dr. Withering seems to have entertained the same idea when he called it toad-grass. Gærtner, Schreber, Professor Martyn, and Dr. Smith have added the other *f*; but we have preferred the original spelling of Linnaeus, which has been followed by most other authors. Linn. Reichard 180. Willd. 260. Gært. 1243. Juss. p. 300. Vent. vol. iii. p. 238. Clafs and order, *tetrandria digynia*. Nat. ord. *Caryophyllae*, Juss. Vent.

Gen. Char. *Cal.* perianth four-leaved, erect, permanent: leaflets awl-shaped, keeled, membranaceous at the margin. *Cor.* petals four, oval, erect, equal, shorter than the calyx. *Stam.* filaments four, equal, the length of the germ. Anthers twin. *Pist.* germ ovate, compressed: styles two, the length of the stamens: stigma simple. *Peric.* capsule oval, compressed, one celled, two-valved. *Seeds* two, oval, compressed with a swelling, convex on one side.

Ess. Char. *Calyx* four-leaved: *petals* four: *capsule* one-celled, two-valved, with two seeds.

Obs. It is sometimes deficient in the number of its stamens.

Species. 1. *B. tenuifolia*. Linn. Sauvage Monf. 141. Ger. Prov. 400. Viliars Dauph. 650. Hudson H. Aug. 72. With. ed. 3. v. ii. p. 305. Smith H. Brit. v. i. p. 191. Gært. Tab. 129. f. 1. La Marck Pl. 87. f. 1. bad. Eng. bot. 1312. "Stem panicled; flowers lateral and terminal; calyx striated." La Marck Hult. annual. *Stems* one or more, six or eight inches high, slender, erect, branched, round, leafy, smooth. *Leaves* erect, opposite, awl-shaped, three ribbed connate, with a broad sheathing base. *Flowers* white, peduncled, forming a spikelike panicle. *Calyx-leaves*, lanceolate, with a white edge. *Germen* superior; *styles* short, distant; *stigmas* capitate. *Seeds* large and rough. A native of dry situations in Spain and the southern provinces of France, which invalidates Ventenat's reason for deriving the generic name from *bufo*, a toad. Its chief claim to a place in the English Flora rests on the authority of Plukenet, who has certainly figured it, and asserts that it was found by the sea-side near Boston in Lincolnshire. On this ground Ray, who had seen it near Montpellier,

Montpellier, but not in England, admitted it into the second edition of his Synopsis. Dillenius, in the third edition, says it was found also by Doody, on Hounslow heath; but it has not since been discovered in either of those places. *z. B. perennis*, La Marck Illus. Pl. 87. f. 2. "Stems branched and bearing flowers near the top; calyx leaves scarious at the edge" perennial. Peduncles longer than in the preceding species, forming a panicle without the appearance of a spike. Frequent in dry stony places in Auvergne.

BUFONIS, in *Zoology*, a species of *ASCARIS* found in the intestines of the toad. The body of this kind is filiform, and the tail rounded. It is viviparous. *Goeze*.

BUFONIS, a species of *TÆNIA*, or tape worm, that infests the intestines of the toad. The anterior part is roundish, behind filiform: head continued obtuse: joints invested with a thin membrane, cylindrical, and oblong; margin silvery. *Gmel.* It is *Tænia dispar.* of *Goeze*.

Obs. The colour is white, and opaque. Length of the worm six inches.

BUFONITA, in *Natural History*, the *TOAD-STONE*. This is a fossil that has been received not only among the list of native stones by the generality of authors, but even has held a place among the gems, and is still worn in rings by some people: it is, however, as much an extraneous fossil, as any animal remaining of that kind. There has been a strong opinion in the world, that it was found in the head of an old toad; and that this animal voided it at the mouth, on being put on a red cloth.

The general colour of the bufonita is a deep, dusky brown; but it varies greatly in this respect in several specimens, some of which are quite black, others of an extremely pale, simple brown, a chestnut colour, liver colour, black, grey, or whitish.

The bufonitæ are usually found immersed in beds of stone; and so little doubt is there of what they have originally been, viz. the petrified teeth of the *lupus piscis*, or wolf fish, that part of the jaw of the fish has sometimes been found, with the teeth petrified in it. See *GRONDEUR*.

The bufonitæ are said to be cordial and astringent: many other fanciful virtues are ascribed to them, which the present practice has rejected.

Dr. Kramer says, *pulvis bufonum*, when applied by way of poultice, with barley-flour and urine, is an excellent remedy for ripening pestilential buboes, but that it has no such effect in venereal, or any other than pestilential buboes.

BUG, in *Entomology*. See *CIMEX*.

BUG, in *Geography*, a river of Poland, which rises in Red Russia, and after a winding course through the centre of the kingdom, joins the Vistula between Plocko and Warsaw.

BUG-caterpillar, in *Entomology*, a name given by Bonnet to a small kind of caterpillar, which smells exactly like a bug. This is not the only species which yields a sensible smell, for there is another which, at the time of the change into the chrysalis state, emits a very pleasant rose-like scent; and their cases, which are made of earth and silk, retain that smell for a long time after, even for several years. Many other insects in this state are known to have a peculiar scent. See *LARVA*.

BUGA marble, in *Natural History*, a name given by the Spaniards to a species of black marble, called by our artificers the Namur-marble, and known among the ancient Romans by the name of *marmor Luculleum*. It is common in many parts of Europe, and is used by the Spaniards in

medicine as well as in building; the powder of it being said to be an excellent styptic, applied to fresh wounds.

BUGALET, in *Sea-language*, a small vessel with two masts, used on the coast of Brittany. The foremast is very short; and on each mast is carried a square sail, and sometimes a top-sail over the main sail. These vessels have a bowsprit, and set one or two jibs.

BUGARONIE, CAPE, in *Geography*, lies on the coast of Africa, in the Mediterranean, between Bugia bay on the West, and Cape Ferra on the east.

BUGEAT, a town of France, in the department of the Correze, and chief place of a canton in the district of Ussel; the town contains 629, and the canton 6011 inhabitants: the territory comprehends 307½ kilometres and 12 communes.

BUGEE, in *Zoology*, a sort of monkey mentioned by Ray in his Synopsis of quadrupeds. He tells us it is an Indian animal, and very rare even in India; that it is about the size of the beaver, and much of the same colour, but its tail and claws are wholly of the monkey kind. The species meant by Ray is altogether uncertain.

BUGELUGEY, the name of a large species of lizard, called by Clusius, and some other authors, *Lacertus indicus*. This is *Lacerta Ameiva* of Gmelin. See *AMEIVA*.

BUGEN, in *Geography*, a town of Germany, in the circle of Upper Saxony, and middle mark of Brandenburg, 10 miles W. of Frankfurt on the Oder.

BUGENHAGEN, or BUGENHAGIUS, JOHN, in *Biography*, a learned protestant divine, was born at Wollin in Pomerania, in 1485. From being a Catholic priest and a violent opposer of Luther's doctrines on their first promulgation, he became a convert and zealous propagator of them in the north of Germany. At Wittenberg, where he was minister, he was in high esteem both for his learning and moderation; and his reputation induced Christiern III. king of Denmark, to invite him for the purpose of settling the reformation in that kingdom. In this arduous task he gave great satisfaction. He died at Wittenberg in 1558. Of his various works the most worthy of notice are, "Commentaries on the Holy Scriptures," in several volumes, 8vo. a "Harmony of the Evangelists," and a "History of Pomerania." *Nouv. Dict. Hist. Mosheim, E. H. vol. iv. p. 304.*

BUGEY, in *Geography*, a province or small district of France, before the revolution, bordered on the east by Savoy, on the south by Dauphiny, on the west by Bresse, and on the north by Franche Comté, and dependant on the government of Burgundy. It is about 20 leagues long, and 12 broad. Its capital is Belley. Before the time of Brennus, the Bugey, the tract of land denominated Gex, and part of Bresse, formed a distinct country; which is termed by Polybius the "Celtic Delta," in allusion to its triangular form. M. Peter I. I. Bacon-Tacon in his "Recherches sur les Origines Celtiques, &c." Paris, 1799, traces the primitive history of Bugey to the first ages of the world, and thinks that its mountains retain their original form; being a continuation of mount Jura, which is itself closely connected with the Alps. He also endeavours to prove, that the worship of Isis was, from time immemorial, established in the Bugey; and that the topographical nomenclature of the county is still in a manner entirely "Isiac." He is inclined, likewise, to suppose, that the inhabitants of this district, 600 years before our æra, accompanied Bellocus, from the first part of whose name is derived Belley, on his memorable expedition into Italy, where he founded the cities of Cremona, Vicenza, Aquileja, Pavia, Mantua, &c. From various concurring circumstances this author also

also concludes, that the Rhodians, about 300 years before Christ, founded a colony on the Baryx, and on the mountains of Pindus and Hæmum. He affirms that they gave their name to the river Rhodæ. He further suggests, from some names that occur in Baryx, that some intercourse formerly existed between this country and England; and that the Gauls peopled this island, and founded the cities of London and Dover.

BUGGANZ, BAKA-BANYA, or BUKANETZ, a royal, free, and mine town of Hungary, in the Bath district, formerly famous for its gold and silver mines, but now subsisting by tillage. It was sacked and burnt by the Turks in 1694; 32 miles W. of Gran.

BUGGARD, a town of Denmark, in the island of Funen, 16 miles W. of Odenſe, or Ottenſee.

BUGGENHAGII, in *Ichthyology*, a species of *CYPRINUS*, distinguished, according to Bloch, by having nineteen rays in the anal fin.

The length of this fish is about twelve or fourteen inches: the body is of a blackish colour above: compressed on the sides, and silvery scales large: flesh white. This sort is found in the lakes of Germany and Sweden.

BUGGERS, *Bulgarii*, anciently signified a kind of heretics, otherwise called *Paterini*, *Cathari*, and *Albigenses*.

The word is formed of the French *Bougres*, which signified the same, and that from *Bougria* or *Bulgaria*, the country where they chiefly appeared.

The Buggers are mentioned by Matthew Paris, in the reign of Henry III. under the name of *Bugares*. *Circa dies autem illos invaluit heretica pravitas eorum qui vulgariter dicuntur Paterini & Bugares, de quorum erroribus maïo tacere quam loqui.*

BUGGER, or **BUGGERER**, came afterwards to be used for a Sodomite; it being one of the imputations laid, right or wrong, on the Bulgarian heretics, that they taught, or at least practised, this abominable crime. *Cafen. Orig. p. 27. Menag. Orig. p. 114. Trev. Dict. Univ. tom. i. p. 1149. voc. Bugre. Du-Cange, Gloss. Lat. tom. i. p. 637. voc. Bulgari.*

BUGGER, *Bulgarius*, is also a denomination given to usurers, a vice to which the same heretics are said to have been much addicted. *Du-Cange, Gloss. Lat. tom. i. p. 637.*

BUGGERY, in our *Laws*, signifies the crime of sodomy; it is said to have been introduced into England by the Lombards, by whom it is usually supposed to have been borrowed from the *Bougres*, or *Bulgarians*. Sir Edward Coke defines buggery, *carnalis copula contra naturam, et hoc per confusionem specierum* (viz. by a man's or woman's coupling with a brute beast) *vel sexuum*, by a man's having to do with a man, or a woman with a woman.

The delicacy of the English law treats this crime, in its very indictments, as not fit to be named, "*peccatum illud horribile, inter Christianos non nominandum.*" *Rot. Parl. 50. Edw. III. n. 54.* A similar taciturnity was observed by the edict of Constantius and Constans. *Cod. 9. 9. 31.*

This crime the voice of nature and of reason, and the express law of God (*Lev. xx. 13. 15.*) determine to be capital. Of this we have a signal instance long before the Jewish dispensation, in the destruction of two cities by fire from heaven; so that this is an universal, not merely a provincial precept. Our ancient law in some degree imitated this punishment, by commanding such miscreants to be burnt to death (*Brit. c. 9.*); though Fleta (*l. i. c. 37.*) says, they should be buried alive; either of which punishments was indifferently used for this crime among the ancient Goths. *Stiern. de jure Goth. l. 3. c. 2.* But now the general pu-

nishment of all felonies is the same, namely by hanging: and this offence (being in the times of popery only subject to ecclesiastical censures) was made felony without benefit of clergy by statute 25 Hen. VIII. c. 6. revived and confirmed by 5 Eliz. c. 17. And the rule of law is, that if both are arrived at years of discretion, *agentes et consentientes paria pena plebuntur.* 3 Inst. 59. If the person on whom it is committed be a boy under the age of discretion (generally reckoned at fourteen), it is then felony only in the agent. All persons present, aiding and abetting in this crime, are principals; and the statutes make it felony generally. There may be accessaries before and after the fact; but they are not, like principals, excluded from benefit of clergy. 1 Hale's Hist. P. C. 670. In every indictment for this offence, there must be the words, "*rem habuit veneream et carnaliter cognovit, &c.*" By the articles of the navy (art. 29. stat. 22 Geo. II. c. 33.), this crime, committed by any person in the fleet, is punished with death by the sentence of a court-martial. Buggery is usually excepted out of our acts of general pardon. This "crime against nature," says judge Blackstone (vol. iv. p. 215.), ought to be strictly and impartially proved, and then as strictly and impartially punished. But it is an offence of so dark a nature, so easily charged, and the negative so difficult to be proved, that the accusation should be clearly made out; for, if false, it deserves a punishment inferior only to that of the crime itself. Threats of charging persons with this crime, or actual accusations, are methods to which the profligate frequently recur for the purpose of extorting money, which is an act of felony.

BUGGESSES, in *Geography*. See **BONI**, and **BOUGI-NESE**.

BUGIA, or **BOUJEIAH**, a large sea-port town of Africa, in the kingdom of Algiers, and province of Constantina. It is built upon the ruins of a large city, the supposed Saldæ of Strabo, constructed by the Romans at the foot of a high mountain that looks towards the north-east: a great part of the walls runs up to the summit of the mountain, where is a castle that commands the place, besides two others at the bottom, built for a security to the port. It is one of the garrisoned towns of the kingdom, where three suffrachs continually reside; but though the garrison consists of from two to three hundred men, it is not sufficient to overawe and prevent the depredations of the Kabyles, who disturb the town on every market-day, and are guilty of unsufferable rapine and barbarity. The town is watered by a large river, called by Marmol and Dapper, "*Huet el Quibir*," or the "*great river*," which is supposed to be the "*Nasava*" of Ptolemy, as it discharges itself into the sea a little to the eastward, after having received a great number of rivulets. The harbour, called by Strabo the port of Sarda, or rather Salda, is formed by a narrow neck of land, that runs out into the sea; a great part of which was formerly faced with hewn stone. Over this was conducted an aqueduct for supplying the port with water, by discharging it into large basons; but the well, aqueduct, and basons are destroyed: and the tomb of Seedy Busgree, one of the tutelary saints of the place, is the only thing remaining worth notice. Bugia is a populous place; and the inhabitants carry on a considerable trade in plough-shares, mattocks, and such utensils, which they manufacture of the iron supplied by the adjacent mines. The Kabyles likewise furnish every market with great quantities of oil, wax, and dried figs, which are shipped off for the Levant, and sometimes for Europe. They also supply soap and timber fit for building. *N. lat. 36° 35'. E. long. 5° 20'.*

BUGIE, a sea-port town of Egypt, on the west coast of the Red sea, nearly opposite to Sidon, the port town of Mecca,

Mecca, and about 37 leagues west of it. N. lat. $22^{\circ} 15'$. E. long. $38^{\circ} 40'$.

BUGINVILLÆA, in *Botany* (named by Commerfon in honour of Bougainville, the celebrated French circumnavigator). Willd. 767. Juss. 91. Clafs and order, *oëandria monogynia*. Nat. ord. *Nyaginææ*, Juss. Gen. Char. *Calyx* none. *Corol.* tubular, a little swelling at the bafe, and contracted about the middle, permanent, four-toothed. *Filaments* eight, inferted on the receptacle fhorter than the corolla. *Germen* fuperior, oblong. *Pericarp* one-feeded.

Species, *B. fpectabilis*, La Marek, Illuft. Pl. 294. A beautiful evergreen fhrub. *Stem* armed with recurved prickles placed a little above the axils of the leaves. *Leaves* alternate, petioled, roundifh-ovate, acuminate, very entire, veined. *Panicle* terminal; peduncles three-flowered. *Flower* inferted on the midrib of a roundifh bractæ, refembling a leaf, and longer than the flower, feated on the common peduncle, and adhering to the bottom of the corolla. A native of Brazil defcribed and figured from a dried fpecimen fent by Commerfon.

BUGLANEH, in *Geography*. See BAGLANA.

BUGLAS. See *Ifland* of NEGROES.

BUGLE, in *Botany*. See AJUGA.

BUGLE, among *Sportsmen*, formed probably from the Saxon *bugen*, to bend, denotes a hunting-horn.

In *Heraldry*, the bugle-horn is generally borne ftringed and garnifhed; which circumftance muft be mentioned in the blazon.

BUGLE, is alfo ufed for a fhining bead of black glafs.

BUGLIO, in *Geography*, a town of Swifferland, in the Valteline. N. lat. 46° . E. long. $9^{\circ} 40'$.

BUGLOSS, in *Botany*. See ANCHUSA.

BUGLOSS, common blue vipers. See ECHIUM vulgare.

BUGLOSS, coreiflips. See PULMONARIA officinalis.

BUGLOSS, wild vipers. See ECHIUM Italicum.

BUGLOSS, fmall wild vipers. See ASPERUGO procumbens.

BUGLOSS, fea. See PULMONARIA maritima.

BUGLOSSA, Brunnf.

BUGLOSSA Italica. Trag. } See ANCHUSA officinalis.

BUGLOSSA longifolia. Cord. }

BUGLOSSA vulgaris. Ger. Em. }

BUGLOSSA urbana. Cord. See BORAGO officinalis.

BUGLOSSA fylveftris minor. Ray. Ger. Em. See LYCOPSIS arvensis.

BUGLOSSUM, a genus instituted by Tournefort, the fpecies of which have been diftributed by Linnæus and his followers among the genera lithospermum, anchusa, and lycopsis. It has been revived by Gærtner with the following effential character: "Calyx five-parted; corolla funnel-fhaped, orifice clofed with arched fcales; ftamens five; ftyle one; nuts four, one-celled, perforated at the bafe."

BUGLOSSUM orientale flore luteo. Tourn. See LITHOSPERMUM orientale.

BUGLOSSUM Samium frutescens. Tourn. See LITHOSPERMUM fruticosum.

BUGLOSSUM Chium arvenfe. Tourn. See LITHOSPERMUM tenuiflorum.

BUGLOSSUM Germanicum. Fuchf. } See ANCHUSA officinalis.

BUGLOSSUM fylveftræ majus nigrum. } Bauh. Pin.

BUGLOSSUM Creticum. Boerh. See ANCHUSA angustifolia.

BUGLOSSUM angustifolium minus. Bauh. Pin. Morif. See ANCHUSA angustifolia.

BUGLOSSUM foliis linguiformibus. Hal. excl. Syn. See ANCHUSA Italica.

BUGLOSSUM perenne magis fativum. Morif. See ANCHUSA Italica.

BUGLOSSUM angustifolium majus. Bauh. Pin. See ANCHUSA Italica.

BUGLOSSUM vulgare majus. Bauh. Hift. See ANCHUSA Italica.

BUGLOSSUM Lufitanicum. Tourn. See ANCHUSA undulata.

BUGLOSSUM latifolium fempervirens. Bauh. Pin. Morif. See ANCHUSA fempervirens.

BUGLOSSUM, Fuchf. See BORAGO officinalis.

BUGLOSSUM latifolium, borrago, Bauh. Pin. See BORAGO officinalis.

BUGLOSSUM fylveftræ, caulibus procumbentibus. Bauh. Pin. See ASPERUGO procumbens.

BUGLOSSUM procumbens. Morif. See LYCOPSIS veficaria.

BUGLOSSUM fylveftræ majus. Bauh. Pin. See LYCOPSIS pulla.

BUGLOSSUM annuum humile. Morif. See LYCOPSIS variegata.

BUGLOSSUM fylveftræ minus. Bauh. Pin. See LYCOPSIS arvensis.

BUGLOSSUM Africanum. Pluk. See ECHIUM fruticosum.

BUGLOSSUM lanuginosum. Rumph. See TOURNEFORTIA argentea.

BUGLOSSUM echioides. Lob. See PICKIS echioides.

BUGLOSSUM litoreum. Rumph. See SCÆVOLA lobelia.

BUGLOSSUM orientale angustifolium, flore parvo cæruleo.

Tourn. is quoted by Linnæus for his lycopsis orientalis, a fpecies which he feems to have formed for it: as he gives no other fynonym, and had probably never feen the plant. Willdenow refers it to his anchusa parviflora, a new fpecies introduced by himfelf, and defcribed from a dried fpecimen, with no fynonym but thofe of Tournefort; and very inconfiftently inferts alfo the lycopsis orientalis of Linnæus, and the fame fynonym, without a comment. The plant of Linnæus is defcribed with ovate leaves, that of Willdenow with linear ones; in other refpects there is no inconfiftence in the fpecific characters.

BUGLOSSUS, in *Ichthyology*, one of the names of the common fole, pleuronectes folea, which fee.

BUGNON, in *Geography*, a town of France, in the department of the Lower Pyrenées, and diftrict of Orthès, 1 league N.E. of Navarreins.

BUGUË, a town of France, in the department of the Dordogne, and chief place of a canton in the diftrict of Sarlat, 4 leagues S.W. of Montignac. The town contains 2475, and the canton 8119 inhabitants; the territory includes $197\frac{1}{2}$ kilometres, and 12 communes.

BUGULA, in *Botany*. See AJUGA, and CLEONIA.

BUGULA orientalis villofa. Tourn. See AJUGA orientalis.

BUGULA alpina maxima. Tourn. } See AJUGA alpina.

BUGULA folio maximo. Boerh. }

BUGULA folis angulofis. Hall. } See AJUGA genevensis.

BUGULA montana. Riv. }

BUGULA. Dod. }

BUGULA flagilifera. Hal. } See AJUGA reptans.

BUGULA foliis imis linearibus. Hal. } See AJUGA chamæ-

BUGULA chamæpites. Scop. } pites.

BUGULA odorata lufitanica. Corn. Morif. See CLEONIA lufitanica.

BUGULM, or BUGULMINSK, in *Geography*, a town and diftrict of Ruffia, in the government of Ufa, feated on the Bugulm, a rivulet that falls into the Ik; 112 miles W. of Ufa.

BUGURUSLANK, a town of Ruffia, in the government

part of Ural, situated on the Kama; 148 miles W.S.W. of Ufa.

BUKUTCHANI, a town of Siberia, 168 miles E. of Eniseisk.

BUHEL, or **BUHL**, a town of Germany, in the circle of Swabia, and margraviate of Baden, 6 miles S.W. of Baden-Baden.

BUHLITZ, a town of Germany, in the circle of Upper Saxony and Farther Pomerania.

BUI, a town of Russia, in a district of the same name, pertaining to the government of Kostroma, seated on the river Kostroma, at its junction with the river Vara.

Bui, a river of Russia, which joins the Kama near Mulem.

BUIE, a strong town of Istria, belonging to the states of Venice, the residence of a governor; 9 miles S. of Capo d'Istria.

BUILDING, *Art of*. The art of building is, perhaps, the most ancient of all arts; clothing is rejected or dispensed with by some savages, and in some favoured climates the arts of procuring food are rendered almost unnecessary by the unsolicited bounty of nature; but we are acquainted with no people that do not form dwellings, places of shelter and security during the night, of assembly to the family, and store-houses of the property, however trifling, that none are without. It is not even confined to man; birds, beasts, and insects have their architecture; but their modes, inspired by instinct, are invariable as the operations of nature; to man alone is given the principle of improvement.

The forms and methods of building depend essentially on the nature of the materials furnished by the country, and the state of society among its inhabitants; and, accordingly, nations very remote in situation, and distant in time, have resembled one another in these particulars. Vitruvius relates that the Colchians, in the kingdom of Pontus, where they abound in forests, fix trees in the earth close together in ranks to the right and left, leaving as much space between them as the length of the trees will permit; upon the ends others are laid transversely, which enclose the space for habitation in the middle; then at the top the four angles are braced together with alternate beams, and the roof is also formed by beams laid across from the extreme angles gradually converging, and rising from the four sides to the middle point at the top, and then covered over with boughs and loam. The interstices which remain in the walls, on account of the coarseness of the materials, are stopped with chips and loam. The reader will observe how accurately this passage describes the log-houses of the American back-settlers. On the other hand, the Phrygians (continues Vitruvius) who inhabit a champaign country, destitute of timber, select little natural hills, excavate them in the middle, dig an entrance, and widen the space within as much as the nature of the place will permit; above they fix stakes in a pyramidal form, and cover them with reeds or straw, heaping thereon great piles of earth. This kind of covering renders them very warm in winter and cool in summer. The habitations of the Phrygians thus described, appear to resemble very nearly the subterraneous dwellings of the Samoyedes and Greenlanders. The kind of cabin, however, most frequently found among barbarous nations, is of a conical shape, formed by branches of trees interlacing one another, and meeting in a point at the summit, their exterior surface being covered with reeds, or leaves, or clay. Such are the wigwags of the North American Indians, and the kraals of the Hottentots and Caffres.

But to proceed to civilized nations. The edifices of the Egyptians, which are regarded as the earliest monuments of

wrought stone, are also the most distinguished in that method. The immense quarries of Egypt probably inspired the taste, as they furnished the materials, while the periodical overflows of the Nile facilitated their transport. Thus favoured by nature, the energetic industry of the ancient Egyptians delighted in every thing wonderful and gigantic; the pyramids, immortal as the country, proud tombs which have long outlived the memory of the mighty kings whose ashes they contain; granite temples, extensive as towns, and laboured as cabinets, temples which enclose in their courts, or support upon their roofs villages of the modern inhabitants; mile-long avenues of sphinxes, colossal statues, and obelisks. The art of building, among the Egyptians, was reduced to the simplest principles; unacquainted with arches, the doorways and other openings were covered with solid lintels, and the temples roofed with massy slabs, the walls, columns, and entablatures were formed of stones of the largest size, perfectly wrought, and laid in horizontal courses, without cement or ligatures; the walls were of enormous thickness, and generally diminishing upwards, with a regular slope, in the manner of fortifications. The passage within the great pyramid is roofed in a singular manner with courses of stones projecting over one another, like inverted steps, till they meet at the summit; thus shewing a method of ceiling with stone which may be regarded as intermediate between the use of lintels and of arches. Some of the tombs also present examples of vaults hollowed in the solid rock, and of niches. So far, and, according to our present information, no farther did the Egyptians proceed towards the discovery of arches. But we expect with impatience the account to be published by the National Institute of France, when accurate measurements, correct drawings, and minute research, conducted under all the advantages of leisure and protection, will replace the hasty sketches and imperfect remarks of individuals, who, though deserving of applause and gratitude for having done so much, under circumstances of danger and discouragement, have left still more to be desired. The size of the masses of stone employed in these constructions is altogether astonishing, and displays mechanical skill and energy, which leave far behind all the similar enterprises of modern nations. Thus, in the temple of Hermopolis, one of the least of the remains, the columns are 9 feet 6 inches in diameter, the architrave is composed of five stones, each 23 feet long, and the frieze of as many; the only remaining stone of the cornice is in length 36 feet. Of the hundred columns of the portico of the temple at Karnac, the least is in diameter 8 feet, and the greatest 12½ feet. The two obelisks at Luxor, of rose-coloured granite, are still 70 feet above the ground, and to judge by the depth to which the colossal statues which accompany them are buried, we may reckon about 50 feet more concealed from the eye, making in all 100 feet for the height of these monuments. Their preservation is perfect; the hieroglyphics with which they are covered are cut in deep and in relief at the bottom, and shew the bold hand of a master, and a beautiful finish. (Denon's Travels in Egypt.) But the account which Herodotus gives of the monolithic chapel of the temple of Latona, at Buttic, is the most extraordinary; it was 40 cubits in every dimension, and was covered by another single stone, 40 cubits square, and 4 cubits thick. The same historian also informs us, that this enormous load was brought on rafts from the island of Plaloe to Buttic, a distance of 200 leagues. This is undoubtedly the greatest weight that has ever been moved by the power of man.

The wonders of human industry also characterize the monuments of the ancient inhabitants of India; but their efforts were directed, almost exclusively, to excavation. The

BUILDING.

caves of Elephantina and Salfette, the sculptured rocks of Mavalipuram, and, above all, the vast temples scooped in the granite mountains of Ellora, rival, in the incalculable labour of their execution, the works of the Egyptians.

The remains of Persepolis retrace the style of Egypt; from whence it appears, that the Persians received the art of building in wrought stone. Diodorus Siculus relates, that it was not till after the conquest of Egypt that they built the famous palaces of Sufa and Persepolis, and that these great works were directed by Egyptian architects.

The same taste for gigantic constructions and extraordinary works in large stones is found among nations who, without communication with those already mentioned, must receive it from nature alone. When the Spaniards conquered Mexico and Peru, they remarked that the natives were accustomed to build edifices with large stones, perfectly wrought and jointed, and laid without mortar; they had also transported from great distances masses of extraordinary dimensions. Stonehenge, and various works of the same nature, in our own country and on the continent, may also be mentioned as efforts of energetic construction, which had preceded every thing of finish and ornament. Thus it should appear that this mode of building has every where been adopted previous to that with small stones and mortar.

The inhabitants of countries deprived of stone quarries supplied the deficiency by means of bricks. These were at first used crude, being merely dried in the sun, during a considerable time; but at length the manufacturers found the method by baking them to form bricks as solid and durable as stone. Of this material were built the walls of Babylon and the temple of Belus, the most ancient example of this mode of construction which history records, and which were reckoned among the wonders of the world. We also learn that bitumen was used as cement in these buildings, which renders it probable that at this period the method of reducing calcareous stones into lime to form mortar was not known.

It is, however, to the discovery of lime, that we owe the durability and perfection of cementitious building. Bitumen forms a porous connection which the air dissolves and the action of the sun evaporates, while calcareous cements are capable of acquiring a hardness superior to that of the generality of bricks and building stones.

The buildings of the Greeks were at first of wood and clay; but they soon substituted stone and marble to the beams and posts which formed their original edifices; and these were so regular and beautiful, that they offered a model, which art never lost sight of in the most sumptuous decorations. From this imitation arose the orders of architecture, and a reasoned system, which, assigning to every member its use and situation, preserved its original form, and perpetuated the memory of the ancient art of building. The Greeks, favoured by nature with abundant quarries of marble and other building stones of the best quality, proceeded on the same simple principles of construction which characterize the Egyptian monuments: large blocks of stone squared with mathematical accuracy, and laid without cement; openings covered with lintels, with a few exceptions of arches and vaults in the theatres and gymnasia; pediment roofs frequently covered with marble tiles. The observations of Mr. Reverly, given in the preface to the third volume of Stewart's "Antiquities of Athens," deserve transcription. "I shall add a few words on the construction of the buildings of Athens, which have not been mentioned in this work. The temple of Minerva is an example of this important part of their architecture. The columns are all constructed of single blocks in diameter, and in courses of more than a diameter in height: the wall

enclosing the cell of the temple, is formed of a single course of marble blocks in thickness, shewing a face inside and outside, the vertical joints corresponding over each other, and in seventeen horizontal courses, reckoning from the bottom of the architrave to the top of the upper step, rising to a height of thirty-three feet. The capitals consist each of one single block, 2, 9, 9, high, and the architrave lies upon them without any other precaution being taken to relieve the weight from the projecting edges of the abacus, than the most extreme accuracy in the two surfaces of the underface or soffit of the architrave, and the top of the abacules, to render them perfectly parallel. The architraves are composed of three blocks, from face to back, each extending from centre to centre of the columns, and each block also the whole height of the architrave, and of equal thickness. The frieze is in two courses in height, and each course wants so much of being the whole thickness of the frieze, as allows the metope, with the sculpture, which is cut on a thin slab, to lie against it. The triglyphs tail in in one height, but do not go through. I observed that a triglyph, lying among the ruins, was so formed, that the back of the block was considerably narrower where it went into the frieze than the breadth of the triglyph, so that each extremity of the triglyph projected on to the face of the slab of the metope several inches, thus forming a rebate, which enclosed the metope. The cornice is in blocks, which are the width of one mutule and one space, their ends forming a complete course on the inside. The tympanum of the pediment is composed of one course of upright slabs, in the outside face, with horizontal courses behind them. The pavement, of which great part remains, is in squares of equal size, large and thick; the joints, as is the universal practice at Athens, are cut with the most mathematical precision, and are extremely difficult to discover in those parts which have taken a dark tint." "The perfect state in which these monuments remain, which have not been destroyed by violence, is one proof of the judgment with which they were constructed. The temple of Minerva would have been entire, except its timber roof, at this day, if a bomb had not been thrown into it by the Venetians, when it was used as the powder magazine of the Turks. The propylea, applied to the same purpose, was struck by lightning, and blown up. The small temple of Theseus is almost as entire as when it was first erected. Even so small a building as the Choragic monument of Lysicrates is now entire, a circumstance arising chiefly from the great judgment shewn in its construction, by erecting it with large blocks, and consolidating the whole with a roof wisely made of one single piece of marble."

The erection of porticos required a frequent employment of very considerable blocks, and accordingly implied great skill in the art of transporting and elevating these masses. Vitruvius celebrates the simple and ingenious method practised by Ctesiphon, in conveying the shafts of the columns of the temple of Diana at Ephesus from the quarries, which were in single stones, sixty feet long; these, by means of axle-trees, adapted at each end, were made to revolve in the manner of a garden-roller.

The ancient Etruscans have left monuments of the same taste in the art of building; however, it is to them that is generally ascribed the method of building with small stones and mortar, at least, it is in the country which they inhabited, that are found the most ancient vestiges of this mode of construction. This method was carried to perfection by the Romans, who were also probably the inventors of domes. Their first temples were round and vaulted, as those of Quirinus, Romulus, Faunus, Cybele, Vesta, &c. Cossutius was the first Roman architect who built after the manner of the Greeks, about

200 years before the Christian era. From this period, though the Romans adopted the Grecian architecture, they did not reject their original mode of construction. Their most considerable edifices are built with pebbles and rubble stones, grouted in mortar, with the arches and angles and facings of brick, or small rubble stones squared, and strengthened at intervals, with regular bonding courses of stone or brick running through the whole thickness. The walls, so built, were generally incrusts with stucco or marble. This method of building is much more expeditious and economical than constructions of wrought stone, which occasion a considerable waste of materials, extraordinary labour in dressing and squaring, and necessitate great expence in removing and elevating. By this method the Romans, employing all kinds of workmen, and materials to the smallest fragments, were enabled to raise the prodigious number of edifices which surpass, in extent, the monuments of any other people.

Vitruvius describes the different kinds of wall used in his time in this manner. The sorts of walls are the *reticulated*, which is now generally used, and the ancient, which is also called the *incertain*. Of these two, the reticulated is the handsomest; but the joints are so ordered, that in all parts the courses have an infirm position; whereas, in the incertain, the materials rest firmly one upon the other, and are interwoven together, so that they are much stronger than the reticulated, though not so handsome. Both sorts are formed of very small pieces, that the walls, being saturated with mortar, may endure the longer; for the stones being of a porous and spongy nature, absorb the moisture from the mortar, and when there is abundance of mortar, the wall having more humidity, will not so soon decay, but will, on that account, be rendered more durable; for as soon as the humidity is extracted from the mortar by the suction of the stones, then the lime and sand separating, the cement is dissolved, and the mortar, no longer uniting the materials, the walls soon become ruinous. This may be observed in some tombs near the city, which are built with marble, or hewn stone, and the internal parts rammed with rubble stone; the mortar being, by length of time, drained of its humidity by the suction of the stones, and the union of the joints being dissolved, they separate, and fall to ruin. To avoid this error, (Vitruvius proceeds), the middle space must be strengthened with abutments of the red hewn stone, or bricks, or common flints built in walls two feet thick, and bound to the front with cramps. Another sort, is that called by the Greeks *empletion*, which (says Vitruvius), is also used by our villagers. The faces of the stones in this kind are smooth, the rest is left as it grows in the quarry, being secured with alternate joints and mortar; and our artificers quickly raising a shell, which serves for the faces of the wall, fill the middle with rubble and mortar. But the Greeks do not build in that manner; they not only build the facing courses regularly, but also use alternate joints throughout the whole thickness, not ramming the middle with rubble, but building it the same as the face: besides this, they dispose single pieces, which they call *diatomos*, in the thickness of the wall, extending from one face to the other, which bind and exceedingly strengthen the walls.

The works in wrought stone of the Romans, were, as well as those of the Greeks, constructed without cement; but they used cramps and ligatures of iron and bronze in extraordinary profusion. It is remarked by Mr. Wood, in describing the great temple of Balbec, probably a work of Antoninus Pius, that "the shafts of these columns consist of three pieces, joined most exactly without cement, which is used in no part of these buildings, and strengthened by

iron pins received into a socket worked in each stone. Most of the bases had two such sockets, one circular and another square, corresponding to two others of the same shape and dimensions in the underpart of the shaft. By measuring some of the largest of these, which were circular, we found the iron pin which they received must have been a foot long, and above a foot in diameter. When we observed, by finding such sockets in all the fallen fragments of this temple, that each stone had probably been strengthened in this manner, we were less surprised at the quantities of iron said to have been carried away by the Bashaws of Damascus at different times from these ruins, on which they had left evident marks of their violent, though unsuccessful, attempts to get at the iron of the columns which are standing. How much this method contributes to the strength of the building, is remarkably seen in the most entire temple, where a column has fallen against the wall of the cell with such violence, as to beat in the stone it fell against, and break part of the shaft, while the joinings of the same shaft have not been in the least opened by the shock." The use of metal was not confined to cramps and bolts, the ancients even constructed roofs of bronze; the portico of the Pantheon, before its spoliation by Urban VIII., was covered with beams and rafters of this material. Tiled with marble, and supported with granite columns; this portico presented a rare combination of grand and beautiful architecture, with the richest materials, and the appearance of indestructibility. Serlio has preserved a design of this metallic roof, which was formed of beams and rafters, after the usual methods of carpentry; these were united and secured by pins and nails of the same metal; and as well to economize the material, as to lessen the weight of the whole, the pieces were hollow. The interior of the portico is divided by the columns into three divisions, or aisles; the two lateral were ceiled, and that in the middle vaulted, also with bronze. The quantity and beauty of this metal may be appreciated by the throne of St. Peter, and the Baldaquin of the same cathedral, the most considerable, beyond comparison, of modern works in bronze, and whose enormous mass is not the equivalent of the spoils of the Pantheon from which they were formed, for an inscription on the portico of this edifice informs us, that the excess of this valuable metal was cast into the cannons of St. Angelo.

Bronze was also used with magnificent profusion in the decoration of buildings; thus many edifices preserve not indeed the ornaments themselves, these have long been torn away by the rapacity of barbarism, but the marks and cramp-holes, by which were attached alto relievos or trophies or inscriptions.

It excites regret to reflect that the means employed by the ancients to increase the beauty and ensure the solidity of their edifices, have, in many instances, only served to accelerate their destruction; the beautiful marbles of the Grecian temples are continually carried off by Turkish carvers of grave stones, or burnt into lime; the inhabitants near the site of the temple of Apollo Didymæus, appear to have been principally supported by this impious manufacture. Palmyra and Balbec have long furnished mines of metal to the neighbouring Bashaws; the Coliseum bears, in innumerable scaffolding holes, the marks of an attempt at its entire ruin in search of the cramps which connect its stones; and the amphitheatre of Nîmes is still blackened by combustions kindled for the same purpose; the temple of Peace, the baths and palaces of the emperors, and indeed almost all the edifices of grandeur and magnificence have been more ruined by the violence of rapine than the injuries of time.

BUILDING.

It may be remarked, before we quit the subject of antique constructions, that the Greeks and Romans in their buildings of wrought stone appear always to have worked only the beds of the stones before placing them in the building, leaving the faces to be worked after the erection of the edifice; an excellent method, which saves from injury the arrises and mouldings. On this account, unfinished columns are sometimes found in their remains; as in the relics of the temple of Apollo Didymæus, near Miletus, may be seen two columns supporting their architrave, with the flutes entirely worked; also, one left standing in its unfinished state, the channels under the capital, and at the base only, being marked out, as a direction to the workmen in completing the flutings, after the structure was raised. (Ionian Antiquities). Similar instances are also found in the island of Delos.

The durability and extreme solidity of the Roman cementitious buildings, in which the mortar has very generally acquired a hardness superior to that of the rubble stones which it connects, compared with the fragility and crumbling nature of the mortar, used by modern builders, had led some to suppose, that the ancients possessed processes and recipes for the formation of cements, the knowledge of which had perished together with many other valuable secrets in the ages of barbarity, which succeeded the fall of the Roman empire. But better information, and the experiments of ingenious men, have exploded this opinion, and there can be no doubt, that proper attention to the choice of lime stone and sand, to the burning of lime, and, above all, care and labour in the mixing and tempering these materials, would enable our workmen to rival those of Rome in this important part of construction. In some instances, this has been tried, and though the lapse of ages may be necessary to make the comparison complete, yet present appearances are sufficient to banish any reasonable fear of the result. See the article CEMENTS, *calcareous*.

Architecture, together with all the arts and sciences that adorn and illustrate humanity, experienced the feebleness and degradation which attended the decline and fall of the Roman empire. Impudent compilers of the spoils of the edifices of happier times, the builders of those ages, have only perpetuated their own ignominy. Constantine was the first of these depredators; he ruined the arch of Trajan to adorn his own with its inappropriate ornaments, and the Mausoleum of Adrian supplied columns to support the aisles of his churches.

In the general confusion occasioned by these practices, it is not to be wondered at that the principles of Grecian architecture, somewhat corrupted in the best times of Rome, should be entirely lost: architraves were omitted and columns were made to support arches and vaults; arcades were every where substituted to colonnades, vaults to ceilings; thus the excessive use of arches and vaults is characteristic of the method of construction adopted in the middle ages.

This corrupted Roman style continued with various and increasing deteriorations, and under different names, as in our own country, of Saxon and Norman, to be the prevailing architecture of Europe till towards the 12th century, when what is generally called the Gothic style prevailed. This is an architecture of singular and original merit, surprising and fantastic, and magnificent and awful; but for the description of Gothic architecture the reader is referred to that article; our business at present is with the modes of building observed in these edifices.

The Gothic mode of construction is an ingenious compendium of building well adapted to the peculiar style of architecture; economical in materials and labour. Rejecting

heavy cornices, architraves, and lintels, of all kinds, the builders had seldom occasion to use stones larger than a man might carry on his back up a ladder from scaffold to scaffold, though they had pulleys and spoked wheels upon occasion. Thus they were readily enabled to raise up their works to an extraordinary height; in which particular they appear to have placed great pride and emulation. Hence the lofty towers and spires, ambitious ornaments that tyrannize over the body of the building, and claim attention at the expence of those useful parts to which they ought, but disdain to be subordinate. The churches were arched over with groined vaulting, which threw the weight on the springing points instead of distributing the pressure equally along the walls, as was the case with the Roman plain vaults and ceilings; the points of pressure from the vaults were opposed by buttresses, and the intermediate spaces of the walls were thin, and occupied with windows; in this respect again differing from Roman construction where the walls are of uniform thickness in their whole extent, without apparent buttresses. The vaulting was ingeniously composed of a skeleton of hewn stone, and the interstices filled in with lighter materials. Thus Mr. Price remarks, in his Observations on the Cathedral Church of Salisbury, that "the groins and principal ribs are of Chiltern stone, but the shell or vaulting between them is of hewn stone and chalk mixed, on top of which is laid a coat of mortar and rubble, of a consistence probably ground in a kind of mill and poured on hot while the lime was bubbling, because by this the whole is so cemented together as to become all of one entire substance. This composition is very remarkable, somewhat resembling the pumice stone, being porous and light, by which it contributes prodigiously to the strength of the whole, and at the same time the least in weight of any contrivance—that perhaps was ever used."

The machine of a Gothic edifice, consisting so essentially of vaults and arches, required great contrivance in balancing and sustaining their pressures; this was effected by means bold, ingenious, but sometimes presumptuously insufficient. The genius of these architects had a tincture of extravagance which led them to sacrifice always the apparent, and too often the real solidity of their buildings to those picturesque and marvellous effects which captivate the imagination of every one, but offend the judgment of the connoisseur. Accordingly these edifices must not expect to rival the duration of the immortal constructions of Greece and Rome.

The pendants from the vaults are among the most pleasing and innocent of the plays of ingenious construction in the Gothic style; but the attempt to substitute weight to buttment, generally observed in the middle aisle pillars of cathedrals, supporting unassisted the pressure of the side vaulting, is a serious defect, which threatens the ruin of these venerable piles. On this account sir Christopher Wren observes, that almost all the cathedrals of the Gothic form are weak and defective in the poise of the aisles. As for the vaults of the nave, they are on both sides equally supported, and propped up from spreading by the bows or flying buttresses which rise from the outward walls of the aisle. But for the vaults of the aisles they are indeed supported on the outside by the buttresses, but inwardly they have no other stay but the pillars themselves, which, as they are usually proportioned, if they stood alone without the weight above could not resist the spreading of the aisle one minute: true indeed the great load above of the walls and vaulting of the nave should seem to confine the pillars in their perpendicular station, that there should be no need of buttment inward; but experience hath shewn
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BUILDING.

the contrary, and there is scarce any Gothic cathedral that I have seen at home or abroad, wherein I have not observed the pillars to yield and bend inwards from the weight of the vault of the aisle."

Hence it appears that the method pursued in erecting these buildings was to insert the springing stones as the work proceeded, but to leave the vaults to be turned after the walls were carried up to their full height and the whole roofed in.

The pointed arch has several advantages over arches formed by one segment of a circle; particularly, as applied to vaults, it will rise with little centering, requires lighter voussairs, and less buttment. The Gothic architects seem to have perpetually calculated the minimum of necessary resistance and solidity, and they displayed considerable skill in aggravating the appearance of boldness by the choice of materials; we have already seen the light composition of their vaults, and on the other hand they frequently used Parbeec marble, a very hard and strong stone for the slender shafts which had to support great weights. The roofs of Gothic buildings are very high pitched, a form more of choice than necessity, rather adopted in compliance with their pointed and pyramidal style of architecture, than necessitated by the climate, as they are generally covered with lead. These roofs are therefore faulty in burdening the walls with an unnecessary load of lead and timber, and they are also deficient in construction by the omission of tie beams to counteract their tendency to spread and thrust out the walls.

Modern architecture, though it has adopted its decorations from the remains of Greek and Roman antiquity, has still retained considerable traces of the Gothic style. These may be observed in the affectation of height, in the ostentatious ornaments of domes and steeples, and in the fondness for complicated forms of plans and multiplicity of parts; and accordingly the construction also is a medium between Gothic temerity and Roman prudence; the balancing of arches and vaults still exercised the skill of the architects; the domes of St. Peter's, of the Vatican, and St. Paul's of London, illustrate the ingenuity and mathematical science of their authors, but we no longer find apparent solidity rejected, or real solidity sacrificed. We have seldom the grand constructions in hewn stone of the Greeks, nor, on the other hand, the economical building of Gothic architects, nor the cementitious walls of the Romans.

Stone, brick, timber, and metal, are our materials. Stone is used rough in rustic buildings, either dry or in mortar; but the stone employed in more finished edifices, either as facing to brickwork, or, where the material is plentiful, in the whole substance of the walling, is used in blocks of moderate size, squared and laid in mortar, and bonded with alternate courses; modern architects, and particularly the French, have shown much ingenuity in the masonry of arches and coives and plat bands. Iron is used plentifully both for cramping stones together and in ligatures to entire walls: thus all considerable domes are strengthened and secured from spreading by strong chains surrounding them; and lead is continually employed in large quantities on roofs. Timber is used in all edifices to form roofs and floors, and to bind and strengthen the walls and foundations; and many buildings are erected entirely with this material. Carpentry is the art in which modern workmen chiefly excel.

The buildings of this country may be comprehended under the following classes: rough stone, like the common houses of the rocky districts, which are either worked dry or with mortar; hewn stone, as the buildings of Bath; brick and stone mixed, in which, as they are always remote

from quarries of stone, that material is the most expensive, and therefore employed in the ornamental parts, as cornices, plat-bands, window sills, and all the members of architecture, and sometimes applied as a facing to the brick wall; in this manner are all the buildings of London; and, lastly, timber, which was formerly the most common of all, and is still a very considerable class; such are all the cottages of the poor out of the rocky districts, and many farm houses and considerable dwellings. These are formed of a frame of timber-work, which in the better sort of houses has its interstices filled in with brick-work, and is called brick nogging, or brick and stud, and then lathed over and plastered, or rough-cast, or stuccoed, or sometimes boarded; the poorer sort, however, are covered with reeds and clay. English buildings are roofed with reed and thatch, which was formerly the most general mode, and is still very prevalent in the country; also with tiles, slate, lead and copper. Slates are used constantly in the stone counties, and brought thence to other parts, as a light, durable, and handsome covering. Tiles are the manufacture of the brick districts, and used there. Lead and copper, as the most expensive materials, are seldom employed to cover entire roofs, but chiefly for gutters and platforms.

Our buildings may justly claim the merit of lightness in construction, economy of labour and materials, and convenient distribution. Their real and evident defect is the want of solidity; this is in great measure to be attributed to the bad quality of the cements, which are composed with such disgraceful carelessness and ignorant haste by the workmen. Our bricks, too, which are made on the principle which pervades all our manufactures of sacrificing every thing to quantity and cheapness, are neither tempered nor burnt sufficiently. In the arts of carpentry and joinery our workmen are peculiarly eminent, both in the bold and skilful construction of roofs and bridges, and in neat and accurate internal finishing.

As the buildings of London are regulated by what is commonly called the *Building Act*, "an act for the further and better regulation of buildings and party walls, and for the more effectual preventing mischiefs by fire, within the cities of London and Westminster and the liberties thereof, and other the parishes, precincts, and places within the weekly bills of mortality, the parishes of St. Mary-le-bone, Paddington, St. Pancras, and St. Luke at Chelsea," which repeals and amends several former acts for the same purpose, it may be proper to give a brief abstract of part of it. This act, passed in the 14th year of the reign of his present majesty, A.D. 1774, begins by dividing all buildings into seven rates or classes, for the purpose of subjecting them to various regulations respecting the thickness of their walls. Cap. 2. The *first rate* comprehends churches and all places of public worship, all buildings for brewing, distilling, soap making, melting of tallow, dyeing, boiling of turpentine, casting brass or iron, refining sugar, and glass making, of whatever dimensions these buildings may be, and also every warehouse, and other buildings whatsoever, not being a dwelling-house, which exceeds three clear stories above ground, exclusive of the rooms in the roof, or which is of the height of 31 feet above the pavement of the street to the top of the coping; and every dwelling-house, which with its offices connected otherwise than by a fence wall, or open passage, exceeds when finished the value of 85ol., or covers more than nine squares of building on the ground floor, (each square containing 100 superficial feet). The regulations for these are, cap. 3 and 4, that all the *external walls* shall be built, at the foundation, of the thickness of two bricks and a half, or 21½ inches, thence to diminish gradually 2½ inches

BUILDING.

inches on each side to the top of the footing, which is to be nine inches high, and two inches below the surface of the paving or flooring of the cellar story; thence, the wall is to be carried up two bricks, or $17\frac{1}{2}$ inches in thickness to the under side of the one pair of stairs floor, and thence, in the thickness of one brick and a half, or 13 inches, up to the under side of the plate under the roof or gutter; and thence, the parapet is to be built in the thickness of one brick, or $8\frac{1}{2}$ inches, with the exception of such parts of the wall as shall be wholly of stone, which may be of the thickness of 14 inches below the ground floor, and nine inches above. The *party walls* of the same buildings are to be built at the foundation three bricks and a half, or two feet six inches and a half in thickness; thence to diminish gradually $4\frac{1}{2}$ inches on each side to the top of the footing, which must be one foot high, and two inches below the cellar floor; thence, the wall is to be built in the thickness of two bricks and a half, or one foot nine inches and a half up to the under side of the ground floor; and thence in the thickness of two bricks, or $17\frac{1}{2}$ inches, up to the under side of the floor of the rooms (if any) in the roof of the highest building adjoining to such party wall; and thence of the thickness of one brick and a half in length, or 13 inches, to the top of the wall.

Cap. 5. defines the *second rate* of buildings, which consists of every warehouse, stable, or other building, not being a dwelling-house, that exceeds two clear stories, and does not contain more than three clear stories above ground, or which is of the height of 22 feet and under 31 feet from the pavement to the top of the coping; and also every dwelling-house which with its offices exceeds the value of 300l., and does not amount to more than 850l., or which covers more than five, and less than nine squares of building. Cap. 6 and 7. The *external walls* of the second rate are to be built at the foundation in two bricks thick, and diminish regularly $2\frac{1}{4}$ inches on each side to the top of the footing, which must be nine inches high; thence to be carried up in one brick and a half thick to the under side of the one pair of stairs floor; and thence to the under side of the coping of the parapet in the thickness of one brick; stone work excepted, which may be of the thickness of nine inches above the ground floor. The *party walls* are to be three bricks and a half at the foundation, diminishing $4\frac{1}{2}$ inches on each side to the top of the footing, which is to be nine inches high; thence, the wall must be two bricks and a half thick up to the under side of the ground floor; thence, two bricks thick up to the under side of the floor of the two pair of stairs story; and thence, of the thickness of one brick and a half to the top of the wall.

Cap. 8. The *third rate* of building is defined to include every warehouse, stable, and other building, not being a dwelling-house, which exceeds one clear story, or does not contain two clear stories above ground, or which is above 13 feet, and less than 22 feet in height from the pavement to the top of the coping, and also every dwelling-house, which with its offices exceeds the value of 150l., and does not amount to 300l., or which covers more than three and a half and less than nine squares of building. Cap. 9 and 10. The *external walls* of such buildings are to be two bricks thick at the foundation, and to diminish $2\frac{1}{2}$ inches on each side to the top of the footing, which must be six inches high; thence, the wall is to be carried up one brick and a half thick to the under side of the ground floor, and thence, one brick in thickness to the coping of the parapet. The *party walls* are to be three bricks thick at the foundation, diminishing $4\frac{1}{2}$ inches on each side to the top of the footing, which is to be nine inches high, and thence, to be built two bricks in thickness to the under side of the ground floor,

and thence, one brick and a half thick to the top of such wall.

Cap. 11. The *fourth rate* of building which is defined to include every warehouse, stable, or other building, not being a dwelling-house, which does not exceed one clear story above ground, or the height of 13 feet from the pavement; and every dwelling-house which with its offices does not exceed the value of 150l., or three squares and a half of building. Cap. 12 and 13. The *external walls* of this rate are to be similar to those of the third rate. The *party walls* must be two bricks thick at the foundation, diminishing $2\frac{1}{2}$ inches on each side to the top of the footing, which must be nine inches high; thence, to be carried up in one brick and a half thick to the under side of the ground floor; and thence, one brick in thickness to the top of such wall.

Cap. 18. Every building except such as are particularly included in the first or seventh rates, which is at the distance of four feet and not eight feet from any public road, and which is detached from any building not in the same possession, 16 feet and less than 30 feet, is declared to be of the *fifth rate*, and may be built of any dimensions whatever.

Cap. 19. The *sixth rate* only differs from the fifth in demanding, that such buildings may be eight feet distant from the street or road, and detached 30 feet from other buildings; and this rate may be built of any dimensions, and with any materials whatever.

Cap. 20. Every crane-house on any wharf or quay, and every shamble, windmill, or water-mill, and also every building situated without the cities of London and Westminster, and the liberties thereof, used as workshops for tanners, fellmongers, glue makers, calicoe printers, whittlers, whitening makers, curriers, buckram stiffeners, oil-cloth painters, wool staplers, throwsters, parchment makers, is declared to be of the *seventh rate* of building, and may be built of any dimensions whatever. Cap. 21. Crane-houses must be built externally of stone, brick, slate, tile, oak, elm, steel, iron, or brass; and all other buildings of the seventh class may be erected of any materials whatever, but must not be covered with pitch, tar, or any inflammable composition.

Cap. 22. Every office which shall be entirely detached from the building to which it belongs, or connected therewith only by a fence, wall, or covered passage, open on one or both sides, shall be deemed to be of the rate or class of building such office would be of, if it did not appertain to any other building.

Cap. 14. The materials of party walls are to be brick or stone, and no timber to be used in them, except such as is necessary for planking, bridging, or piling the foundation; and cap. 27. for templets, chains and bond, and also the ends of girders, beams, purlins, binding and trimming joists, or other principal timbers, observing always to leave $8\frac{1}{2}$ inches of solid brick work between the ends and sides of such timbers and the timbers of adjoining buildings. Cap. 26. Party walls are to be carried up one foot six inches above the roof of the highest adjoining building, which shall gable against them; and to be one foot above the gutters. Cap. 29. Chimnies built in party walls are subject to the following regulations: the back of the chimney from the hearth, to 12 inches above the mantle, is to be built in 13 inches thick in the basement story, and $8\frac{1}{2}$ inches thick in the upper stories; and in those cases where chimnies are built back to back on each side of a party wall, the entire thickness of the backs is to be, in first rate houses, eighteen inches in the cellar story, and thirteen inches in the upper stories, and in the second, third, and fourth rates, the thickness in the cellar story is to be thirteen inches, and eight inches and a half in the upper stories.

Cap.

Cap. 38. Every owner of any building within the limits of this act, who may think it necessary to repair or rebuild the party wall between his and the adjoining premises, is to give three months notice in writing to the owner of the adjoining building, appointing a survey to be made of the said wall, and naming two surveyors or able workmen on his part, and requiring the other party also to name two surveyors to meet at an appointed place, to view and certify the state of the wall. But if the owner of the adjoining premises shall neglect to appoint two surveyors on his part, according to notice, then the two surveyors first named, together with two other surveyors, to be named by the party giving notice, may, within six days after the time appointed in the notice, view the party wall, and certify in writing under their hands to the court of mayor and aldermen, or to the justices of the peace in their next quarter or general sessions as the case may be, the condition of the party wall, and whether the same, or any part thereof, ought to be repaired or pulled down and rebuilt; and, in case the major part of the surveyors appointed shall not, within the space of a month from the appointment, sign the certificate, then it shall be lawful for any one or more of the justices of the peace for London or Westminster, or the county of Middlesex or Surry, as the case may be, to appoint one other surveyor to be added to the surveyors before appointed, all or the major part of whom are to meet, and view the party wall; and in case the major part of them shall certify the wall to be decayed or ruinous, and not sufficiently secure from fire, then, within three days from the making such certificate, a copy of it is to be delivered to the owner of the adjoining building, or affixed to the door if it is unoccupied, and also filed with the clerk of the peace in the city, county, or liberty, where such wall is situate; and the last mentioned owners may appeal from the certificate to the next general or quarter sessions, when the justices are to summon before them one or more of the surveyors, and examine the matter upon oath, and thereupon make such orders as they think just.

Cap. 41. The person at whose expence a party wall is built, shall be reimbursed by the owner of the adjoining premises who makes use of the wall, a part of the expence in the following proportion. If the adjoining building be of the same, or a superior class to the building belonging to the person at whose expence the party wall was constructed, the owner of such adjoining building shall pay one moiety of the expence of so much of the party wall as he shall make use of: but if the adjoining building be of an inferior rate, the owner shall pay a sum equal to a moiety of the expence of building a party wall, as required by the act for such class of building.

Cap. 46. Door and window frames are to be set in reveals and recesses, at least four inches from the front of the building, except the door cases of warehouses. Cap. 48. Every coping, cornice, fascia, window dressing, portico, balcony, balustrade, or other external decoration, or projection whatever, is required to be made externally of brick, stone, burnt clay, or artificial stone, stucco, lead, or iron, except the cornices and dressings to shop windows, or the covered ways to any building. No water is to be suffered to drip next to any public way from the roof of any building, except from the roofs of porticos or other outbuildings, but to be conveyed by metal pipes, or wooden troughs, or brick or stone funnels into drains or reservoirs.

Cap. 49. No bow window or other projection shall be built next to any public street, so as to extend beyond the general line of the fronts of the houses in the said streets, except such projections as are necessary for copings, cor-

nices, facias, door and window dressings, or for open porticos, steps, or iron pallisades; and also, except shop windows, which are allowed in streets 30 feet wide or more, to project ten inches from the line of building, and five inches in streets of less width.

Cap. 53. No stack of warehouses shall contain more than 35 squares of building on the ground plan, except such warehouses are divided by one or more party walls into divisions of not more than 35 squares each, and any communications made through the party walls are to have door cases and fills of stone, and iron doors. Stables are only to contain 25 squares in one division, with the same regulations.

Cap. 55. If any building of the first, second, third, or fourth rates, (except the inns of court or chancery, the royal exchange, companies' halls, and except warehouses and dwelling houses, let at a rack rent for not more than 25 pounds by the year) shall be converted into two or more dwelling houses, work-shops, stables, or other buildings which shall be in distinct tenures on the ground floor, then each such tenement shall be considered as a separate building, and be divided by party walls.

Cap. 59. No iron, tin, copper, or other pipe or funnel for conveying smoke or steam, is allowed to be in front of any building next to a public street, nor in the inside of any building nearer than 14 inches, to any timber or other combustible material.

Cap. 62. The mayor and aldermen of the city of London, and the justices of the peace for the county of Middlesex, Surry, the city of Westminster, and the liberty of the tower of London, are empowered to appoint surveyors to see the rules and regulations of this act properly complied with: and cap. 63. before any building is begun to be erected, the master workman is bound to give 24 hours notice thereof to the surveyor of the district, in which the building is, who is to attend and view the building, and enforce the observance of the act. The fees to be paid by the builder to the surveyor are, for a building of the first rate 3l. 10s., and for an alteration or addition to the same 1l. 15s.; for a building of the second rate 3l. 3s., and for an alteration 1l. 10s.; for the third rate 2l. 10s., and 1l. 5s.; and for the fourth rate 1l. 1s. and 15 shillings.

BUILDING, *Ship*. See SHIP.

BUILT, in *Sea Language*, is an epithet applied to ships, denoting their peculiar form and structure, and distinguishing some from others of a different class or nation. Thus we use *frigate-built*, *galley-built*, &c. *English-built*, *French-built*, &c.

BUILTH, or BUALLT, in *Geography*, is a market town of Brecknockshire, Wales, finely situated on the banks of the river Wye, over which there is a handsome stone bridge. According to some antiquaries, here was the Roman station which Ptolemy calls Bulleum Silurum. Several intrenchments are still remaining in the vicinity of the town, and some Roman bricks, inscribed LEG: II. have been found here. The Chronicle of Caradoc relates, that the Danes, in 893, who had been vanquished and harassed by Alfred, fled to this part of the country, and, among other devastations, nearly demolished the town of Builth. It was, however, again rebuilt and fortified with a strong castle, and again suffered nearly a similar fate, in 1217, by Reynald de Bruse, who then broke off his alliance with Llewelyn ap Iorwerth, and united with Henry III. In 1221 he was besieged in this fortress by a party of Welsh lords; but Henry, to whom he had remained constant, came with an army and raised the siege. About 1256, we find this fortress in the possession of Rhys Fychan, whom Llewelyn ap Gruffydd defeated and

forced

forced out of Builth. In various other wars between the English and Welsh, this place was alternately occupied by the conquering power, and in each conflict experienced some damages.

This town is singularly built on two parallel terraces, and forms two streets on the side of a steep declivity. The upper street is clean and respectable, but the lower, and more populous street, on the banks of the Wye, is narrow, and most of the houses have a poor and mean appearance. Builth, from its contiguity to Herefordshire, and from the combined attractions of its salubrious air, grand and interesting scenery, and the quality of its waters, is much resorted to by strangers. It is provided with two weekly markets, and three fairs annually. Builth is 171 miles N.W. from London, 15 from Brecknock, and contains 994 houses, and 5159 inhabitants.

About one mile N.W. of Builth is a celebrated mineral spring, called The Park wells; and about seven miles N.E. are Llandrindod-wells, consisting of three springs. These waters are esteemed of highly medicinal qualities, and are recommended by the faculty in many disorders of the human frame. Dr. Lindon has written a treatise on their peculiar properties. These wells are situated on a common, on which are a few scattered houses, and a large building for the accommodation of those who visit them. The wells of Llanwrthyd, which are similar in quality to some of those of Llandrindod, lie on the other side, at no great distance from Builth. Malkin's Tour in South Wales, 4to. 1804. Evans's Cambrian Itinerary, 8vo. 1801.

BUINAH POINT, a cape on the west coast of Ireland, being the southern point of the entrance into Newport or Clew bay, in the county of Mayo. Near it are some rocks and a ledge which require the attention of mariners. In some nautical books it is called *Ruinaha*. W. long. $9^{\circ} 45'$. N. lat. $53^{\circ} 46'$. McKenzie. Keaufort.

BUINSK, a town and district of Russia, in the government of Simbirsk, seated on the river Sviaga; 36 miles N.N.W. of Simbirsk.

BUIS, LE, a town of France, in the department of the Drôme, and chief place of a canton in the district of Nyons, $2\frac{1}{2}$ leagues S.E. of it, and seated on the Oreze. The town contains 2215, and the canton 8932 inhabitants; the territory comprehends 325 kilometres and 24 communes. The district called Buis, before the revolution, was a territory of Dauphiny, small and mountainous, but moderately fertile.

BUISKOI, a town of Siberia, 64 miles S.E. of Nertshinsk.

BUITRAGA, a small town of Spain, in New Castile, seated on a rock, which is fortified both by art and nature.

BUKANS. See **BUGGANZ**.

BUKARI. See **BUCCARI**.

BUKI, a town of Poland, in the palatinate of Kiev, 44 miles south of Bialacerkiew. N. lat. $49^{\circ} 25'$. E. long. $30^{\circ} 28'$.

BUKO, a small town of Germany, in the ancient duchy of Mecklenburg, called *New-Buko*, by way of distinction from Old Buko, a neighbouring church village.

BUKOVITZE, a town of Croatia; 14 miles S.E. of Carlstadt or Carlowitz.

BUKTARMINSKOI, MOUNTAIN, a branch of the Altay mountains of Russia, which commences in the superior region of the river Buktarma, at the frontier heights between the Chinese and the Russian empires, declines from the south towards the north and west, and accompanies the fore-mentioned stream, on both its sides, till its confluence with the

Irtish; It reaches to east and north-east as far as the mountains that run along the Kokufan, and towards the north up to those that follow the course of the Ulba. From the Binskoi snow mountains up to the head of the Uiman, which falls into the Kokufan, it forms a lofty ridge, rising almost throughout in high summits of snow, and on this side extends its greatest height to the source of the last-mentioned river. This huge mountain, as yet little known, and partly inaccessible, consists, as far as it has been examined, in its highest points, of various kinds of granite, porphyry, and flint breccia. But in its chasms, and particularly towards the shore of the main or most considerable rivers, different sorts of schistus, chalk-stone, marl, breccia, and sand-stone are frequently met with. Jasper is found in abundance, with porphyry and trapp, in the superior regions. Of the chalk-mountains seen in the lower confines of the Buktarma, some are very craggy, and have a number of caverns. In these mountains there has hitherto been explored but one mine, the Buktarminskoi, with any hope of success. See **ALTAY**.

BUKUKUNSKOI KAMEN, a fortress of Siberia; 120 miles S.W. of Veroninsk.

BUKUPIENICK, a town of Poland, in the palatinate of Lublin; 22 miles S. of Lublin.

BUL, in the *Hebrew Calendar*, the eighth month of the ecclesiastical, and second of the civil year, since called *Marfhevan*; it answers to our October, and has nine and twenty days.

BUL, in *Ichthyology*, one of the English names for the common flounder.

BULAC, in *Geography*. See **BOVLAC**.

BULACAN, a small province of the island of Laçon, or Manila, lying between Panpanga and Tondo. It abounds in rice and palm-wine.

BULACH, a town of Switzerland, in the canton of Zurich, and a prefecture of the same name, which first entered into an alliance with Zurich, in 1407. The inhabitants are Protestants; distant 8 miles N. from Zurich. N. lat. $47^{\circ} 25'$. E. long. $8^{\circ} 27'$.

BULACH, a town of Germany, in the circle of Swabia, and duchy of Wurtemberg. In the annexed bailiwick is a mountain, which furnishes iron and copper ores; 20 miles W.S.W. of Stuttgart, and 4 S.W. of Calu.

BULAFO, a musical instrument, much used by the Negroes of Guinea, &c. It consists of several pipes made of hard wood, set in order; which diminish by little and little in length, and are tied together with thongs of thin leather twisted about small round wands, put between each of the pipes, so as to form a small interstice. They play on it with sticks, the ends of which are covered with leather, to make the sound less harsh.

BULAKUAN, in *Geography*, a remarkable castle in the empire of Morocco, situate on the banks of the Morbeya, in the province of Duquella. It stands in a wild and barren spot, on the summit of a commanding eminence more than 200 feet high, and forms a pyramid, with rounded angles; and a large river runs beneath it, which from its depth and rapidity, inspires a kind of horror. This castle was built at the close of the 13th century, by Muley Abdalmomen, the first king of the race of Moahedins; but many additions were made to it by Muley Abdallah, son of Muley Ishmael. This prince caused subterraneous passages to be dug at a great expence for procuring water from the river; and in order to secure his water-carriers from the fire of the musketry, he built conduits, which brought the waters from the neighbouring mountains, the ruins of which are still visible on the road from Bulakuan to Morocco. Near the

castle is a village, and another before you pass the river; each of which contains about 200 houses, or thatched huts, being piles of rough hewn stone without mortar. Both these villages, inhabited by Moors, are exempt from taxes, in consideration of their giving needed assistance in crossing the river. Although the castle stands in a sandy barren situation, the banks of the river below it present to view well-cultivated gardens, with their orchards and vineyards. Each garden contains a windmill and a bucket, for supplying it with water. The only ferry-boat for passing the river near this castle, is a raft, composed, for the occasion, of reeds, to which skins, inflated with wind, are tied with cords, made of the palm-leaf. This is sustained by several Moors, who, whilst they swim, guide and support it by their shoulders, in spite of the rapidity of the current. On this crazy craft travellers and their effects are transported. We learn from Livy, that, during the second Punic war, when Hannibal went from Spain to Italy, a part of his army passed the Rhone, the Ticino, and the Po, on goat-skins filled with air. A kind of temporary bridge is constructed for the passage of the emperor, consisting of two thick oiled cables, fastened to large piles on each bank of the river. These cables are formed into a kind of hurdle, by passing through them iron stakes about 5 feet long, and laying upon it fods 6 inches thick. *Chenier's Present State of the Empire of Morocco.*

BULAM, or **BOOLAM**, an island in the Atlantic, near the coast of Africa, at the mouth of the Rio Grande, $1\frac{1}{2}$ league from the continent, and about 18 leagues long, and from 4 to 5 broad. N. lat. 11° . W. long. $14^{\circ} 50'$. Some have considered it as one of the Bissago isles. See *BISSAGOS*. The whole coast of this island is described as bordered with woods, beyond which the country is singularly fertile, rich, and beautiful. It was formerly uninhabited, and cultivated by the natives of the other islands, who visited it in seed-time and harvest, and returned home for the rest of the year. It was found to be abundantly productive of rice, maize, millet, fruits, and roots. The ground is said to rise imperceptibly from the shore for the space of 2 leagues, thus exhibiting a most agreeable prospect. This ascent serves as a base to higher mountains, which stand in the centre of the island, covered with fine wood, and separated by beautiful vallies, with such regularity, that nature would seem to have been improved by art. This island was recommended, so long ago as the commencement of the last century, by M. de la Brue, to the French government, as a fit place for a settlement; and the advice was repeated, in 1767, by the abbé Demanet. However, during the year 1791, a society was formed in London for establishing a settlement on some eligible spot on or near the coast of Africa. Those who formed this association, allured by the flattering information which they had received of the island of Bulam, fixed on this as the object of their destination. The subscribers were to receive a grant of 500 acres of land for the sum of 50l. and in that proportion for any greater or less number of acres, as far as 2000. In the space of one month after opening the subscription, 9500l. were paid into the hands of trustees. After having encountered various difficulties, the adventurers arrived at Bulam, and immediately took possession of it by hoisting the British flag. The natives unexpectedly attacked the new comers; killed some of them, and obliged the others to relinquish what they had obtained. Accordingly, as they were thus compelled to abandon it, they sought for refuge in a settlement belonging to the Portuguese, where most of the unfortunate adventurers became victims to the climate of the country. Mr. Montefiore, who was a principal agent in this business, despairing of the colonization of Bulam, embarked for *SIERA LEONI*, of which he gives a very favourable

account. However, from another account, compiled from the records of the Bulam society, we are led to entertain a more favourable opinion of the situation and prospects of this colony. Mr. Beaver, who resided at Bulam as chief in command, in a letter dated July 1793, expresses great confidence of the final success of the undertaking; declaring that, with sufficient support (not military; every thing having been fairly purchased, and amicably settled with the neighbouring Africans) "not one-tenth part of what had been afforded to the Sierra Leone company," he could, long ago, "have added to our present territories land sufficient to maintain 500,000 people, and at very little expence." He concludes his letter, addressed to the trustees of the Bulam association, with observing, "that if the good people of England knew but one half of the advantages to be derived from colonizing this part of Africa, on an *extensive* scale, you might command half the money in the kingdom." This officer resided at Bulam about two years.

Dr. Chisholm, in his "Essay on the malignant pestilential fever, &c." 8vo. 1797, maintains that the yellow fever was originally brought to the West Indies from Bulam in the ship Hankey, on board of which it commenced.

BULARCHUS, in *Biography*, a Greek painter, flourished 740 years B.C. and is said to have been the first who introduced (at least among the Greeks) different colours in the same picture.

BULARSKAIA, in *Geography*, a town of Siberia, on the south side of the Irith, opposite to Tobolsk.

BULATMAI, in *Ichthyology*, a species of *CYPRINUS*, the anal fin of which contains eight rays: the second dorsal fin is large, and not serrated: heads or cirri four. *Habitzl.*

Cyprianus Bulatmai is a rare fish, of the size of the common carp. The colour is steel blue, glossed with gold above, and silvery, shining with a golden hue beneath: the scales are of the middle size, semicircular, distant, and imbricated: flesh white as snow, and very good. This inhabits the Caspian sea.

BULB, or **BULBUS**, in *Botany*, *βῦλος*, Gr. as it is employed by Theophrastus, is sometimes the name of a plant allied to *Scilla Allium*, and others of the same family, but not particularly ascertained by modern botanists, and sometimes denotes the peculiar kind of root by which those plants are distinguished. In the latter sense it was admitted by Pliny, and other Latin writers, and is preserved in most of the modern languages of Europe. Our English gardeners universally speak of it as a *root*; and it is said by professor Martyn, in his "Language of Botany," to have been "so called by botanists, till Linnaeus corrected the error, and shewed that it is a single *bud* enveloping the whole plant." But Linnaeus was by no means the first who viewed it in this light. Our countryman Grew, in the second book of his "Anatomy of Plants," presented to the Royal Society in 1672, says expressly, that "all bulbous *roots* are, as it were, here aphrodisies, or *root* and *trunk* both together; for the *spring* only are absolute *roots*; the *bud* actually containing those parts, which springing up, make the *herb* or *body*; and is, as it were, a great *bud* under ground." About the same time Malpighi was engaged in a similar course of study at Bologna, and communicated the result of his researches also to our Royal Society. Under their patronage his "Anatomie Plantarum" was published in London, the first part in 1675, and the second, which contains the treatise "De Radicibus," in 1679. He treated the subject more at large, and dissected, described, and figured several of the best known bulbs. In complete agreement with Dr. Grew, he uniformly states the bulb to be a germ or bud, consisting of leaves or coats which enclose the rudiment of the future

plant, and produce other embryo buds for its farther propagation and increase. Nor were these great physiologists the first who started the idea. We find it clearly expressed by Clusius, who wrote a hundred years earlier. "Est ergo tulipæ, ut & aliarum bulbosarum tunicatarum, bulbus nihil aliud quam gemma grandis subterranea, quæ præter adnatas externas intra se concipit alium bulbum seu gemmam, qui matri bulbo succedens ei idem videtur, cum revera non sit, sed diversus ipsiusque soboles; cumque intra ipsum bulbum conceptus & enutritus sit, adnatis extremis grandior & habitior evadit, ipsiusque parentis æmulus." Even in the time of Theophrastus, as we learn from his "History of Plants," lib. i. cap. 10. it had been disputed whether a bulb is properly a part of the root: a question which the venerable botanist, after stating the arguments on both sides, finally resolves in the affirmative, on the general principle, that roots are capable of appearing under different forms, and that all which is under ground belongs to the root. It appears, however, that, at so early a period, there were some who compared the bulb to the *κνίμα*, *κνίμα*, or *cyma*, the fleshy part of the stalk of a cabbage, when it first rises above the surface of the ground; and, if we admit the proposed reading of one of the commentators, others went so far as to call it *οσος*, oculus, an eye, or gem; but the conjectural restoration of a passage so corrupt in the manuscripts as to be confessedly unintelligible, cannot be brought forward to establish a fact in the history of science. Since the publication of the *Philosophia Botanica*, no doubt has been entertained on the subject; the botanists, as well as others, still speak of bulbous roots: nor can any material objection be made to the continued use of the term, if it be understood to mean a bulb-bearing root, or as it is accurately expressed in the *Termini Botanici*, "*radix bulbo instructa*."

Gems and bulbs are somewhat quaintly, but not unaptly, styled by Linnæus, *hybernacula*, the winter quarters of the young, or rather embryo plant; and they belong respectively to different families of the vegetable kingdom. They are distinguished from each other by their situation, and by such differences in their form and texture as their peculiar circumstances require. In the *Systema Naturæ*, a *gem* is said to be an *hybernaculum* seated on the ascending caudex; and a *bulb* to be an *hybernaculum* seated on the descending caudex: in popular language, the former is above, the latter beneath the surface of the ground: i. e. the gem is a stem-bud, and the bulb a root-bud. In the *Termini Botanici* of Elmgren, published in *Amœnitates Academicæ* under the eye of Linnæus, the distinction between them is taken, not from their situation, but their substance. A gem is there said to consist of the rudiments of future leaves; and a bulb to be the rudiment of those which are past. In this definition the great naturalist, for to him it must ultimately be attributed, even allowing the general principle to be just, has sacrificed clearness, if not propriety of expression, to his characteristic love of antithesis. The rudiments of future leaves require no explanation: but the *rudiments* of those which have *perished*, it is not so easy to understand. He undoubtedly meant the remains of what were once the rudiments of the leaves; and which, sheltered by the surrounding earth, have not been entirely destroyed, though considerably changed in their appearance, by a change in the temperature of the air. Or as it is stated by Ferber in the dissertation entitled "*Prolepsis Plantarum*," published also in *Amœnitates Academicæ*, "*bulbus a gemma in eo solum differt, quod bases foliorum persistentes a copioso succo, quem e terrâ hauriunt, fiunt carnosæ, & nova folia suis gemmis instructa excrecant intra priorum bases. Non confundi debent bases foliorum præteritorum cum foliis futuræ plantæ;*

illas enim haud aliter considerare oportet, quam ut squamas gemmarum exteriores ab aere vel frigore induratas."

It is natural to inquire how the remains of leaves which in their perfect state were above the surface of the ground, have been drawn down so as to become the scales or coats of subterraneous bulbs. To account for this, Linnæus must have adopted, though we do not remember that he has quoted, the theory of the old botanists concerning the gradual descent of the caudex, supposed to be produced by the mechanical action of the radicles or string roots, which, to borrow the homely language of Grew, "descending themselves directly into the ground, like so many ropes, lug the trunk after them." This idea is mentioned by Dr. Darwin in his *Phytologia* with some degree of contempt, and passed over without a formal refutation as the unfounded doctrine of "some inaccurate observers." Without presuming to detract from the established authority of Grew, who certainly ought not to be ranked with the tribe of inaccurate observers, we may venture to intimate that the integuments which form what may be called the body of the bulb, are not in all cases the remains of decayed leaves, but have been originally formed below the surface, and have never advanced beyond their present appearance. In this point of view they have actually been represented by some of the disciples of Linnæus under his immediate inspection; as appears from Læfing's dissertation "*De Gemmis Arborum in Amœnitates Academicæ*." "*Bulbos diximus*," says that writer, "*nihil aliud esse, quam gemmas, cum eodem modo ac illæ includant intra se futuram plantam; sed eorum tunicæ evadunt succulentæ a copioso nutrimento, quod hauriunt e terrâ cui innascuntur, quo repleti non possunt amplius extendi:*" i. e. bulbs, we have asserted, are no other than gems; for like them they include the future plant, but their coats are rendered succulent by the copious nourishment which they draw from the earth, and in consequence of this repletion become incapable of farther extension.

Of these two concise definitions of a bulb, that given in the *Philosophia Botanica* is evidently inaccurate: since it is so expressed, as to include the root buds of perennial herbaceous plants, called by some authors, but not by Linnæus, *turiones*; which have not the form, and have never been known either in popular or scientific language, by the name of bulbs. That in the *Termini Botanici* is, as we have seen, deficient in perspicuity; and when properly explained, does not appear to possess sufficient precision. Bulbous plants are defined by Mr. Ray to be those which consist of a single tuber or head, either scaly or tunicated, throwing out numerous fibres from its base. In this definition our great countryman should not have introduced the word *tuber*; for in the preceding sentence he has expressly divided the fleshy roots which swell laterally, into bulbous and tuberous. A bulb, therefore, and a tuber, were, in his ideas, as we believe them to be in nature, distinct things.

A bulb is now universally understood to be a species of bud of a peculiar structure suited to its situation on the plant. A bulbous root consists of this bud, of the proper radicles, and of the intermediate caudex. A tuber, if we mistake not, is a radicle, swollen, either wholly, or in part, to an extraordinary thickness, and having generally, if not always, imbedded within its substance the rudiments of one or more future buds; as in the well known root of the potatoe, *solanum tuberosum*. See *TUBER*.

Bulbs are divided by Linnæus, in his *Philosophia Botanica*, into four kinds, the squamous, the tunicated, the solid, and the articulated.

The squamous bulb consists of imbricated lamellæ; i. e. of scales laid partially one over the other, like the tiles or slates

slates on the roofs of buildings, but more loosely connected, and a little diverging at their points; as in several species of lily. The root of the white lily is described and figured by Malpighi in his "Anatome Plantarum." It is composed of scales, or, as he calls them, leaves, gibbous without, and a little concave within, so adapted to each other as to form a bulb. These scales proceed at different elevations from a solid elongated body, styled by Malpighi a radical trunk, the descending caudex of Linnæus, which sends out from its base a number of compound radicles, and from its upper extremity, within the scales, the root leaves and stem of the plant.

The tunicated bulb consists of numerous tunics or coats, as in the common onion, *allium cepa*. These coats lie close together in concentric layers, and proceed from a short broad caudex, having its upper surface more or less convex. They enclose at their centre the embryo plant of the ensuing season; and between them, at different distances from the centre, other bulbs, called *cayeux* by the French naturalists, and offsets by English gardeners, for the future increase of the species.

The solid bulb is said by Linnæus to consist of a solid substance, and the tulip is given by him as an example: but he must be understood to speak comparatively, not strictly and absolutely. The tulip root is thus described by Dr. Darwin in his *Phytologia*. "In the tulip root dissected in the early spring, just before it begins to shoot, a perfect flower is seen in its centre; and between the first and second coat, the large next year's bulb is, I believe, produced; between the second and third coat, and between this and the fourth coat, and perhaps further, other less and less bulbs are visible, all adjoining to the caudex at the bottom of the mother bulb; and which, I am told, require as many years before they will flower as the number of coats with which they are coated." It is evident from this description, that the bulb of the tulip is as really coated as that of the onion. Indeed it had been arranged by Mr. Ray among the tunicated bulbs long before the time of Linnæus. It differs only in having its coats more fleshy, and less easily separated from each other: characters found in a still greater degree in several other bulbs which are, nevertheless, by no means truly solid.

It appears to us that no proper bulb is or can be so. If we adhere to the idea given of it by Linnæus, as a kind of hybernaculum, or winter quarters of the embryo plant, it must have a space within it for that purpose: it must also, as we conceive, have scales or coats, within which *cayeux*, or offsets, for the future increase of the plant may be formed. The bulbs which have been called solid, have coats, either comparatively thick, and so closely compacted together, as, on a slight inspection, to resemble one indiscriminate mass; or, so small and few, as to be exceeded in bulk by the full grown caudex. Hence has arisen the difference in authors with respect to their distribution of this kind of root. The bulb of the crocus, for instance, has so dubious an appearance, that Mr. Ray, in his "Historia Plantarum," has placed it among the tuberosc roots; but our great naturalist would not have so classed it, had it passed under his eye in an early stage of its growth, when it is clearly tunicated. It is considered by Philibert in his "Introduction à l'Etude de Botanique," lately published at Paris, as a mixed bulb, or rather a tunicated tuber. "In the bulb properly so called," says that acute naturalist, "the caudex is less in bulk than the tunics, and the rudiments of the stem embraced by them: in the tunicated tuber the caudex is more considerable; and in the pure tuber, the tunics are entirely wanting." "Thus," continues he, "in the crocus are found only two or three

tunics, which are finally lengthened into a spathe, and closely embrace the leaves implanted on the caudex; whereas, in the true bulb the leaves are surrounded by a great number of tunics which never increase in length. Take up a crocus some time after it has flowered, and you will find that the exterior coats are destroyed; the caudex is naked; and several small bulbs appear seated on its convex surface; or, as it is somewhat ambiguously expressed in the original, "*le caudex est à découvert; & sur plusieurs de ses points, vous remarquez de petits bulbes, naissant de la tubérosité même du caudex.*" It seems evident, from the latter part of the sentence, that this ingenious writer, in the present case, confounded the tuber and the caudex, which are, in fact, always distinct parts of a plant; and was thence led to give to the root of the crocus a character which it does not possess. This root has nothing about it equivalent to a tuber; but is strictly bulbous, and, like that of the onion, consists of proper radicles, a caudex, and a tunicated bulb. The only difference between them arises from the relative proportion of the caudex and the tunics; a difference which, though sufficiently obvious in the extremes, may be lost in such gentle gradations, as to render it impossible to draw a line of distinction, and which therefore cannot be received as a specific character. In the instance before us, it exists, we believe, only in those bulbs which have arrived, or are nearly arriving at maturity, and are about to produce flowers. We this day, March 12th, dissected a young bulb which had produced leaves above ground, but would not have flowered during the present year. Its coats bore a considerable proportion to the caudex, and contained within them, distinctly formed, two new bulbs, each enclosing an embryo plant, furnished with the rudiments of its future leaves. An older one, in flower, examined at the same time, was, to all appearance, completely solid, with the exception, however, of the usual thin, brown, dry, and loose envelopes, which were, doubtless, the shrivelled remains of the former coats. All the rest was the proper caudex, greatly increased in size, and having on it, at different distances from the central flower-stalk and leaves, two *cayeux*, or offsets, seated on its naked surface. Each of these offsets consisted of an apparently new and very small caudex, springing from a shallow concavity in the surface of the old one, and of numerous coats much exceeding their proper caudex in bulk, and all extended either into the sheaths, the leaves, or the spathe of the future flower. Another mature plant had two flowering stems proceeding from two bulbs, so closely connected together as to resemble one, but separated near the top by the usual brown membranous coverings. These bulbs were, doubtless, formed in the same season, and within the same coat of the parent bulb, on opposite sides of the flowering bud of the preceding season; and appear to have so far exhausted the caudex, though now arrived at its full size, as to render it incapable of producing any more offsets.

The bulb of the common corn flag, described and figured by Malpighi, approaches still nearer the naked descending caudex, or what has been improperly called the solid bulb. It was considered, indeed, by this eminent naturalist as a tuber, consisting of homogeneous matter collected into one continuous substance: but it is evident, from his description, that it has the characters of a true bulb. The exterior surface of the tuber or bulb, says he, *stripped of its folioles and involucre*, presents to the view various gems; and a little below their origin, leaves, as usual, break out, which, being plucked off, leave fragments of their stalks, as represented in his figure, and give to the whole the appearance of a trunk or stem.

The root of the orobanche, figured and described by the same author, is of a more dubious nature. In the first place, it does not belong to the monocotyledinous division of plants, in which the legitimate bulbous plants are usually, if not always, found. In the next place, it produces on its surface scattered gems, each supported by an exterior, caducous leaf; some of which gems spring also from the stem, or ascending caudex. We presume, therefore, that it may be styled a descending caudex, with germ-bearing leaves, analogous to those of trees and shrubs. It may be proper, however, to remark, that Bernard Jussieu, as we learn from La Marck's "Flore Française, Discours Préliminaire," p. 54. placed in the royal garden at Trianon, orobanche, lathræa, and some others, in the division of the monocotyledinous plants. Anthony Jussieu, on account of their having both a calyx and a corolla, and their evident affinity to other didynamous genera, has judged them to be dicotyledinous. What induced his illustrious uncle to think otherwise we are not told. The parasitic growth of all the species of orobanche renders it difficult to ascertain in what manner they spring from the seed: but the disposition adopted by so eminent a botanist, and the description of the root given above from Malpighi, seem to indicate a something of a monocotyledinous character, and afford ground for a conjecture, that in these plants a connecting link between those grand natural divisions may be found.

The root of the common turnip (*brassica rapa*) which has been called a bulb by many writers, though not by Linnæus, is nothing more than an intumescence of the descending caudex, produced by a luxuriant soil; and most generally the effect of cultivation, differing from the cultivated carrot (*daucus carota*), which no one ever thought a bulb, merely in form. Neither of them has any claim to the character of an hybernaculum.

The articulated, or jointed bulb, consists of lamellæ or scales, linked or chained together; such as are found on tuberous moschatel (*adoxa moschatellina*), the greater toothwort (*lathræa squamata*), and bulbiferous coral-root (*dentaria bulbifera*). The only instance of this kind of root given by La Marck, is that of white saxifrage (*saxifraga granulata*), but he thinks it should rather be ranked with the tuberous than the bulbous roots.

Ventenat, in the "Botanic Dictionary," prefixed to his "Tableau du Règne Végétal," confines the term bulb to those which are strictly tunicated or coated, among which, as we have seen, those styled solid by Linnæus ought to be placed; and has ranked with the tubers universally so called, (such as those of the common potatoe), the globular root of the turnip radish, (a variety of *raphanus sativus*), intending, doubtless, to include the common turnip; the scaly root of the lily; the knotty root of the common dropwort (*spirea filipendula*); the articulated root of tuberous moschatel; the fasciculated root of *asphodelus luteus* and *creticus*; the grumous root, of the garden ranunculus (*R. Asiaticus*); and the serotiform, or didymous root of several species of orchis. We are inclined to think that this able botanist is right in separating all these from the proper bulb; the essential character of which will then depend on its tunicated structure, and the difference of the species will arise from the various thickness of the coats, and the proportion of their whole substance to that of the descending caudex: but the remaining ones are so dissimilar to each other in several important respects, that they cannot, with any degree of precision, be called by the same name.

The true distinction between a bulb and a tuber appears to us to be in their relative situation with respect to the descending caudex. The bulb *crowns* the proper root, and

has the caudex interposed between it and the radicles. The tuber is situated *under* the caudex, either on the same plan with the radicles, as in some species of orchidæ; or, still lower, when it is evidently an intumescence of the radicle itself, as in the common potatoe. Linnæus, in his practical works, uniformly calls those roots of the orchidæ, which answer this description, bulbs; solely, it should seem, on account of their general appearance; for they are not mentioned under any of his four divisions, and do not correspond with either of the definitions quoted above from the "Philosophia Botanica," and the "Termini Botanici." That they do not essentially differ from the tuber of the common potatoe, is evident from the steps by which, in different species, they approach that well known and invaluable esculent. In orchis bifolia, pyramidalis, ustulata, &c. they spring immediately from the caudex along with the proper radicles: in orchis mascula, ophrys apifera, &c. they swell suddenly from the radicle itself at a small distance from its origin: and in ophrys monorchis, the new tuber is so far from the caudex as to be apparently not different from that of the potatoe. These serotiform tubers differ only in number from the palmate, fascicled, and aggregate tubers of other species, between which, and those of common pilewort (*Ranunculus ficaria*), *asphodelus luteus*, &c. as far as the subject has been hitherto investigated, no certain line of distinction can be drawn. All the radicles of ophrys nidus avis, birds-nest orchis, are swollen into tubers. The rare ophrys Loefselii appears to differ from all the rest of its natural family, in having a true bulb. A tuber, therefore, is an intumescence of the radicle, as the turnip, carrot, &c. are of the caudex; and, like them, may possibly be, in some cases, merely a reservoir for the nourishment of the present stem, particularly in a drouthy season. In this light the singular tubers of *spirea filipendula* are considered by Dr. Smith. But it is more commonly, and as no actual observations have been made on the roots of *filipendula* to determine the question, we are rather inclined to think it always a real hybernaculum, having imbedded in its substance the rudiments of one or more future buds in a less advanced state than that of the bulb. When the tuber is small, and contains only a single bud, as in several leguminous plants, and perhaps some grasses, it is called a tubercle.

Ventenat is probably correct in placing the grumous root of the garden ranunculus under this head. But the scaly root of the white lily, &c. differs essentially from the tuber in being placed upon the caudex; as it does from the true coated bulb, in having a looser texture; being, in fact, composed of unconnected scales, which, by their concave shape, are so adapted to each other, as to produce the appearance of a bulb. The scales of common wood sorrel (*oxalis acetosella*) are of the same kind, but smaller, and somewhat less compact: those of tuberous moschatel have, in a still less degree, the form of a bulb: and in the bulbiferous coral-root the resemblance totally vanishes. They all, we apprehend, agree in having the rudiment or bud of a future plant situated at their axils, to protect which seems their proper use; and if torn off with a small part of the caudex, and planted in a suitable soil, will readily take root. Radical fibres are indeed plentifully thrown out under the scales of tuberous moschatel while they are attached to the parent plant; they are found more sparingly in bulbiferous coral-root; and sometimes, as appears from Malpighi's figure, occur in the white lily. Roots of this kind seem to form a connecting link between the true tunicated bulb, and the proper bud or gem of the ascending caudex in trees and shrubs. The greater toothwort, having no other radicles, is, we conceive, rather allied to the ophrys nidus avis; and in this

this opinion we have the satisfaction to find that we are supported by the authority of Dr. Smith. See English Botany, p. 50. The granules of the white saxifrage, which La Marek considers as tubers, more nearly resemble the proper bulb, being seated on the descending caudex, which throws out radicles beneath them, and may be regarded as bearing some affinity to what Linnaeus calls stem-bulbs, though he has constructed his definition of the term bulb so as to exclude them. They are placed either in the axils of the leaves, as in *lilium bulbiferum*, *dentaria bulbifera*, &c.; or on the common receptacle of the head of flowers, as in several species of *allium*: or, within the calyx, instead of a proper seed, as in *polygonum viviparum*. Botanists have paid little attention to their natural history; and have, for the most part, done nothing more than announce their existence. We know not that any inquiry has ever been made, whether those which are found in the three very different situations just mentioned are precisely of the same nature and structure, or whether they do not so far differ from each other as to render it expedient to give them distinguishing names. It appears, from Dr. Darwin's description of what he calls the summit bulbs of *allium magicum*, that in every thing but situation they are exactly similar to the root bulb of that and other kindred plants. "In cutting one of them horizontally," he tells us in his *Phytologia*, "I observed three young bulbs inclosed in the concentric fleshy membranes of the summit bulb in the following manner: five thick, fleshy, concentric coats of the general summit bulb being taken away, there appeared one single naked small bulb; and on the sixth coat being removed, two other bulbs became visible, which were included in it." A philosophic view of all the different methods in which plants are propagated without the intervention of an impregnated germ; and of the order in which they are connected together, so as to form a regular gradation from the gem or proper stem-bud to the tuber of the common potatoe and the tubercles of vicia, lathyrus, and many other plants, is one of the numerous desiderata in vegetable physiology. The history of bulbs alone would require a long course of experiments.

BULB, in *Vegetable Anatomy*. This term is commonly applied to the enlargements of the roots of many herbaceous plants, which are therefore said to possess *bulbous roots*. See **BULBOUS ROOTS**. The true bulb, however, does not in strictness constitute any part of the root, but in its structure and uses bears a perfect analogy to the bud. See **BUD**. Bulbs are in some instances met with in the axillæ of the leaves, as in the *lilium bulbiferum*, and even in the flower itself, in many species of *allium* and *agave*; but their most usual situation is upon the root. It is there that they are found in the *hyacinth*, *tulip*, the *lilies*, the *common onion*, and a number of the herbaceous monocotyledons. The root in all these instances is an irregular circular plate, from the lower part of which proceed a tuft of the fine or fibrous roots; the upper part forming the bulb.

The bulb is composed of a number of laminae, which are placed one upon another; and contain in their centre the embryo of the plant.

When the laminae have not been exposed to the air, they are thick, and loaded with juices, are generally of a white colour, and consist chiefly of parenchyma, in which are spread some fibres, forming nervures. They resemble very much etiolated leaves.

When the bulbs have been removed from the earth, and kept for any length of time in an open and dry situation, the external layers shrink up, become thin and glossy upon the surface, and often acquire a brilliant metallic colour.

The laminae in the *onion*, *hyacinth*, *tulip*, and many others, consist of circular tunics, the one entirely enveloping the other; but in the *lilies* they assume the form of scales, and more exactly correspond with the coverings of buds. See Plate II. in *Vegetable Anatomy*; fig. 18. Shews the bulb and root of the *onion*; *a* is the bulb, which has the superior part cut off to bring into view the concentric layers of which it is composed; *b* indicates the circular plate forming the common centre of the fibrous roots, which are marked by *c*. Fig. 19. of the same plate exhibits the bulb of a *lily*, which is made of thick imbricated scales; from the base which supports the scales the fibrous roots take their origin.

The pulpy laminae, which constitute the great mass of all bulbs, are analogous to the scales of the bud, and, like them, serve to protect the young plant or flower from all external influences, until the embryo attains a certain degree of development, or becomes vigorous enough to be nourished by its own independent actions. The embryo in the bulb, as in the seed and bud, is always formed in the year preceding its evolution. Thus we may clearly discern in the bulb of the *tulip*, as early as the month of August, the lineaments of the flower which is to make its appearance the ensuing April. See Plate II. of *Vegetable Anatomy*. Fig. 22. represents a bulb of the *tulip*, cut down through the middle in the month of September; *aa* the various investments of the bulb; *bb* the innermost tunics, thinner than the rest, and containing the young flower; *c* the embryo tulip, implanted as it were in the circular root, which serves as the basis of all the parts of the bulb; *d* the circular plate, or common radicle.

As bulbous plants do not produce buds in the axillæ of their leaves, the circular root, which supports the bulb, gives origin to small bulbs, which are in many respects analogous to the lateral buds. They exist, like them, for a certain period in an immature or embryo state, inclosed by the leaves or tunics of the parent bulb. They are formed in many species at the commencement of the season of vegetation; when they become apparent, they are as small as a grain of corn; they increase at first slowly, but afterwards they grow with rapidity, and when the flower is ready to blow, they acquire fibrous roots preparatory to their detachment from the parent bulb. When the root-buds approach maturity, the bulb, from whence they arise, ceases to vegetate, and ultimately dies and rots. It is in this manner that the root of a tulip becomes apparently removed from its situation, the original bulb being replaced by others which produce the flowers of the following year.

There are some bulbs, as those of the *hyacinth*, which furnish, for several years, the lateral bulbs or root-buds; but in these cases it is only at the end of two or three years that the small bulbs attain the magnitude of the original one. If, however, they be detached during the first year, they will grow independently of the parent bulb, which in this case does not perish, but continues to exist for several years, and to produce new offsets.

Bulbs, like buds, may be distinguished into *leaf bulbs* and *flower bulbs*; as an example of which, let a seed of tulip be sown, it produces in the first summer a plant, which dies in the autumn, but leaves in the earth one or more bulbs. These afford stronger plants, the ensuing spring, than those of the first year, but which do not yet bear flowers. They also perish in the autumn, and leave behind them other leaf bulbs, stronger or more perfect than those of the preceding year; and a succession of leaf bulbs is thus generated for four or five years, until at length the bulb acquires sufficient vigour for femal generation; and then it produces, in its place, a large flower bulb, surrounded by several leaf bulbs.

BULBINE,

BULBINE, Plinii, in *Botany*. See **HYACINTHUS COMOSUS**.

BULBINE, Hort. Clif. See **ANTHERICUM FRUTESCENS** and **ALOIDES**.

BULBINE, Gærtner. See **CRINUM ASIATICUM**. Gærtner's crinum is the agapanthus of L'Heretier, Schreber, and this dictionary.

BULBOCASTANUM, C. Bauh. Tournefort. See **BUNUM**.

BULBOCASTANUM, bulbosa. C. Bauh. See **CHÆROPHYLLUM BULBOSUM**.

BULBO-CAVERNOSI, in *Anatomy*. See **ACCELERATOR URINÆ**.

BULBOCODIUM, in *Botany*, (from *βολβος* a bulb, and *κόδιον* wool.) Linn. gen. 407. Reich. 440. Schreb. 555. Willd. 624. Jussieu 54. Clafs and order, *hexandria monogynia*. Nat. ord. *Spathacei* Linn. *Narcissi* Juss.

Gen. char. *Cal.* none. *Cor.* six-petalled, funnel-shaped; claws very long, linear; throat connecting the petals; petals lanceolate, concave. *Stam.* filaments six, awl-shaped, inserted on the claws of the petals; anthers incumbent. *Pist.* germ ovate, awl-shaped, obtusely three-cornered, superior; style thread-shaped, the length of the stamens; stigmas three, oblong, erect, channelled. *Peric.* capsule triangular, acuminate, angles obscure, three-celled; seeds numerous.

Obs. It has sometimes only four stamens and four petals.

Spec. B. *vernum*, La Marck, Illust. Pl. 230. (*Colchicum vernum*. Cluf. Park. Ger. emend. Ray.) *Root* bulbous. *Leaves* three, lanceolate, enveloped in their lower part by a thin membranous sheath. *Flower* little, if at all longer than the leaves, white at first, but afterwards acquiring different shades of purple, rising almost immediately from the root; borders of the petals arrow-shaped, and their narrow acuminate segments so fitted to each other, and so closely connected, as to give the whole the appearance of a monopetalous corolla like that of colchicum. *Stamens* shorter than the petals. It flowers early in the spring, and has the general appearance of the crocus, from which it differs in the number of its stamens, as it does from colchicum in having only one style. Lam. Encyc. and fig. A native of mountainous situations in Spain, the south of France, and Russia. It appears to have been cultivated in England by Parkinson, so early as 1629, but is now become very rare in our gardens, its bulbs being tender, and not much inclined to increase. It may be propagated by offsets like other bulbous rooted plants, removed soon after the leaves decay, but this should not be done more than once every three years. It may also be produced from seed sown at the latter end of September, or any part of October, in pots filled with fresh loamy earth, where they should remain, only varying the situation according to the season: till the next summer but one, when as soon as their leaves are decayed, the roots should be taken up, and planted in the borders of the flower garden. Miller.

BULBOCODIUM, J. Bauh. hist. See **NARCISSUS PSEUDONARCISSUS** and **N. MINOR**.

BULBOCODIUM, Rai. ang. See **ANTHERICUM SEROTINUM**.

BULBOCODIUM, *gracum*, Tourn. See **ANTHERICUM GRÆCUM**.

BULBOCODIUM, *crocifolium*, Tourn. Mil. Icon. See **IXIA BULBOCODIUM**.

BULBOUS roots, in *Gardening*, are such roots as are composed of bulbs, and which differ essentially from the tu-

berous roots, which consist of an entire solid fleshy substance. Under this head are comprehended some esculent plants, such as garlick, onions, leaks, shallots, &c. and a numerous train of flowery plants, mostly herbaceous perennials, producing beautiful flowers, many of them being hardy enough to succeed in beds and borders in the open ground, and others in the stove or greenhouse. The principal of the flowery tribe belong to the following genera: the *amaryllis*, including the Guernsey lily, bella-donna lily, Jacobea lily, &c.; *narcissus*, or daffodil, including jonquils, hyacinths, tulip, fritillaria, and crown imperial *lilium*, or common lily, including martagons; *ornithogalum*, or star of Bethlehem; *galanthus*, or the snow-drop; *leucojum*, or great snow-drop; *scilla*, or sea onion; *colchicum*, or meadow saffron; *albica*, or bastard star of Bethlehem; *muscaria*, or musk and grape hyacinth; *iris*, the bulbous and persian; *haemanthus*, or blood flower; *allium*, or moly; *crocus*, including spring and autumn kinds; *bulbocodium*, and *pancratium*, or sea daffodil. The different species and varieties of which are seen under their respective genera.

Bulbous roots may in fact be said to be annual or biennial, as the same individual root lasts for a certain time only, in some, not more than a year after having attained a flowering stalk; in others, longer, as previous to their dissolution, they afford from their sides a supply of suckers or offsets to perpetuate the respective kinds, so that at the end of many years, what is still often considered as the same individual root, is in reality another. All bulbous rooted plants renew their leaves and flower stems annually; and their principal seasons for flowering are at different times during the spring and summer months, some producing their flowers at one time, and their leaves at another, as in some species of *amaryllis* and *colchicum*; others produce their flowers and leaves together, as in the hyacinth, tulip, *narcissus*; and the leaves and flower stems of all the sorts perish annually at a certain period after flowering, after which time, the root becomes in a state of maturity in respect to its growth for a few weeks, in which new fibres are prepared for the future plant. This is the proper time to remove the roots, either to separate the offsets for propagation for planting the roots in fresh prepared earth, or for removing them to any other part of the garden or other ground. And, likewise, for preserving the bulbs out of ground for autumn and spring planting, when the beds or borders can be more conveniently prepared for their reception; for most sorts taken up at this period may be kept out of ground several months; or if occasion require, some sorts admit of being kept out of the ground from the time of the flowers and leaves decaying, until the following spring, as is often practised when intended for spring planting, to obtain a longer succession of blooms by succeeding the autumn plantation.

Bulbous roots may, however, remain several years unre-moved, and when greatly increased by offsets be only taken up at the proper period to separate the increased progeny, and replanted again as may be necessary. It is, however, particularly necessary to take up all the choice kinds of bulbous roots annually to separate the offsets for increase, as well as to prepare the earth of the beds and borders afresh, to promote the beauty and merit of the succeeding year's bloom, especially for the curious tulips, hyacinths, *narcissus*, &c. The more inferior sorts of bulbous roots should also be removed every other, or as often as their offsets are considerably increased in number, which, if permitted to remain so long as to increase into large bunches, cramp each other in growth, and produce small ill-nourished flowers of little beauty.

All the bulbous roots which have been taken up at the above

above period in summer, should be chiefly planted, where practicable, again in the following autumn, about October or November, as they flower much stronger than when kept out of the ground till the spring season.

The Rev. Mr. Marshall, in his work on gardening, however, directs that autumn flowering bulbs, when their leaves are decayed, should be taken up in May, and that none of the kinds remain too long without being taken up, as they are liable to be cramped and confined in their growth, and of course decline in their beauty.

It is recommended as the best practice with flowering bulbs, to plant the spring kinds in the beginning of the autumn, as in the latter end of September, or beginning of the following month; and those of the summer flowering sorts in October, or the succeeding month; and those of the autumn blow in the latter part of July, or in the following month; too early and too late planting being equally to be avoided, as when put in too soon, they are liable to be impaired by being too forward when the winter and early spring proves severe, and when delayed too long they are apt previously to exhaust themselves by forming new root fibres.

Bulbous roots of the laminated kinds, such as lilies, should not be kept out of the soil longer than six or eight weeks; the summer flowering sorts being set at separate periods in the autumn, and in the beginning of the year before the latter end of February, so as to produce a proper succession of flowers.

With others of the same nature, this method is also common, but they should have dry sandy soils in order to stand the winter without rotting, where there happens to be much wet, succeeded by severe frosts. In these cases, the protection of mats and the haulm of peas may often be found useful. When bulbous roots have remained in the ground longer than the proper period, so as to have struck out new roots, they should always be removed with bulbs of earth, as where this is not attended to, they grow weak. On this account, the exact period for removal should be attended to with great care.

The offsets of bulbous roots should in general be put into the ground a considerable time before the periods of planting out the full sized roots: those from laminated bulbs mostly requiring to be immediately planted.

The soil most adapted to the growth of bulbous roots, in general, is that of a sandy loam where there is no stagnation of moisture below; many sorts of these roots are not however very difficult in this respect, provided there be not an over proportion of moisture. The ground for them should be prepared by digging it to the depth of six, eight, or ten inches, or more, reducing it well in the operation. After this has been done, it should remain a week or ten days before they are put in to become perfectly settled.

In regard to the disposal of these roots in planting, it is generally for the more large and curious sorts in beds a little rounded, of three or four feet in width according to circumstances; or in patches in the common borders, for the smaller kinds, in clusters of three, four, or five together, according to their growth. With the large sorts, such as the white orange lilies, crown imperial, &c. one in a place is sufficient. The roots of fancy flowering bulbs when planted in beds, are usually put in rows, eight or more inches apart, and from five to seven inches distant, in proportion to their growth. Some prefer less room; but where a strong blow is required, these distances are not too great. Hyacinths should in general have the space of seven or eight inches, and tulips eight or nine, though it is often the practice to allow the former not more than five or six inches. The depths of setting roots of the bulbous kinds, are, in general,

according to their sizes or growths, as three or four inches from their upper parts. But some sorts, as the crown imperial, and crocus, will rise from a considerable depth, as six inches or more, and others from still greater, which has induced some persons to plant them to such depths as are sufficient to prevent their being injured by digging over the surface ground; but in these cases, they must be liable to rot in wet seasons.

Different methods are employed in planting bulbous roots, as those of putting them in by the dibble, and in drills drawn by a hoe. The latter is in general to be preferred, as they are apt to lie hollow in dibbling, while by placing them in a drill, they may be gently pressed into the soil, and be perfectly covered up. When they are set in the beds, the best method is to draw off the mould to a sufficient depth to one side, leaving the surface perfectly level, watering it a little in dry seasons, and then forming it into proper squares, placing a bulb in the middle of each, covering them with the mould drawn off, so as to leave the bulbs in an upright position. After the bulbs have been put into earth, if the weather continue very dry, a little water should be sprinkled over the beds or other places, to forward their vegetation, and prevent their rotting. Some protection is necessary in raising the more curious sorts of these roots, as before they appear during the winter, the beds should be sheltered from too much wet, in order to guard against the effects of frost. And when they first present themselves above the ground, they should have the protection of an awning of cloth, mats, or other contrivances, in the nights when the weather is severe; but they should not remain on in the day time, when it is tolerable. Some sort of covering of the same sort is also necessary when they are in blow to shield them from the sun and rain, and continue them much longer in a perfect state of flowering.

There is a method of getting spring flowering bulbs forward, which is by setting them in pots or glasses for the purpose, in warm rooms, or in moderate hot beds, as by these means, they flower in winter. The hyacinth and narcissus, as well as several others, may be managed in this way with facility. These should be placed in pots of light dry sandy earth in autumn, as about the beginning of October, water being occasionally given. They may likewise be put into glasses at the same period, and occasionally every three or four weeks, till the latter end of February, in order to have them flower in succession. In this method the bottom of the bulbs should be just immersed in the water, which should be renewed once a week, or oftener, so as to keep it constantly up to the bottom of the bulbs. Soft water is the best for this purpose. The blow is said, by Mr. Marshall, to be considerably strengthened, by dissolving a portion of nitre, about the size of a pea, in the water each time it is changed.

Besides the raising of flowers from root-bulbs in these modes, there are some produced from little bulbs, forced on the sides of the top parts of the stems, as in the bulbiferous lily. These should be taken off about August, and after being dried a little in the sun, planted out in rows in the nursery in the same manner as the offsets.

By these means the various bulbous-rooted plants may be continued; but, in order to produce new varieties, recourse must be had to seed, which should be carefully saved, when fully ripened, from the best and most curious flowers; and which, after having been hardened a little in the sun, should be sown in boxes of light rich earth, setting them in sheltered sunny situations, but not under covers. This is usually done about the latter end of August, or beginning of the following month, the seed of hyacinth, tulip, and other large sorts, being covered to the depth of nearly an inch. A little

little water should be occasionally given, when the season is dry, to keep the soil moist, but not wet. The seeds may be protected till they come up by a little covering of some kind of strawy material. Other sowings may be made in March, or the following month, the boxes being brought into southern exposures, where there is only the morning sun, towards May. The young seedling plants should be protected in severe and frosty weather, and where there is much rain, by means of mats, hoops, and reed hurdles, or other contrivances, to break off the north-east winds. The young plants should likewise be kept properly thinned out, and perfectly free from weeds; and when the stems decay, a little mould should be put upon them to the thickness of half an inch. In the following summer when the leaves decay, as about August, they should be planted out into nursery beds at the distance of two or three inches, according to the kinds. Some sorts, as the hyacinth and tulip, require to be removed from this into another nursery bed, as soon as their tops decline, and set at six inches distance; or it is probably a better practice to thin them out to this distance in the first beds. After this they are to be managed as blowing plants.

These sorts of roots of plants blow at different lengths of time after being raised; some in the following year, and others not till several years afterwards, as will be explained under the culture of each of the different sorts.

The bulbous rooted plants constitute some of the most showy and ornamental flowers of the beds, clumps, and borders of the garden and pleasure ground, affording considerable variety from their blowing at different periods during the early spring, summer, and autumnal seasons.

BULCARD, in *Ichthyology*, a name under which Willaghy describes *Blennius pholis*, the smooth Blenny; a fish found on the Cornish and other coasts.

BULCKAU, or BULKA, in *Geography*, a town of Germany, in the arch-duchy of Austria, seated on a river of the same name, which runs into the Taya, 4 miles W. of Laab; the town is distant one mile W. from Schrottentaal.

BULDAT, a town of the Arabian Irak; 20 miles E. of Bagdad.

BULDURUISKOI, a town of Siberia; 132 miles E.S.E. of Nerchinsk.

BULEPHORUS, in the court of the eastern emperors, was the same officer with *summa rei* RATIONALIS.

BULEUTÆ, in the cities of Greece and Asia, were the same with the *decuriones* at Rome. Calv. Lex. Jur. p. 128. See DECURIO. The word has been sometimes also used to denote *senators*. See SENATOR.

BULEUTERIA, Βουλευτήρια, in *Grecian Antiquity*, public halls at Athens, where companies of tradesmen assembled to deliberate on commercial concerns. Trade was much encouraged in this city: and if any one ridiculed it, he was liable to an action of slander. Solon himself was engaged in merchandize; the founder of the city Massilia was a merchant; Thales, and Hippocrates the mathematician, traded; and Plato sold oil in Egypt. Under the Roman empire, the senate, or general council of Grecian cities, was called "Bulé" from Βουλῆ, *consilium*; its members were denominated "Buleutæ," and the place where it met at Syracuse, "Buleuterium."

BULFINCH'S HARBOUR, in *Geography*, lies on the north-west coast of North America, in N. lat. 46° 52' 30". W. long. 123° 7' 30".

BULGANAC, a river on the south-west coast of the Crimea, in the Black Sea, falling into the sea in N. lat. 44° 38'. E. long. 34° 50'.

BULGAR, a mountain of Asiatic Turkey, in the province of Caramania; 30 miles S. of Cogni.

BULGARIA, GREAT, the name given by some geographers to a province of Asia, in Russian Tartary, situated beyond the Volga, on the banks of the rivers Kama, Bielaia, and Samara, but now incorporated into the dominions of Russia, and forming part of the government of Caucasus. Its ancient capital was Bulgar, Beloger, Belgard, or Borgard, which lay 30 versts below the mouth of the Kama, and 5 from the Volga; but according to other accounts the Volga flowed by the town. Borgard was first ravaged by the Tartars in 1234, and in 1500 entirely destroyed by the Russians. See BULGARIANS.

BULGARIA, *Little*, a province of European Turkey, bounded on the north by the Danube and Walachia, on the east by the Black sea, on the south by Mount Hæmus, which separated it from Romania and Macedonia, and on the west by Servia. It was formerly called the Lower Mysia, but derives its present name from the Bulgarians, by whom it was occupied. Its extent is about 280 miles in length and 180 in breadth. The country in general is mountainous, but the plains and valleys, washed by the Danube and rivers that flow into it, are rich and fertile, and produce corn and wine in great abundance. Its ancient capital was Ternowa, but its kings principally resided at Nicopoli; but its present capital is Sophia. It now forms a part of the Ottoman empire. The inhabitants are mostly Christians of the Greek church, ignorant and superstitious, having one patriarch and three archbishops, subject to the authority of the patriarch of Constantinople. They are intermixed, however, with Turkish Mahometans and Jews. Their language is the Slavonic, (which see,) but in pronunciation differing little from the Servian. The country is divided by the Turks into four Sangiakships, viz. those of Bidin or Widin, Sardinie comprehending Sophia, Nicopoli, and Silistria. The present inhabitants, though descended from ancestors who distinguished themselves by their martial achievements, are occupied in grazieri, agriculture, and handicrafts. This country is famous for a gate, constructed by the emperor Trajan in the hills south of Sophia, among steep rocks and precipices almost inaccessible, in commemoration of his having marched with his army along a road formed by himself through places that were before impervious. It consists of two stone pillars, with an arch over them, representing a gate; but is now in a mutilated and ruinous condition.

BULGARIANS, or BOLGARIANS, in *Ancient History*, a tribe of Slavonians, who are supposed to have inhabited Asiatic Scythia and the countries lying north of the Caspian sea, near the Volga, whence it is said they obtained the name Volgari, which was changed into Bulgari; and thence their country was denominated Volgaria and Bulgaria. Others, however, reject this etymology, alleging that the Volga was anciently called Raa, or, in Arabic, Idel; and deduce the appellation of Bulgarians either from their famous and large city Belgard, or from the denomination of BILIRIANS which they assumed. The Bulgarians, after having extended their borders along the Don and the Yaik, about the Volga and the Kama, carried on a great trade to Persia, Bucharia, India, Greece, and even to Italy and France, by the Euxine. They also traded considerably with the Russians, and, by their instrumentality, with the northern nations. Bulgaria was therefore, in former times, the emporium of the European and Asiatic commerce. The Bulgarian empire fell afterwards under the dominion of the Tartars, and when the Russians conquered the

BULGARIANS.

the Tartars, became subject to Russia. Their country was rich and extensive; its borders extended along the Volga, from the mouth of the Oka downwards to the Khoalisses, or Netier-Bulgarians, where they had their peculiar sovereigns; and the Ares or Votiaks, along the Kama, were under their supremacy. It is not known how far it reached westward, and on the Don; however, the Tscherenisses and Tschuvashes were subject to them. Their language was the Sarmatic. The ruins of large towns and stone buildings are evidences of their opulence, their civilization, and their industry; and the coins that are dug out of the earth, with Arabic and Indian inscriptions, demonstrate their extensive commerce.

It was not till the reign of Zeno, about the year 485, that they began to be heard of and dreaded by the Romans. Ennodius, the most ancient writer who mentions them, informs us, in the panegyric which he composed on Theodoric, king of the Ostrogoths, that they were a warlike and numerous nation, enured to the toils of war, ever ready to prefer death to slavery, and never known to have been put to flight, till they engaged this hero. From Asiatic Scythia and other countries which they occupied, they advanced, in quest of a more fertile country, to the Tanais, and from thence, in the reign of Zeno, to the banks of the Danube, under the conduct of their king or leader Bladinus. Having passed this river, they made an irruption into Thrace, with a view of settling in that country; but they were opposed by Theodoric, the Ostrogoth, at that time general of the Roman troops in that province, and compelled to repass the Danube. In 499, they made a successful irruption into Thrace, and committed dreadful ravages, and defeated the army of the emperor Anastasius, commanded by Aristus, which was sent to resist them. Three years after this expedition they again invaded Thrace, and carried off an immense booty; of which they plundered the province. In 539, the 13th year of the emperor Justinian, they made an incursion over the Danube into Moesia, defeated the Roman troops, and were retreating with their spoils and captives, after having destroyed with fire and sword what they could not remove, when they were attacked by Justinian's army under the command of an experienced officer, and obliged to surrender their booty and to save themselves by flight. However, in the following year they again entered Thrace, which they plundered and laid waste; but they were routed with great slaughter, and the loss of many prisoners. For these victories the emperor assumed the appellation of "Bulgaricus," which appears on his coins. History gives no account of them till the reign of Constantine III. or V. (Blair) surnamed Pogonatus, which commenced in the year 668. In his time they passed the Danube, and entering the Roman territories, committed great devastations in the provinces bordering on that river. They were feebly opposed by the powerful army of Constantine, and left at full liberty to ravage the open country at pleasure. At length, in 678, Constantine agreed to pay them an annual pension, on condition of their not infesting the Roman territories, and joining his forces against all other barbarians, wherever he required their assistance. About this time some of them settled in the dukedom of Benevento.

It is said that Constantine allowed them to settle in Lower Moesia, to which they gave the name of Bulgaria, which this province still retains. Other writers, however, suppose that they had settled there several years before the reign of Constantine. In 687, Justinian II. refusing to acquiesce in the treaty stipulated with them by his father, invaded their country, and reduced them to great distress; but the Bulgarians, animated by despair, determined to

make a last effort in defence of their liberties; and falling unexpectedly upon the emperor's army, put it to flight, and obliged him to confirm his father's treaty. In 713, they made an irruption into Thrace, and advanced to the gates of Constantinople, and after having ravaged the country, returned home, with an immense booty, un molested. When Constantine Copronymus, in the 9th year of his reign, A.D. 749, ordered forts to be built on the borders of the provinces, adjoining the country of the Bulgarians, they remonstrated; but their ambassadors were dismissed with a disdainful answer. Upon this the incensed Bulgarians made a sudden irruption into the Roman territories, and having laid waste the country, returned home loaded with booty. The emperor collecting his forces, marched against them in person; but whilst he was laying waste their country, they took advantage of attacking him in a narrow pass, obliged him to fly, and pursued him with great slaughter to the gates of Constantinople. In the years 763 and 775, the Bulgarians suffered great injury in their conflicts with the Romans; but upon the accession of Leo IV. A.D. 775, he concluded a peace with their king, whose daughter Irene he had married; but his son and successor Constantine Porphyrogenitus, in the 12th year of his reign, A.D. 791, deluded by some astrologers, attacked the Bulgarians, and was totally defeated. The Bulgarians renewed their irruption into the Roman provinces in the reign of Nicephorus; and the emperor retaliated by marching with a large army into their country, and ravaging it with fire and sword. The ambassadors of the Bulgarians, who were sent to him to sue for peace, and to request his leaving their country, were treated with scorn; upon which their king Crumus, actuated by despair and the thirst of revenge, began with fortifying all the passes through which the emperor was to retire, and then proceeded to attack the Roman camp. This he forced, slew the emperor, and cut off almost his whole army. The savage conqueror ordered the head of Nicephorus to be struck off, and after having exposed it to public view, he inclosed the skull in silver, and used it in all grand entertainments instead of a cup. In 811 Michael I. ascended the throne, and a peace was concluded between the Romans and Bulgarians; but it was of very short duration. Crumus, offended by the treacherous escape of some Roman prisoners, levied a considerable army, entered the Roman territories, and assisted by an Arabian in the use of military engines, reduced several fortified places, and ravaged the whole country. Among other cities which he reduced, he made himself master of Mesembria, in the vicinity of Mount Hæmus, and put the garrison to the sword. The emperor prepared for an engagement, and the two armies met in the neighbourhood of Constantinople. After a furious conflict of doubtful issue, the Romans were utterly defeated; and Michael retired to a monastery, and resigned the purple to Leo V. A.D. 813. The Bulgarians wantonly triumphing in their success, refused to listen to any pacific overtures; and a second engagement took place, in which the Romans, after an obstinate resistance, were routed. But whilst the Bulgarians were busily engaged in plundering the Roman camp, Leo renewed the fight and obtained a complete victory. The Bulgarians remained for five years in a state of tranquillity; but at length, in the year 877, they took occasion to re-enter the Roman territories, and in their usual manner to ravage them with fire and sword. A battle ensued, and the Roman army was routed. The prisoners were led by the victor in triumph round his camp, and having caused their noses to be cut off, he sent them, thus defaced, to Constantinople. After subsequent advantages gained on

the part of the Bulgarians, and repeated defeats and severe losses sustained by the Romans, Adrianople was besieged and taken, A.D. 922; and preparations were made for besieging Constantinople. But, before the close of the following year, an interview took place between Simeon the king of the Bulgarians, and Romanus the eastern emperor, and a peace was concluded between them. In the year 970, the Rusli or Rossi, who inhabited the present Podolia, invaded Bulgaria and ravaged the country; but, having invested Adrianople with a powerful army of more than 308,000 men, they were defeated and cut to pieces by a body of 12,000 Romans. The Bulgarians submitted to Zimisces, their deliverer; but upon his death, A.D. 975, they revolted from the Romans and renewed their usual ravages of their provinces. After a long and doubtful struggle between the Bulgarians and the emperor Basil, he at last prevailed, and, in the 44th year of his reign, A.D. 1018, reduced Bulgaria into the form of a Roman province. From this time the Bulgarians remained in subjection to the emperors of Constantinople, whom they powerfully assisted both against the Latins and the Turks, and were, on that account, allowed to chuse a king of their own nation, who nevertheless owned himself a vassal of the empire. The Bulgarians, however, revolted again in the reign of Isaac Angelus, A.D. 1186. In 1275, Stephen, the fourth king of Hungary, having vanquished the prince of Bulgaria and cut his whole army in pieces, obliged the Bulgarians to acknowledge him as their sovereign. With the assistance of the Greek emperors they shook off the Hungarian yoke; but attempting, in 1369, to recover Adrianople, which had been taken by the Turks, they were totally defeated by Amurath I.; and Bajazet, who succeeded Amurath, made an absolute conquest of the whole country in 1396, and reduced it to a province of the Turkish empire, in which state it has continued ever since. *Anc. Un. Hist.* vol. xvii. Gibbon's *Hist. Decl. and Fall of the Roman Emp.* vol. vii. ix. x. xi.

BULGARIAN *Language*, the same with the **SLAVONIC**, which see.

BULGNEVILLE, in *Geography*, a town of France, in the department of the Vosges, and chief place of a canton, in the district of Neufchateau, $3\frac{1}{2}$ leagues south of it. The town contains 955, and the canton 10,883 inhabitants. The territory comprehends $262\frac{1}{2}$ kilometres and 27 communes.

BULIA, or **BULIS**, in *Ancient Geography*, a maritime town of Greece, in the Phocide, situate towards the gulf of Corinth, near the frontiers of Boeotia. It had two temples, one of Bacchus and another of Diana; the statues of which were formed of wood.

BULIMIA, in *Medicine*, a term signifying excessive hunger, from βῦλ, a particle denoting excess, and λιμός, hunger. It is also called *fames canina*, *fames lupina*, *dog's appetite*, *wolf's appetite*, &c. This symptom occurs in cases where the food is not retained long enough in the stomach to be digested, as in cases of habitual vomiting, and in lientery; also where the aliment, duly prepared or concocted in the stomach, is nevertheless but scantily conveyed into the circulation, as in the case of worms, and obstruction of the mesenteric glands; and it is said that this symptom occurs where much acidity is present in the alimentary canal. Sauvages, with his usual fecundity, has enumerated seven different species of bulimy; but in most of the instances which he has mentioned, it is rather to be regarded as a concomitant of other disorders, than as a distinct and specific affection. Ruysch gives an instance of this complaint, which was connected with a dilatation of the pylorus, in

consequence of which the food slipped through the stomach into the intestines, before there was time for digestion to take place; and it is recorded by Lieutaud, that upon opening the body of a patient who had died of a disorder, in which a voracious appetite was a leading symptom, he discovered a preternatural termination of the ductus choledochus in the stomach. In this case the bile effused into the stomach seems to have kept up a constant irritation in that organ, and to have stimulated the stomach to expel the ingesta before they could be duly acted upon by the principal agent in the work of digestion, the gastric fluid.

From these observations it is evident that the plan of treatment must be varied, according to the diversity of the morbid conditions with which it is connected. Thus, when it is the consequence of an immediate rejection of the food by vomiting, the irritability of the stomach should be counteracted by mild gelatinous food, by opiates, tonics, &c. aided by stimulant epithems, and other topical applications. At the same time nutritive enemata should be injected into the intestines. In like manner, when it is the consequence of the food passing off too rapidly by stool (as in lientery), the remedies adapted to that condition of the body should be resorted to. (See **LIENTERY**.) If it proceed from worms, calomel, jalap, cowitch, and other anthelmintics, should be prescribed; if from mesenteric obstruction, rhubarb, neutral salts, and afterwards chalybeates; and, lastly, when it arises from acidity in the stomach and intestines, bitters and absorbents should be given.

After this view of the various causes of bulimy, and of the treatment as adapted to each of those causes, we shall proceed to notice some remarkable and well-authenticated instances of this affection. In 1700 there lived at Stanton, seven miles from Bury, a labouring man of middle age, who for many days together had such an inordinate appetite, that he would eat up an ordinary leg of veal, roasted, at a meal. He would eat sow-thistles, and various other herbs, as greedily as cattle are wont to do; and all he could get was little enough to satisfy his hunger. He voided several long worms. This case is related by Dr. Burroughs, in the 22d vol. of the *Phil. Trans.* Two other cases are recorded in the 43d vol. of the same Transactions, one by Dr. Mortimer, the other by Dr. Cookson. The subjects of this affection were in both instances boys. The first of them was 12 years old, and lived at Blade Barnsley, in Yorkshire. His appetite was so ravenous, that if he was not supplied with food when he craved it, he would gnaw the very flesh off his own bones. When awake he was constantly devouring. Nothing passed his stomach; it was always thrown up again. In the space of six days he devoured 384 lbs. of liquid and solid food. The other boy was 10 years old, and had been seized with a fever about 15 months before, which continued for a fortnight, and was followed by constant vomitings. As in the former case, so in this, the food was no sooner swallowed than thrown up again. In the space of six days this boy devoured 371 lbs. of meat and drink, besides 1 lb. 10 oz. of salt. After more than a twelvemonth from the first attack, he died greatly emaciated.

In the third vol. of the *Memoirs of the Medical Society of London*, is inserted the history of a case of bulimy, accompanied with vomiting, wherein 379 lbs. of meat and drink were swallowed in the space of six days, yet the patient lost flesh rapidly. A cure was effected by giving food boiled down to a jelly, frequently, and in small quantities. In this form the food was retained, and the body being duly supplied with nourishment, the stomach and rest of the system recovered their proper tone and energy. But the most extraordinary instance of bulimy which perhaps ever occurred, is that

that recorded in the third vol. of the Medical and Physical Journal. communicated by Dr. Johnson, commissioner of sick and wounded seamen, to Dr. Blane, formerly physician to the navy. The subject was a Polish soldier, named Charles Domery, in the service of the French, on board of the *Hoche* frigate, which was captured by the squadron under the command of sir J. Borslase Warren, off Ireland, in 1799. He was 21 years of age, and stated that his father and brothers had been remarkable for their voracious appetites. His began when he was 13 years of age. He would devour raw and even live cats, rats, and dogs, besides bullock's liver, tallow-candles, and the entrails of animals. One day (viz. September 7th 1799) an experiment was made of how much this man could eat in one day. This experiment was made in the presence of the before-mentioned Dr. Johnson, admiral Child, and Mr. Foster, agent for prisoners at Liverpool, and several other gentlemen. He had breakfasted at four o'clock in the morning on 4lbs. of raw cow's udder; at half past nine o'clock there were set before him 5lbs of raw beef and 12 tallow candles of 1lb. weight, together with 1 bottle of porter; these he finished by half past ten o'clock. At one o'clock there were put before him 5lbs. more of beef, 1lb. of candles, and 3 bottles of porter. He was then locked up in the room, and sentries were placed at the windows to prevent his throwing away any of his provisions. At two o'clock he had nearly finished the whole of the candles, and great part of the beef; but without having had any evacuations by vomiting, stool, or urine; his skin was cool, pulse regular, and spirits good. At a quarter past six he had devoured the whole, and declared he could have eat more; but the prisoners on the outside having told him that experiments were making upon him, he began to be alarmed. Moreover, the day was hot, and he had not had his usual exercise in the yard. The whole of what he consumed in the course of one day amounted to

Raw cow's udder	-	-	-	4lbs.
Raw beef	-	-	-	10
Candles	-	-	-	2
				—
				16lbs.

Besides 5 bottles of porter.

The eagerness with which this man attacked his beef when his stomach was not gorged, resembled the voracity of a hungry wolf; he would tear off large pieces with his teeth, roll them about his mouth, and then gulp them down. When his throat became dry from continued exercise, he would lubricate it by stripping the grease off a candle between his teeth; and then wrapping up the wick like a ball, would send it after the other part at a swallow. He could make shift to dine on immense quantities of raw potatoes or turnips, but by choice would never taste bread or vegetables. He was in every respect healthy, 6 feet 3 inches high, of a pale complexion, grey eyes, long brown hair, well made but thin, his countenance rather pleasant, and he was good-tempered. His evacuation by the bowels was by no means proportioned to the quantity of food he devoured, and even did not exceed that of other men; but his perspirations were profuse, not only when in bed, but also when up and eating. To the profuseness of this evacuation, Dr. Johnson, and the other medical gentlemen, have ascribed the rapid dissipation of the ingesta, and his incessant craving for fresh supplies of food. It does not appear that he had worms.

BULINUS HÆMASTOMUS, in *Conehology*. See **TURBO HÆMASTOMUS**.

BULITAGA, in *Geography*, a range of mountains which

separates the empire of Russia from Persia. N. lat. $48^{\circ} 38'$ to 50° . E. long. $72^{\circ} 14'$ to $73^{\circ} 14'$.

BULITHOS, *lapis bovinus*, a calculus or stone found in the gall-bladder, kidneys, or urinary bladder of oxen.

Instances hereof are given by Bromell, the Academy Naturæ Curiosorum, and other naturalists, by which it appears that Aristotle was mistaken in asserting, that man alone is subject to the stone, and inquiring solicitously into the reasons hereof. Arist. Probl. § x. n. 42.

BULK of a ship, denotes her whole content in the hold for stowage of goods.

BULK, to break. See **BREAKING**.

BULK-heads, are partitions made across a ship, or lengthways, with boards of timber, whereby one part is divided from another. The *bulk-head afore* is the partition between the fore-castle and gratings in the head, and in which are the chafe-ports.

BULKA, in *Geography*. See **BULCKAU**.

BULKLEY, CHARLES, in *Biography*, a Protestant dissenting minister, was born in London in 1719, educated in Dr. Doddridge's academy at Northampton, whither he removed from Chester in 1736, and commenced preacher in 1740. After some time he settled in London, where he was baptized by immersion, and joined the general Baptists. After having conducted his labours with ability and reputation, in connection with a congregation of this description, for a long series of years, during which he succeeded the eloquent Dr. Foster in his lecture at the Old Jewry, he died in 1797, in the 78th year of his age. Besides several single sermons, preached on particular occasions, he published "Discourses on several Subjects," 1752; "A Vindication of Lord Shaftesbury's Writings," 1753; "Notes on Lord Bolingbroke's Philosophical Writings;" "Observations on Natural Religion and Christianity, candidly proposed in a Review of the Discourses lately published by the Lord Bishop of London, in 3 volumes;" "Economy of the Gospel," 4to. 1764;" "Discourses on the Parables and Miracles of Christ," 4 vols. 1770; "Catechetical Exercises," 1774; "Preface to notes on the Bible," 1791, &c. Evans's Funeral Sermon, 1797.

BULL, in *Astronomy*, the constellation TAURUS, which see.

BULL, Dr. JOHN, in *Biography*, was born about 1563, in Somersetshire, and became, by his great abilities on the organ and virginal, the wonder of his time. Indeed, the prosperous reign of queen Elizabeth was, perhaps, not rendered more illustrious by the musical productions of Tallis, Bird, and Morley, than the performance of Dr. Bull. His music-master was William Blithman, organist of the chapel royal to queen Elizabeth, in which capacity he held a very high rank. Bull, on the death of his master, in 1591, was appointed his successor in the queen's chapel; and in 1596, at the recommendation of her majesty, he had the honour of being the first that was appointed music-professor to Gresham college. And though unable to compose and read his lectures in Latin, according to the founder's original intention, such was his favour with the queen and the public, that the executors of sir Thomas Gresham, by the *ordinances*, bearing date 1597, dispensed with his knowledge of the Latin language, and ordered "The solemn music lecture to be read twice every week, in manner following, viz. the theoretique part for one half hour, or thereabouts; and the practise, by concert of voice or instruments, for the rest of the hour: whereof the first lecture should be in the Latin tongue, and the second in English.—But because at this time Mr. Doctor Bull, who is recommended to the place by the queen's most excellent majesty, being not able to speak Latin, his lectures

are permitted to be altogether in English so long as he shall continue in the place of music lecturer there." Ward's *Lives of the Professors of Gresham College*, Pref. p. viii. The first lecture read by Bull, at Gresham college, was printed the same year that it was pronounced, under this title: "*The Oration of Maister John Bull, Doctor of Musicke, and one of the Gentlemen of hir Majesties Royall-Chappell, as he pronounced the same, beefore divers worshipful persons, the Aldermen and Commoners of the cite of London, with a great multitude of other people, the 6th day of October, 1567, in the new erected Colledge of Sir Thomas Gresham, Knt. deceased: made in the commendation of the founder, and the excellent science of Musicke.*" Imprinted at London by Thomas Este.

At first, application was made to the two universities, by the lord mayor and corporation of London, jointly with the mercers' company, left trustees of this institution, to nominate two persons in all the liberal arts fitly qualified to read lectures in their several faculties: but this application was not continued, as some jealousy seems to have been awakened at Oxford and Cambridge, lest this new college should be prejudicial to those ancient seats of learning.

What effect this liberal foundation had on other faculties let the friends and patrons of each particular science say; but as to music, it is hardly possible to read the lives of the professors without lamenting that the design of so noble an institution, established on such an extensive plan, should be so entirely frustrated as to become wholly useless to that city and nation for whose instruction it was benevolently intended. Dr. Bull; the only person on the list of music professors, who seems to have been able to inform by theory, or amuse by practice, those who attended the musical lectures, resigned his professorship in 1607. Indeed, during more than a year of his professorship, Mr. Thomas Bird, son of the venerable William Bird, exercised the office of a substitute to Dr. Bull, while he travelled on the continent for the recovery of his health. So that except about nine years from the date of the establishment, to the present times, it does not appear that the science of sound, or practice of the musical art, has been advanced by subsequent professors. For in the following list, given by Dr. Ward, up to the year 1740, including Dr. Clayton, elected 1607; John Taverner, 1610, who was no relation of the musician of that name; Richard Knight, 1638; William Petty, 1650, afterwards the famous sir William Petty; Dr. Thomas Baynes, 1660; William Perry, 1681; John Newy, 1696; Dr. Robert Shippen, 1705; Dr. Edward Shippen, his brother, 1710; John Gordon, 1723; and Thomas Brown, 1739; though all men of learning and abilities in other faculties, yet no one of them had ever distinguished himself, either in the theory or practice of music; nor are any proofs remaining that they had ever studied that art, the *arcana* of which they were appointed to unfold! What an abuse of reason and munificence does it seem, that those who had never meditated on the art or been taught, themselves, should be fixed upon to teach, and direct the studies of others!

A silly story has been told by Anthony Wood (*Faisti Oxon.* vol. i. c. 131.) concerning a feat performed by Dr. Bull, who, at St. Omer's, when he first visited the continent, to a composition originally written in forty parts, added forty more in a few hours; which is so impossible, as not to be worth relating.

After the decease of queen Elizabeth, he was appointed organist to king James. And July the 16th, 1607, when his majesty and prince Henry dined at Merchant-Tailors' hall, the royal guests were entertained with music, both vocal and instrumental, as well as with several orations. And

while his majesty was at table, according to Stow, "Mr. doctor Bull, who was free of that company, being in a citizens gowne, cappe, and hood, played most excellent melody upon a small payre of organs placed there for that purpose onely." (*Chron.* p. 891. edit. 1615.) In December, of the same year, he resigned his professorship of Gresham college, but for what reason does not appear, as he continued in England several years afterwards.

In 1613 he quitted England, and entered into the service of the archduke, in the Netherlands. He afterwards seems to have been settled at Lubeck, at which place many of his compositions in the list published by Dr. Ward, are dated; one of them as late as 1622, the supposed year of his decease.

Dr. Bull has been censured for quitting his establishment in England; but it is probable that the increase of health and wealth was the cause and consequence. Indeed he seems to have been praised at home, more than rewarded; and it is no uncommon thing for one age to let an artist starve, to whom the next would willingly erect statues. The professorship of Gresham college was not then a sinecure. His attendance on the chapel royal, for which he had forty pounds per annum, and on the prince of Wales, at a similar salary, though honourable, were not very lucrative appointments for the first performer in the world, at a time when scholars were not so profitable as at present; and there was no *public playing*, where this most wonderful musician could display his abilities, and receive their due applause and reward.

A list of more than two hundred of Dr. Bull's compositions, vocal and instrumental, is inserted in his life, which, when it was written in 1740, were preserved in the collection of Dr. Pepusch. The chief part of these were pieces for the organ or virginal, which we have seen and examined, having been transcribed into queen Elizabeth's virginal book, and printed in a collection called *Parthenia*. An *In nomine*, of five parts, we have scored from the Christ Church set of manuscript books, in Dr. Aldrich's collection, and have attentively perused his choral composition in the collections of Dr. Tudway and Dr. Boyce, which is the same verse anthem, with different words, for two voices, with a chorus. In all this vocal music that we have seen, there seems to be much more labour and study than genius. Tallis and Bird had so long accustomed themselves to write for voices, that the parts in their compositions are much more natural and flowing than those of Bull. In looking at the single parts of Tallis and Bird, there are notes and passages which appear wholly insipid and unmeaning, as melody; but which, when heard in harmony with any other part, produce admirable effects.

Indeed, possessed as he was of such extraordinary powers of execution on keyed instruments, we have been frequently astonished, in perusing Dr. Bull's lessons, at the few new and pleasing passages which his hand suggested to his pen. It has been said, that Dr. Pepusch preferred Bull's compositions to those of Couperin and Scarlatti, not only for harmony and contrivance, but air and modulation: an assertion which rather proves that the doctor's taste was *bad*, than Bull's music *good*. Though we should greatly admire the hand, as well as the patience, of any one capable of playing his compositions; yet, *as music*, they would afford us no kind of pleasure: *ce sont des notes, et rien que des notes*; there is nothing in them which excites rapture. They may be heard by a lover of music with as little emotion as the clapper of a mill, or the rumbling of a post-chaise.

After such frequent mention of the extreme difficulty of these old pieces, in mercy to modern performers, it may with truth

truth be said, that the loss, to refined ears, would not be very great, if they should for ever remain unplayed and undecyphered. For being generally built on some old and vulgar psalmodic tunes, unmeaning in themselves, the crowded harmony and multiplied notes with which they are loaded, have not rendered them more pleasing. Indeed the infallible consequences of a young practitioner bestowing such time and labour on them as may be necessary to subdue the difficulties of execution they contain, would be corruption of taste, and neglect of more useful studies.

The instrumental music of queen Elizabeth's reign seems to partake of the pedantry and foppery of the times: eternal fugues upon dry and unmeaning subjects were the means of establishing reputation for *learning* and *contrivance*; as dull divisions and variations, in which the change was generally from bad to worse, seem to have been the only qualifications which entitled a professor to eminence for *taste* and *invention*.

The very terms of *canon* and *fugue* imply restraint and labour. Handel was perhaps the only great fughist, exempt from pedantry. He seldom treated barren or crude subjects; his themes being almost always natural and pleasing. Sebastian Bach, on the contrary, like Michael Angelo in painting, disdained facility so much, that his genius never stooped to the easy and graceful. We never have seen a fugue by this learned and powerful author upon a *motivo*, that is natural and *chantant*; or even an easy and obvious passage, that is not loaded with crude and difficult accompaniments.

As the youth of Bull must necessarily have been spent in subduing the difficulties of other composers, he seems, in his riper years, to have made the invention of new difficulties of every kind, which could impede or dismay a performer, his sole study. It seldom happens that those possessed of great natural force of hand, on any instrument, submit to the drudgery of much dry study; but this gift was so far from relaxing the labour and diligence of Dr. Bull, that he entered deeper into all the *arcana* of the art, and pedantry of the times, than most of his contemporaries. That he was "exquisitely skilled in canon," has been given as one of the most irrefragable proofs of his being a great musician; and canons, *retro*, and *per arsin et thesin*, in triangular, and other fantastical forms, are carefully preserved, as stupendous specimens of his abilities.

Walsingham has been a subject upon which Dr. Bull and Bird have exercised their abilities in the most elaborate manner. In the fifteenth century, popular tunes were the foundations upon which the greatest contrapuntists constructed even the masses which they set to music; and in the next, the English, no longer in want of these tunes in the church, polished and tricked them up for the chamber, with every art and embellishment they could devise.

Both Bird and Bull have likewise worked on the hexachord, *ut re mi fa sol la*, ascending and descending; upon which theme they have constructed elaborate and ingenious *litanies*, of the most difficult execution. That of Bull has passages for the left hand, which perhaps none but himself could play during his own time, and which we have never seen introduced in any compositions of the present century, except those of Sebastian Bach; or heard executed, but by Palestra, near forty years ago; who must have vanquished them by the incessant labour of several years, out of his short life; for he was then but eight years old. A new, but similar difficulty, has lately been devised for keyed-instruments, in the rapid divisions for one hand, in *chaves*, which great application only can vanquish. The execution of long and rapid divisions of thirds and sixths, and even of common

chords, is not frequently wanted in modern music, and therefore they would baffle and embarrass the greatest performers, who have not worked at such passages with unremitting labour. But besides these difficulties, there are others of *measure*, in Bull's Lessons, where, in four parts, the left hand has two of six crotchets in a bar, while the right plays nine to each semibreve of the hexachord.

Specimens of the difficulties abounding in the compositions of the golden age of queen Elizabeth, may be seen in the Hist. of Mus. vol. iii. in order to invalidate the vulgar cant of such as are determined to blame whatever is modern, and who, equally devoid of knowledge and feeling, reprobate as *trash* the most elegant, ingenious, and often sublime compositions, that have ever been produced since the laws of harmony were first established.

Indeed we should suppose that the pieces of Bull were composed to be *tried*, not played, for private practice, not public use; as they surpass every idea of difficulty that can be formed from the lessons of Handel, Scarlatti, Sebastian Bach; or, in more modern times, Emanuel Bach, Mützel, Mozart, Clementi, Dupré, Cramer, and Beethoven.

BULL, GEORGE, an English prelate, was descended of an ancient family seated at Shapwick in Somersetshire, and born at Wells in that county, in 1634. Having finished his course of classical learning at Wells and at Tiverton, he was entered a commoner of Exeter college, Oxford, in 1648; where, notwithstanding the loss of time incurred by the pursuit of pleasures and diversions, he acquired the reputation of an acute disputant, and attracted the notice of his superiors. In 1649, refusing to take the oath to the commonwealth of England, he retired to North Cadbury in Somersetshire; and having applied with diligence to the study of divinity, he took orders, and accepted the small benefice of St. George's, near Bristol, where he maintained an exemplary character, and was eminently useful, preaching twice every Sunday, and performing the devotional service by the aid of the common prayer, though the regular use of the liturgy was prohibited. After the restoration in 1662, he was presented by the lord chancellor, earl of Clarendon, to the rectory of Suddington, St. Peter, near Cirencester, having been instituted, by the recommendation of lady Pool, to the adjoining rectory of Suddington, St. Mary, in 1658. In this situation he remained twenty-seven years; discharging his pastoral functions with assiduity, and prosecuting his studies with indefatigable application. Most of his works were composed during this period of his life. In 1669 he published his "*Harmonia Apostolica*," or "*Apostolical Harmony*," in two dissertations, in the first of which St. James's doctrine of Justification by works is explained and defended; in the second, the argument of St. Paul with St. James is clearly demonstrated. This work, which was written in Latin, excited great opposition, and was attacked by several divines, both among episcopalians and nonconformists. The author's reply to his adversaries was contained in his "*Examen Censuræ, &c.*" and his "*Apologia pro Harmonia, &c.*," published together in 1675. In 1678 he was promoted to a prebend in the church of Gloucester; and in 1680 he finished his "*Defence of the Nicene Faith*," which was printed at the Oxford theatre in 1685, with the special approbation, and at the sole expense of bishop Fell, under the title of "*Defensio Fidei Nicenæ, ex Scriptis quæ extant Catholicorum Doctorum qui intra tria prima Ecclésiæ Christianæ Secula floruerunt.*" This book is written, in a pure Latin style, against the Arians and Socinians on the one hand, and the Trinitrists and Sabellians on the other; and it was received with great applause both at home, and in foreign countries. It did not, however,

however, escape the animadversions and censures of several Unitarian writers. Five years after the completion of this book, the author was presented to the valuable rectory of Avening, in Gloucestershire. Soon after, in 1686, he was promoted by archbishop Sancroft, to the archdeaconry of Landaff: and in consideration of his eminent services to the church, the university of Oxford conferred upon him the degree of doctor in divinity. During the reign of James II. he preached with great ardour against the errors of popery. In 1694, he published his "Judicium Ecclesiæ Catholicæ, &c.," in defence of the anathema, decreed by the first council of Nice. For this work the author received the thanks of the whole body of the clergy of France; though, considered as the vindication of an anathema, which condemns some of the highest ornaments of literature and christianity both in and out of the church, it will not now be regarded as entitling Dr. Bull to any very distinguishing commendation. The last treatise written by this learned author, was his "Primitive Apostolical Tradition of the Doctrine received in the Catholic Church, concerning the Divinity of our Saviour Jesus Christ, asserted, and evidently demonstrated against Daniel Zuricke the Prussian, and his late Followers in England." All his Latin works published by himself at different times, were collected and printed in 1703 in one volume, folio, by Dr. J. E. Grabe, with a preface and annotations. In 1705, Dr. Bull was promoted to the bishopric of St. David's; and taking his seat in the house of peers, in the session, when the bill passed for the union of both kingdoms, he bore testimony in favour of the church of England, as being "in her doctrine, discipline, and worship, most agreeable to primitive and apostolical institution." He resided constantly in his diocese, and carefully discharged all the episcopal functions; but in 1710 he closed his laborious and useful life at Brecknock, the customary place of his residence, where he was interred; leaving behind him a widow and two children, the survivors of eleven. His constitution was naturally firm and vigorous; but his incessant application had to a considerable degree impaired it before the close of his life. His temper was lively, irritable, and inclined to melancholy; nor does he seem to have been entirely free from a tincture of superstition. He was remarkable for the firmness of his mind, and for an habitual sense of religion, which influenced his conduct after the first deviations of his youth. His learning was recommended by the modesty that accompanied and adorned it; and his patience, piety, and christian hope were signally exemplified during the painful paroxysms of the disease that terminated his life. Bishop Bull's sermons and larger discourses were published in 1713 by Mr. Nelson in three volumes 8vo. The first of these volumes contains two sermons on the intermediate state, which were republished in 1765 by the late professor Chappelow, and which have been animadverted upon by the author of the "Historical View of the controversy concerning the intermediate State, &c." All the bishop's works have been published together, in folio, by Mr. Nelson, who also published his "Life" in 1717, 8vo. Biog. Brit.

BULL, in *Ecclesiastical Writers*, denotes an instrument dispatched out of the Roman chancery, sealed with lead; answering to the edicts, letters patent, and provisions, of secular princes.

The bull is thus described by Matthew Paris, anno 1257: "*In bulla domini papa stat imago Pauli à dextris crucis in medio bullæ figurata, et Petri à sinistris.*"

The word *bull* is derived from *bullæ*, a seal; and that from *bullæ*, a drop or bubble: or, according to others, from the

Greek, *βελον*, *council*: according to Pezron, from the Celtic *buil*, or *bul*, a bubble.

We meet with four kinds of these *bulli* or *bulle*; golden, silver, waxen, and leaden; all in use among the emperors and kings of the middle and barbarous ages. In some, the impression is made on the solid metal itself; in others on wax; and only enclosed in a metalline box, or case.

Sealing with metals is an illustrious privilege, belonging only to princes, though assumed also by prelates, as princes of the church. The doges of Venice durst not arrogate this honour, till leave was given them by pope Alexander III. about the year 1170, to seal their diplomata with lead.

The *bull* is the third kind of apostolical rescript, and the most in use, both in affairs of justice and of grace. It is written on parchment; by which it is distinguished from a *brief*, or simple *signature*, which is on paper. A bull is properly a signature enlarged; what the latter comprehends in a few words, the former dilates and amplifies.

If the bulls be letters of grace, the lead is hung on silken threads; if they be letters of justice, and executory, the lead is hung by a hempen cord. They are all written in an old round Gothic letter.

The bull, in the form wherein it is to be dispatched, is divided into five parts; viz. the narrative of the fact; the conception; the clause; the date; and the salutation, in which the pope takes on himself the quality of "servant of the servants of God," *servus servorum Dei*.

Properly speaking, it is the seal or pendant lead alone that is the bull: it being that which gives it both the title and authority. The seal presents, on one side, the heads of St. Peter and St. Paul; on the other, the name of the pope, and the year of his pontificate.

By bulls, jubilees are granted: without them no bishops in the Romish church are allowed to be consecrated. In Spain, bulls are required for all kinds of benefices; but in France, &c. simple signatures are sufficient; excepting for bishoprics, abbeys, dignities, and priories conventual. According to the laws of the Roman chancery, no benefits, exceeding twenty-four ducats per annum, should be conferred without bulls: but the French would never submit to this rule, except for such benefices as are taxed in the apostolical chamber: for the rest, they reserve the right of dissembling the value, expressing it in general terms: *Cujus & illi forsitan annexorum fructus 24 ducatorum auri de camera, secundum communem estimationem, valorem annum non excedunt.*

The bulls brought into France were limited and moderated by the laws and customs of the land, before they were registered; nor was any thing admitted till it had been well examined, and found to contain nothing contrary to the liberties of the Gallican church; those words, *proprio motu*, in a bull, were sufficient to make the whole be rejected in France. Nor do the Spaniards admit the papal bulls implicitly; but having been examined by the king's council, if there appear any reason for not executing them, notice thereof is given to the pope by a supplication; and the bull, by this means, remains without effect: and the like method of proceeding with the court of Rome is observed by most of the other courts of Europe, in the papal communion.

To *fulminate bulls*, is to make publication thereof, by one of the three commissioners to whom they are directed; whether he be the bishop or official. This publication is sometimes opposed; but when it is, the fault is not charged on the pope who issued the bull; but an appeal is brought

to him against the person who is supposed to make it; thus the fault is laid, where it is known not to be just, to evade affronting the pontiff. See FULMINATION.

The *bull in cana Domini*, is a bull read every year on Maunday-Thursdai, in the pope's presence; containing various excommunications and execrations against heretics, those who disobey the see, who disturb or oppose the exercise of ecclesiastical jurisdiction, &c.

After the death of the pope, no bulls are dispatched during the vacancy of the see, to prevent any abuses; therefore, as soon as the pope is dead, the vice-chancellor of the Roman church takes the seal of the bulls; and in the presence of several persons, orders the name of the deceased pope to be erased; and covers the other side, on which are the heads of St. Peter and St. Paul, with a linen cloth: sealing it up with his own seal, and giving it, thus covered, to the chamberlain, to be preserved, that no bulls may be sealed with it in the mean time.

These decrees of the pope are often mentioned in our statutes, as 25 Edw. III. 28 Hen. VIII. c. 16.; 1 and 2 Ph. and M. c. 8; and 13 Eliz. c. 2. They were formerly used, and of force in this country; but by stat. 28 Hen. VIII. c. 16. all bulls, &c. obtained from the bishop of Rome are void; and by 13 Eliz. c. 2. (see also 23 Eliz. c. 1.) the procuring, publishing, or using of any of them is high treason.

BULL, *golden*, is a denomination peculiarly given to an ordinance, or statute, made by the emperor Charles IV. in 1356, said to have been drawn up by that celebrated lawyer, Bartoli, and still reputed the *magna charta*, or fundamental law of the empire. It was composed and published at a diet convoked by the emperor at Nuremberg; and is thus called from a golden seal fixed to it, such as were used by the emperors of Constantinople, annexed to their edicts.

Till the publication of the golden bull, the form and ceremony of the election of an emperor were dubious, and undetermined; and the number of electors was not fixed: this solemn edict regulating the functions, rights, privileges, and pre-eminences of the electors. The original, which is in Latin, on vellum, is kept at Franckfort. On the back side of it there are several knots of black and yellow silk, to which hangs a *bull*, or seal of gold. It is pierced through the middle with a golden wire, the ends of which are fastened by a seal of gold, about the size of a half crown, one side exhibiting the figure of Charles IV. upon a throne, and the reverse, a kind of gate, inscribed "Aurea Romana." On the exergue are these words: "Carolus IV. Rom. Imp. semper Augustus, rex Bohemiz." This is preserved in a square wooden box. This ordinance, containing thirty articles, was approved of by all the princes of the empire, and remains still in force. The election of the empire is by it declared to belong to seven electors; three of them ecclesiastics, viz. the archbishops of Mentz, Treves, and Cologne; and four seculars, viz. the king of Bohemia, prince Palatine, duke of Saxony, and marquis of Brandenburg.

BULL, *Caroline*, a famous constitution published by Charles IV. A.D. 1359, which cancelled all the statutes or regulations that had been made to the prejudice of ecclesiastical liberty, and denounced the severest penalties against those who should aggrieve the persons of the clergy. It was issued in order to pacify pope Innocent VI., who had been alarmed and offended by some plans of reformation which the emperor had adopted. With a view of reforming the German clergy, he communicated to the bishops the measures he had taken for this purpose, and threatened to sequester the revenues of those who should refuse to obey

his orders. The pope, believing the honour and liberty of ecclesiastics at stake, desired the emperor to forbear meddling with the reformation of the clergy, which was his province, and insisted upon his restoring what the secular noblemen had at different times usurped from ecclesiastics. This circumstance occasioned the publication of the Caroline bull.

BULLS, *golden*, were in use among the eastern emperors for a considerable time, leaden ones being confined to matters of a smaller moment. Spelman mentions a golden bull, in a treaty of alliance with our Henry VIII. and Francis I. of France: the same author relates, that the instrument, whereby Clement VII. gave king Henry VIII. the title of Defender of the Faith, had golden *bulls* affixed to it; and there are other instances in Du-Cange and Altaferra.

BULLS, *silver*, were not in so frequent use, though instances of them are not wanting.

BULLS, *leaden*, were sent by the emperors of Constantinople, to despots, patriarchs, and princes; and the like were also used by the grandees of the imperial court, as well as by the kings of France, Sicily, &c. and by bishops, patriarchs, and popes. Polydore Virgil makes pope Stephen III. the first who used leaden *bulls*, about the year 772. But others find instances of them as early as Sylvester, Leo I. and Gregory the Great. The later popes, besides their own names, strike the figures of St. Peter and St. Paul on their bulls; a practice first introduced by pope Paschal II.

BULLS, *waxen*, are said to have been first brought into England by the Normans. They were in frequent use among the Greek emperors, who thus sealed letters to their wives, mothers, and sons. Of these there were two sorts, one red, the other green. Du Cange, Gloss. Lat. tom. i. & Gloss. Græc. Montfaucon, Palæolog. lib. vi.

BULL of Phalaris, or Perillus, a brazen bull made by Perillus the Athenian, to flatter the cruelty of Phalaris, tyrant of Agrigentum, for the purpose of tormenting criminals. It was formed in the shape of that quadruped; and when persons were inclosed in it, fire was applied, and their cries are said to have resembled the roaring of a bull. Perillus is said to have been the first who suffered in it, for having extorted too great a recompence for the construction of it. Phalaris himself was punished by the people of Agrigentum for his cruelty, by being put to death, as some say, in his own bull. When Hannibal took the city, this bull, among other treasures and valuable curiosities, was sent to Carthage; but it was afterwards restored to the Agrigentines by Scipio, when he took Carthage, in the third Punic war. Cic. l. iv. in Verrem. c. 33.

BULL, in Geography, a large rock in the Atlantic ocean, about three miles W. of Dursey island, on the coast of the county of Kerry, Ireland. N. lat. 51° 33'. W. long. 10 9'.

BULL, a rock near the west point of the island of Raghlin, in the North channel, about seven miles N.W. of Fairhead, in the county of Antrim, Ireland. N. lat. 55° 19'. W. long. 6° 10'.

BULL, *North and South*, two banks of sand in the bay of Dublin, Ireland, between which lies the small sand bank, called the *bar*. There are buoys to mark these banks, but notwithstanding every improvement of the harbour, and every precaution, they sometimes occasion shipwrecks.

BULL, in Rural Economy, an animal of much importance to the stock farmer. For the purposes of the breeder the head of the bull should, according to Mr. Culley, "be rather long, and the muzzle fine; his eyes lively and prominent, his ears long and thin, his horns white; his neck,

rising

rising with a gentle curve from the shoulders, and small and fine where it joins the head; his shoulders moderately broad at the top, joining full to his chine, or crops and chest backwards, and to the neck-vein forwards; his bosom open, breast broad, and projecting well before his legs, his arms or fore thighs muscular, and tapering to his knee; his legs straight, clean, and very fine-boned; his chine and chest full as to leave no hollows behind the shoulders, the plates strong, to keep his belly from sinking below the level of his breast; his back or loin broad, straight, and flat, his ribs rising one above another in such a manner, that the last rib may be rather the highest, leaving only a small space to the hips or hooks, the whole forming a round or barrel-like carcase; his hips should be wide placed, round or globular, and a little higher than the back, the quarters from the hip to the rump long; and instead of being square, as recommended by some, they should taper gradually from the hips backwards, and the turls or pott-bones not in the least protuberant; rumps close to the tail, the tail broad, well haired, and set on so high as to be in the same horizontal line with his back."

This is an animal chiefly kept for the purpose of propagation, though he is capable of being subjected to the yoke; but there is no certainty of his working quietly; and the use he may make of his prodigious strength should constantly be guarded against. Bulls are for the most part naturally untractable, stubborn, and fierce; and frequently in the bulling season absolutely furious and uncontrollable; however, by castration, they may be rendered perfectly tame and quiet, without the least diminution of their strength. They also often grow larger, more heavy and unwieldy, and become more adapted to labour, as well as more tractable, by this operation. See Ox and CATTLE.

The disposition of these animals is, however, shewn to depend greatly upon the manner in which they are reared by the practice of Mr. Bakewell, who had all his bulls so tame and gentle, that they could be managed with the greatest facility.

Among the *Ancients*, those who triumphed, sacrificed a bull, when they arrived at the capitol. Bulls were offered to Apollo and Neptune. It was held a crime to sacrifice them to Jupiter, though we do not want instances of that practice.

Bulls were ranked by the Romans in the number of military rewards.

BULL, African, in *Natural History*, a small wild bull, common in that part of the world, and supposed to be the true *bubalus* of the ancients. See BUBALUS.

BULL's blood, fresh drawn, is said to be a powerful poison, as coagulating in the stomach. This is related on the authority of Pliny, xxviii. 9. and xi. 38. and many persons among the ancients, such as Æson, Midas, Hannibal, and Themistocles, are said to have been poisoned by it. But the fact has been questioned by some, and denied by others. See Apollodorus, lib. i. cap. 27. Strabo, lib. i. p. 106. Plutarch in Flaminio; and Valer. Maxim. vol. vi. ext. 3.

BULL's gall, is an intense bitter, more pungent and acrimonious than that of any other animal; whence it is sometimes used to destroy worms.

BULL, bannal, denotes a bull kept by a lord, who has a right to demand all his tenants to bring their cows to be served by him.

BULL, free, according to Du-Cange, signifies the same with *bannal bull*. Hence *tauri lib.ri libertas*; which, however, should rather seem to denote a privilege of keeping a bull independent of the lord.

BULLS, wild. The wild bulls, now so numerous on the

continent of America, are said to have sprung from one bull and seven cows, which were carried thither by some of the first conquerors.

In the island of Hispaniola, the French buccaneers pursue bulls with dogs, and kill them with fire arms. See *BUCCANEERS*. At Buenos Ayres, the Spanish toradors chase them on horseback, armed with a long lance, at the end of which is a half-moon of sharp steel. Having drawn a number of the horned kind together, they let the cows escape, but dextrously take the bulls with their half-moons on the hind-legs, by which, disabling them from flight, they are easily dispatched.

BULL-baiting. See *BAITING*.

BULL-fighting, a sport or exercise much in vogue among the Spaniards and Portuguese, consisting in a kind of combat of a cavalier or torador against a wild bull, either on foot or on horseback, by riding at him with a lance. The Spaniards have bull-fights, i. e. feasts, attended with shows, in honour of St. John, the Virgin Mary, &c. This sport the Spaniards received from the Moors, among whom it was celebrated with great celat. Some think, that the Moors might have received the custom from the Romans, and they from the Greeks. Dr. Plott is of opinion, that the *ταυρομαχία* amongst the Thesalians, who first instituted this game, and of whom Julius Cæsar learned and brought it to Rome, were the origin both of the Spanish and Portuguese bull-fighting, and of the English bull-running. Nat. Hist. Staff. chap. x. § 76.

The practice was prohibited by pope Pius V. under pain of excommunication, incurred *ipso facto*. But succeeding popes have granted several mitigations in behalf of the toradors.

Mr. Gibbon, in his "History of the Decline and Fall of the Roman Empire," (vol. xii. p. 421.) has extracted from Muratori (Script. Rer. Italic. tom. 12.) an account of a bull-feast, which was celebrated in 1332, after the fashion of the Moors and Spaniards, in the Coliseum at Rome. The nobles were invited by a general proclamation, communicated as far as Rimini and Ravenna, to exercise their skill and courage in this perilous adventure. The Roman ladies were marshalled in three squadrons, and seated in three balconies, which were lined on this occasion with scarlet cloth. When the company was collected and arranged, the lots of the champions were drawn by an old and respectable citizen; and they descended into the arena, or pit, to encounter the wild bulls with a single spear. Amidst the crowd, the annalist has selected the names, colours, and devices, of 20 of the most conspicuous knights. Several of the names are the most illustrious of Rome and the ecclesiastical state; the colours were adapted to their taste and situation; and the devices are expressive of hope or despair, and breathe the spirit of gallantry and arms; the combats of the amphitheatre were dangerous and bloody. Every champion successively encountered a wild bull; and the victory may be ascribed to the quadrupeds, since no more than eleven were left on the field, with the loss of nine wounded, and eighteen killed on the side of their adversaries. Some of the noblest families might mourn, but the pomp of the funerals in the churches of St. John Lateran, and Maria Maggiore, afforded a second holiday to the people.

Similar combats with bulls in the amphitheatres, have been justly regarded as a striking feature of Spanish and Portuguese manners. Some have supposed that these spectacles, by rendering bloodshed familiar to the people, tend to deaden sensibility, and to make the national character ferocious and brutal. Others think, that they serve as an antidote to timidity, and as a means of cherishing resolution and valour. But theories of this kind are not justified by facts.

facts. Modern Italy, it is said, has no gladiators; but numerous assassins; whereas ancient Rome had scarcely one assassin, but whole armies of gladiators. As far as it respects the national character, it seems to be of little moment, whether bulls be killed by butchers or by champions; and it is well known, that such spectacles have little or no influence on the disposition, because they are attended by people of all ages and stations, and yet they neither give energy to the feeble, and boldness to the timid, nor make any alteration in the mildness of their manners. The bull-fights of Spain and Portugal attract a crowd of spectators, and yield very considerable sums of money to those who undertake and conduct them, of which part is appropriated to the purpose of defraying the expence of horses and bulls, and of paying the hire of the toradors; and part is applied to the support of religious and eleemosynary establishments. These entertainments have formed one of the chief funds of the hospital at Madrid. The bulls that are selected for these combats are of a peculiar breed, and the connoisseurs can readily distinguish by a view of them where they have been bred. The arena, where these shows are exhibited, is a kind of circus surrounded by ranges of seats, one above another; and the highest of them is covered. The lower part of the edifice is occupied by boxes. At Valladolid, which has no circus appropriate to these fights, the principal square is converted into a theatre, and the balconies of the adjoining houses are made to project in such a manner as to accommodate the numerous spectators who assemble on these occasions. The spectacle commences by a kind of procession around the square, in which the combatants appear both on horseback and on foot; and they are preceded by two alguazils on horseback, who are deputed to obtain of the president of the show an order for its commencement. Upon a certain signal, the animal appears; and the officers of justice, by hastily withdrawing, give notice to the spectators that their cruel pastime is about to begin. The bull is received, on his appearance, with loud shouts; and the contest is begun by the "picadors," who are mounted on horses and dressed in the ancient Spanish mode, each of them being armed with a long lance. To the honour of this part of the combat, which requires strength, courage, and dexterity, several persons of rank occasionally aspire. When the bull darts upon these combatants, without any previous irritation, his courage is applauded; and if in spite of the pointed weapon which resists his assault, he returns to the charge, the shouts of the spectators are redoubled, and their joy seems to transport them into enthusiasm; but if the bull is timid, and avoids his persecutors, he is hooted at and hissed by the spectators, and insulted with reproaches and blows by those who are near him. If these modes of provocation are insufficient to rouse his ferocity, large dogs are let loose upon him, which seize him in a furious manner by the neck and ear; and which he tosses into the air, so that they fall to the ground stunned, and sometimes mangled. At length, however, the combat is renewed, and the animal, overcome by his assailants, perishes ignobly. If the animal manifests spirit and fierceness, the picadors pierce him with their lances; and thus irritated, he furiously attacks the horse which carries the combatant, rips up his sides, and overturns him and his rider. The picadors, thus dismounted and endangered, are relieved by other combatants on foot, called "Chulos;" who divert the animal's attention by shaking pieces of differently coloured cloth before him; these the provoked animal pursues, and they escape merely by their agility. Sometimes they are under a necessity of throwing themselves over a barrier that encloses the arena. When this barrier is single, the bull pursuing the chulo, sometimes jumps over

it, and causes great consternation among the spectators on the lower benches, so that in their precipitance for escaping, they suffer as much as they might have done from the fury of the animal, who, however, becomes incapable of this kind of pursuit. The picador, when effectually relieved, mounts his horse, or if the first horse be killed or become unfit for service, procures another, and renews the combat. When the picadors have sufficiently tormented the bull, they withdraw, and leave him to the irritation of the combatants on foot. These latter, denominated "banderilleros," go before the animal; and when he aims at them, they plunge into his neck darts, called "banderillas," with hooked points, and ornamented with small streamers of coloured paper. The fury of the bull is now redoubled; he roars and tosses his head, and aggravates, by the violence of his motion, the pain occasioned by his wounds; and in this situation, the agility of his adversaries is signally displayed. The danger that threatens them alarms the spectators; but accustomed to this kind of combat, they secure themselves by their address and dexterity. When the vigour of the bull is almost exhausted, and he is bathed with blood, and the people are anxious to witness the combat of another victim, the president of the entertainment issues the signal of death, which is proclaimed by the sound of trumpets. The "matador" then advances; and holding a dagger in one hand, he waves before his adversary with the other hand a kind of flag. They both stop and gaze at one another; and the spectators are again amused for some time by the impetuosity of the bull, and the agility of the matador. The assembled observers witness this scene in profound silence: and the matador coolly dispatches the furious animal by a blow, where the spinal marrow joins the head. The death is bloodless and instantaneous, and deserves imitation, as humanity would wish to save pain to the animals slaughtered for food. When the animal falls, a thousand voices proclaim with loud shouts the triumph of the conqueror. If the blow is not decisive, and the bull survives, murmurs succeed applause, and the matador is regarded only as an unskilful butcher. When the tragedy terminates, three mules ornamented with bells and streamers appear, and the bull is dragged by means of a rope tied round his horns from the arena. Sometimes the bull is pierced in various parts with lances, to which squibs are fastened, which being set on fire, the maddened animal stands pawing the ground while he draws in and exhales volumes of smoke. Sometimes an American is introduced, who, after the manner of hunting the wild bull in his own country, throws a rope round the horns, and entangling him as in a net, then kills him with perfect safety.

On each of the days set apart for these entertainments, six are thus sacrificed in the morning, and 12 in the afternoon: at least this is the case at Madrid. The three last belong exclusively to the matador, who, unaided by the picadors, exerts his ingenuity to diversify the pleasure of the spectators. The Spanish government are not insensible of the moral and political inconvenience arising from this species of frenzy. So far from encouraging, they discountenance it; whilst it would be dangerous precipitately to abolish it. The court itself formerly reckoned it among the number of its festivals, which occurred at certain periods. The theatre of them was the "Plaza-Mayer," and they were honoured with the presence of the king and royal family; and his guards presided there in good order. His halberdiers formed the interior circle of the scene; and their long weapons, held out in a defensive posture, were the only barrier which they opposed against the dangerous caprices of the bull. These entertainments, which by way of ex-

cellence were called "Fiestas Reales," are now become very rare. Charles III. who endeavoured to polish the nation, and to direct the public attention to useful objects, was very desirous of suppressing a taste from which inconveniences sprang; but he was too wise to employ violent means for this purpose. He, however, confined the number of bull-fights to those, the profits of which were applied to some charitable institutions, with a design of substituting to these other funds afterwards. Bull-fights being thus rendered less frequent, will, perhaps, gradually lose their attraction, until more favourable circumstances allow the entire abolition of them.

BULL-running, denotes a feudal custom obtaining in the honour of Tudbury in Staffordshire, where anciently, on the day of the Assumption of our lady, a bull was turned loose by the lord to the minstrels, who, if they could catch him before he passed the river Dove, were to have him for their own, or, in lieu thereof, to receive each forty pence; in consideration of which custom, they pay twenty pence yearly to the said lord. Plot. Nat. Hist. Staff.

BULL and boar.—By the custom of some places, the parson is obliged to keep a bull and boar for the use of his parishioners, in consideration of his having tithes of calves and pigs, &c. 1 Rol. Abr. 559. 4 Mod. 241.

BULL-comber, in *Entomology*. See SCARABÆUS TYPHÆUS.

BULL-dog, in *Zoology*, a kind of mastiff upon a smaller scale; with a somewhat flatter snout and a greater ferocity of aspect. The bull-dog is remarkable for the undaunted and savage pertinacity with which he provokes and continues the fight; and when he has fixed his bite, is with much difficulty disengaged from his antagonist. This is the dog employed in the barbarous diversion of bull-baiting. See DOG.

BULL's eye, in *Astronomy*. See ALDEBARAN.

BULL's eye, in *Meteorology*, a little dark cloud, reddish in the middle, chiefly appearing about the Cape of Good Hope; thus denominated by the Portuguese, who, on the appearance of it, instantly take down their sails, as knowing that a terrible storm of thunder, lightning, and whirlwind, is at hand.

BULL's eye, in *Sea Language*, denotes a sort of small oval block without sheaves, made of hard wood. It is turned in a lathe, has a groove round the outside, and an oval hole gouged through the middle. These blocks are used instead of blocks and iron thimbles; but, indeed, they are very seldom used at all.

BULL-finch, in *Ornithology*. See LOXIA PYRRHULA.

BULL-frog, in *Zoology*. See RANA CATESBEIANA, and OCILLATA.

BULL-bay river, in *Geography*, lies to the east of Port Royal or Kingston harbour, in Jamaica, between Cane river and Four-mile wood.

BULL and cow, rocks near the south coast of Newfoundland. N. lat. 46° 55'. W. long. 53° 42'.

BULL Sand, lies about a league S.W. from the Spurn point, or eastern entrance of the Humber, on the coast of Yorkshire, between which and the point is a fine channel of ten or eleven fathoms.

BULL's harbour and island, or Sewee bay, lies on the coast of South Carolina, in North America, to the south-west from Cape Carteret. The entrance of the harbour, which is within the island, is at the N.E. end of it, having a small island within that: between them is a passage, in N. lat. 32° 56'. and W. long. 78° 24'.

BULL-head, a cape of Ireland, on the north side of Dingle bay in the county of Kerry, near three miles S.E. of Dingle. W. long. 10° 4'. N. lat. 52° 6'.

BULL-head, in *Ichthyology*, is a trivial English name applied most commonly to that small kind of fish which we distinguish farther by the name of *river-bull-head*, (*Cottus Gobio*, Linn.) Another fish of the same genus, *COTTUS CATAPHRACTUS* is called the *armed-bull-head*; this last lives in the sea.

BULL-trout, an English name for a fish of the salmon kind, caught in many of the rivers of England; it is also called the scurf. See SALMO TRUTTA.

BULL-rush, in *Botany*. See SCIRPUS FLUITANS.

BULLA, in *Antiquity*, a golden ornament, of a globular figure, and generally supposed to have been hollow within, wherein was contained some amulet, to serve as a preservative from witchcraft and envy, hung about the neck by those who triumphed among the Romans; and also by the children of the patricians, and even *ingenui*, as a badge of their hereditary nobility and freedom, by which they might be animated to behave themselves in a manner worthy of their birth. Authors are divided in their opinions about the form of this ornament, which the Sabine women, in acknowledgment of that increase of wealth and power for which Rome was indebted to them, were allowed to hang about the necks of their children. Plutarch (in Romul.) says, that they resembled the little bubbles which are formed by the drops of rain, when they fall upon running water. Hence it has been inferred, that they were hollow and light; others think that they were half globes, flat on one side, and globular on the other. Some have supposed, that they were originally made in the shape of a heart, in order to prompt their wearers to the acquisition of wisdom; and others say, they were round, with the figure of a heart engraved on them. The form, in process of time, is said to have varied from a complete circle to that of a segment. Such was the shape of the golden bulla lately found at Manchester; and as this had no aperture by which an amulet could be introduced, Mr. Whitaker (Hist. Manchester, vol. i. p. 79.) concludes, that they were not hollow; and he supposes, that they were intended at first rather as amulets than as ornaments; alleging that they were frequently impressed with the figure of the sexual parts. As to their origin, it has been affirmed by some, that they were first introduced by Romulus, and that he gave one of them to Tullus Hostilius, the first child born of the rape of the Sabines. Others ascribe the introduction of them to Tarquin the Elder, who gave a bulla to his son, at the age of 14, together with the prætexta, because he had killed an enemy; and hence it was afterwards assumed by other patricians. But Macrobius says, that Tarquin extended the right of wearing this ornament to all the children of the patricians; and that accordingly he began with his own.

The bulla was not allowed to the children of slaves, or even of *liberti*, who, in lieu thereof, wore a leather collar round the neck, much after the manner of the purple string to which the bulla was hung. But the great vestal, and the Roman ladies, wore a bulla; the former by way of distinction, the latter as a piece of dress. We may add, that bullæ were sometimes allowed to statues; whence the phrase, "statuæ bullatæ." M. Lepidus, having killed an enemy, and saved a citizen, even when a boy, had a "bullated" statue erected to him in the Capitol, in memory of the exploit. The Roman youth laid aside the bulla, together with the "prætexta," and consecrated it to the Lares, when they arrived at their fifteenth year; as appears from the satyrists:

"Cum primum pavido custos mihi purpura cessit,
Bullaque succinctis Laribus donata pependit."

Pers.

Perf. Sat. v. ver. 20. Hist. Acad. Infer. tom. ii. Valer. Max. lib. iii. cap. i. Cic. in Verr. I. 58. Macrob. Sat. i. 6.

BULLA was also a denomination given to divers other metalline ornaments made after the form of bullæ.

In which sense, bullæ seem to include all golden and silver ornaments of a roundish form, whether worn on the habits of men, the trappings of horses, or the like. Such were those decorations used by the ancients on their belts and doors. Virgil, speaking of Pallas's belt or girdle, says:

"Notis fulserunt cingula bullis
Pallantis pueri." Æneid. lib. xii. ver. 942.

The bullæ of doors were a kind of large-headed nails fastened on the doors of the rich, and kept bright with great care. The doors of temples were sometimes adorned with golden bullæ.

The bullæ worn by soldiers on their belts, and also on the doors of houses, &c. have been considered by some, not merely as ornaments, but as a kind of amulets, and intended as preservatives from diseases and dangers, as well as incentives to glory.

BULLA also denoted a table hung up in the public courts, to distinguish which days were *fasti*, and which *nefasti*; answering in some measure to our calendar.

BULLA, in *Conchology*, the name of a genus of shells, the character of which is thus defined: animal a limax; shell univalve, convoluted, and unarmed; mouth, or aperture, somewhat straitened, oblong, longitudinal, and at the base very entire; pillar-lip oblique, and smooth.

The species of this genus are ovum, volva, birostris, spelta, verrucosa, gibbosa, nancum, aperta, hydatis, ampulla, lignaria, physis, amplustra, ficus, rapa, canaliculata, conoidea, fontinalis, hypnorum, turrita, gelatinosa, terebellum, cypræa, virginea, fasciata, strigata, striatula, exarata, bifasciata, ambigua, zebra, achatina, hyalina, ovata, ferruginosa, velum, vesica, cylindrica, oliva, voluta, dominicensis, purpurea, spreta, solida, stercuspulicum, scabra, akera, soluta, truncata, and carnea.

BULLA, in *Zoology*, a species of CYCLIDIUM, of an orbicular form and transparent. Müll.

BULLA is also a species of VOLVOX, the form of which is somewhat oval. Martiniere.

BULLA *Velutina*, of *Mülleri*, in *Conchology*. See HELIX HELIOTOIDEA.

BULLA *regia*, or *Bullaria* of Ptolemy, in *Ancient Geography*, a free town of Africa, on the route from Carthage to Hippoza, between Simittu and Novæ Aquilina. Anton. Itin.

BULLACE-TREE, in *Botany*. See PRUNUS *institia*.

BULLÆUM, in *Ancient Geography*, a town of the Silures in Britain, placed by Camden at Buallt or Buillt in Brecknockshire, by Baxter at Caerphilly, and by Horsley at or near Usk in Monmouthshire: thus uncertain is its situation.

BULLAN-BAY, in *Geography*, a bay on the west coast of Ireland, between the northern part of the Isle of Achil and the main land of the county of Mayo.

BULLANSPOUR, a town of Hindoostan, in the hilly country of Cahlora, seated near the river Setlege, 159 miles E. of Lahore, and about N. 26° E. 60 geographical miles from Sirhind. N. lat. 31° 31'. E. long. 76° 40'.

BULLARII, in the court of Rome, the makers or drawers of bulls or constitutions. See BULL.

BULLARY, *Bullarium*, a collection of papal bulls.

We have extant divers kinds of bullaries; some containing

only the bulls of particular popes; such are the bullaries of Innocent XII. and Clement XI. Others contain the bulls granted to particular communities; such is the bullary of the order of Cluny, &c.

A general bullary of all the papal constitutions from Gregory VII. to Sixtus Quintus, was compiled by order of pope Sixtus Quintus, in 1586; since which has been published a great bullary, by Laert. Cherubin, containing the bulls of all the popes from Leo in 440, to Paul V. in 1559; since continued by Ang. Cherubin to the year 1644, and by Ang. a Lantusca and Jo. Paulus to the year 1676; and, lastly, by an anonymous editor to the time of Benedict XIII. under the title of "*Bullarium magnum Romanum*." We have the same digested in a new method by Bouchardus; a commentary on it begun by Vinc. Petra, and a summary of it by Novarius. Fabr. Bibl. Med. Ævi. Lat. lib. ii. tom. i. p. 816. 822.

BULLATA, in *Conchology*, a species of VOLUTA, the shell of which is cylindrical, very glabrous, reddish, with somewhat livid belts; spire obtuse; pillar-lip with four plaits within; aperture effuse. Chemnitz. Inhabits the Indian seas.

BULLATUS, a species of SOLEN, the form of which is somewhat rotund, inflated, and striated slightly; anterior part of the shell retained open by the crenatures with which it is beset.—This sort inhabits the American seas, and it is believed those of India also. The shell is thin, somewhat pellucid, longitudinally striated, white, and spotted or clouded with purple. Hinge with a single tooth. Marginal teeth remote, compressed, and inserted in a kind of hollow in the opposite valve.

BULLATUS, a species of CONUS, the shell of which is yellow, clouded with white. Linn. Native place unknown. Adanson calls it Potan.

This shell is thin, sometimes of an uniform colour, but more frequently spotted, clouded, or striped; aperture of the mouth for the most part large, and blueish.

BULLE, in *Geography*, a town of Switzerland, in the canton of Friburgh, where the insurgents of Gruyeres assembled in 1781, in order to concert measures for obtaining a redress of grievances; 10 miles S. of Friburgh. N. lat. 46° 40'. E. long. 6° 54'.

BULLENMEER, a town of Germany, in the circle of Westphalia, and county of Oldenburg; 18 miles N. of Oldenburg.

BULLER, CAPE, a cape of South Georgia, to the west of the bay of islands, and about 7 leagues from cape North, nearly E. of it. S. lat. 53° 58'. W. long. 37° 40'.—Also, a cape on the coast of Terra del Fuego island, in S. lat. 53° 58'. W. long. 67° 40'.—Also, a cape on the coast of New Britain, in the East Indian ocean. S. lat. 4° 56'. E. long. 151° 23'.

BULLERS, or BOULERS of *Buchan*, a natural harbour, on the east coast of Scotland, about 6 leagues N. from Aberdeen, and 2 S. from Peterhead. It is only frequented by fishermen, and formed by a rock of an irregular oval form, projecting into the sea from the middle of a bay to the distance of 100 yards. Vessels of all sizes may shelter here from the weather; but landing is impracticable. It derives its name from boiling, on account of the turbulence of the water.

BULLES, a small town of France, in the department of the Oise and district of Clermont, seated on the river Bresche, and celebrated for its fine flax and linen; 2 leagues N.W. of Clermont.

BULLETT, an iron or leaden ball, or shot, wherewith fire-arms are loaded. Some derive the word from the Latin

betellus, others from the Greek *βῆλλον*, to throw. *Bullets* are of various kinds, viz. *red-hot bullets*, made hot in a forge; intended to set fire to places where combustible matters are found. See SHOT.

Hollow bullets are shells made cylindrical, with an aperture and a fusee at one end, which giving fire to the inside, when in the ground, bursts, and has the same effects with a mine.

Chain-bullets, consisting of two balls, joined by a chain three or four feet apart.

Branch-bullets, two balls joined by a bar of iron five or six inches apart.

Two-headed bullets, called also *angels*, being two halves of a bullet joined by a bar, or chain, are chiefly used at sea for cutting of cords, cables, sails, &c.

Quarter-bullets. See QUARTER.

The diameter of a leaden bullet, weighing one pound, is 1.69 inches, according to sir Jonas Moore; or by a table in Muller's "Treatise of Artillery," (p. 56), 1.672 inches; and the diameter of any other bullet is found by dividing 1.69 inches by the cube root of the number, which expresses how many of them make a pound; or by subtracting continually the third part of the logarithm of the number of bullets in the pound from the logarithm .2278867 of 1.69, and the difference will be the logarithm of the diameter required.

Thus the diameter of a bullet, of which 12 make a pound, will be found by subtracting .3597270, a third part of 1.0791812 the logarithm of 12, from the given logarithm .2278867; or because this logarithm is less than the former, an unit must be added, so as to have 1.2278867; and then the difference .8681597 will be the logarithm of the diameter sought, which is .738 inches, observing that the number found will be always a decimal, because the number subtracted is greater than the other.

We may also deduce the diameter of any bullet from its given weight, provided that the specific gravity of lead is known: for, since a cubic foot of lead weighs 11,325 ounces, and 678 is to 355 as the cube of a foot or 12 inches, *i. e.* 1728, to the contents of a sphere, which is therefore 5929.7 ounces; and since spheres are as the cubes of their diameters, the weight 5929.7 is to 16 ounces, or one pound, as the cube 1728 is to the cube of the diameter of a sphere, which weighs 16 oz. or 1 lb.; which cube is 4.66263, and its root is 1.6706, the diameter sought.

By the rule above laid down is calculated the following table, shewing the diameters of leaden bullets, from 1 to 39 in the pound.

	0	1	2	3	4	5	6	7	8	9
0	0	1.69	1.541	1.172	1.054	0.988	0.960	0.883	0.845	0.812
1	0.784	0.760	0.738	0.719	0.701	0.685	0.671	0.657	0.643	0.630
2	0.623	0.612	0.603	0.594	0.586	0.578	0.570	0.563	0.556	0.550
3	0.544	0.537	0.532	0.527	0.521	0.517	0.512	0.507	0.503	0.498

N. B. The upper horizontal column shews the number of bullets to a pound; the second, their diameters; the third, the diameters of those of 10, 11, 12, &c.; and the fourth, those of 20, 21, 22, &c.; and the last, those of 30, 31, 32, &c.

The government allows eleven bullets in the pound for the proof of muskets, and 14.5 in the pound, or 29 in two pounds for service; 17 for the proof of carabines, and 20 for service; and 28 in the pound for proof of pistols, and 34 for service. The diameter of musket bullets differs but 1-50th part from that of the musket-barrel; for if the shot but just rolls into the barrel, it is sufficient. Cannon-bullets or balls are of different diameters and weights, according to the nature of the piece. See CALIBER and SHOT.

The first mention of iron-bullets in the "Fœdera," occurs A.D. 1550, in an acquittance for delivery of the artillery and ammunition of Boulogne; and yet stone-bullets remained in use considerably later than this time.

According to Mersenne, a bullet, shot out of a great gun, flies 92 fathoms in a second of time, which is equal to 589½ English feet; and, according to Huygens, it would be 25 years in passing from the earth to the sun: but according to some very accurate experiments of Dr. Derham, it flies, at its first discharge, 510 yards in five half-seconds; or about 7 miles in a minute: allowing therefore the sun's distance 95,000,000 English miles, a bullet would be near 26 years in its passage at the full speed.

Bullets shot into the water undergo a refraction; several experiments concerning which are given by Mr. Carré.—Vide Mem. Acad. Scienc. ann. 1705, p. 277.

The extraction of bullets from wounds is an operation described by surgical writers. Bullets sometimes remain easy in the body during many years.

Swallowing of musket bullets is sometimes practised to remove iliac and colic pains. Mr. Young gives a case wherein this had a terrible effect: the bullet happening to miss its way down, instead of the *œsophagus*, got into the *trachea*. Mr. Chirac has a dissertation on the question, which of the two is safer in iliac cases, to swallow leaden bullets, or crude mercury? He gives the preference to the bullets. Phil. Trans. N° 263.

BULLET-moulds consist of two concave hemispheres, with a handle whereby to hold them; and between the hemispheres is a hole, called a gate, at which to pour in the melted metal. The chaps or hemispheres of bullet-moulds are first punched, being blood-red hot, with a round-ended punch, of the shape and size of the intended bullets. To cleanse the insides, they make use of a bullet-bore.

BULLET-bore is a steel Shank, having a globe at one end, wherewith to bore the inside of a mould clean, of the size intended.

BULLET-iron, a denomination given by some to Spanish or Swedish bars of iron.

BULLET, JOHN-BAPTIST, in *Biography*, a professor of theology, and dean of the university at Befançon, died in that city in 1775, at the age of 76 years. He was a member of several learned societies, and esteemed as a valuable writer. His principal works are, "His History of the Establishment of Christianity, taken solely from Jewish and Pagan Writers;" 1764, 4to. "The Existence of God, demonstrated by Nature;" 2 vols. 8vo. "Reply to the Difficulties of Unbelievers, respecting various passages in the Sacred Writings;" 3 vols. 12mo. "De Apollonica Ecclesiæ Gallicanæ Origine;" 1752, 12mo. "Memoirs on the Celtic Language," 1754-59, 3 vols. folio; to which work he is chiefly indebted for his reputation. "Historical Enquiries concerning Playing-Cards;" 1757, 8vo. "Dissertations on the History of France," 1759, 8vo.; all written in French, except that with the Latin title. Nouv. Dict. Hist.

BULLEYN, WILLIAM, of a respectable family of the same name, in Suffolk, was born in the Isle of Ely, in the early part of the reign of Henry the eighth. At a proper age he was sent to Cambridge, which he quitted, probably after taking his bachelor's degree, and went to Oxford, where he applied himself to the study of medicine, and read the Greek and Arabian writers, in both which languages he appears to have been tolerably skilled. While resident there, he made excursions through the neighbouring countries, paying great attention to the plants that he had found recommended in the cure of diseases; and after taking the degree

degree of doctor, he extended his excursions, travelling over the greatest part of England and Scotland. He afterwards visited the continent, with the same view. On his return, he was made rector of Blaxhall in Suffolk, through the interest, probably, of his family, and practised medicine there. On the accession of queen Mary, he removed to Durham, thinking it more safe, being a protestant, to live at that distance from the court. He lived here in great intimacy with sir Thomas Hilton, governor of Tinnmouth fort, and became a sharer, or joint proprietor of the salt-pans. Sir Thomas dying under his care of a putrid fever, he fell into such disgrace, that he found it necessary to remove from Durham, and Mary being dead, he came to London; but the vengeance of the family pursuing him, he was taken up, arraigned, and tried for the murder of his friend; and though he easily cleared himself from the imputation of this crime, he was continued in prison, at the suit of the prosecutor, the brother of sir Thomas, for a debt due to the family. While in prison, he tells us, he wrote the greater part of his medical works. Having at length discharged his debt, he returned to London, was made a member of the College of Physicians, and acquired considerable reputation for his skill in the practice of medicine, which he enjoyed to the time of his death, January 7, 1576. His rectory he gave up at the time of his quitting Blaxhall. He was an ancestor, Granger says, of the late Dr. Stukely. There are two portraits of him, both cut in wood; the one a profile, with a long beard, published with his Government of Health, an octavo volume, 1548; the other a whole length, to his "Bullein's Bulwark of Defence against all Sicknes, Soarnes, and Wounds that do dayly assault Mankind;" fol. 1562. His last work is entitled, "A Dialogue, both pleasaunte and pietifull; wherein is a goodlie Regiment against the Fever Pestilence; with a Consolation, and Comfort against Death;" 8vo. 1564. In this work, not more than a seventh part of which, Dr. Aikin says, is on the subject of medicine, the author appears as a person of much humour, and fancy. Haller mentions a work by Richard Bulleyn, who was also, like our author, both a divine and a physician; "De Nephritide, ejusque Remediis," which was published in 1562. These works, which are now only sought for by collectors, as specimens of the engraving, and printing of the time, passed through several editions, and doubtless contributed in raising the reputation of the writer. This shews the little progress our ancestors had then made in civilization and knowledge, as our author was no better informed than to imagine, that beads made of ebony might be successfully worn as a charm against certain diseases, and "that witchcraft was more hurtful in the realm than either quartan, pox, or pestilence;" lamenting "that damnable witches should be suffered to live unpunished, while so many blessed men (protestants) were burned." But these prejudices continued more than a century after his time; for in Charles the Second's reign we find doctor Chamberlain, then in high repute as an accoucheur, sanctioning the folly of putting necklaces on children to facilitate dentition, and writing a treatise, to shew the manner in which the beads effected this purpose. Aikin's Biographical Memoirs of Medicine, &c.

BULLIALDUS, or BOULLIAU, ISHAEI, a celebrated astronomer and scholar, was born of protestant parents, at Houdun in France, September the 28th, 1605; and having finished his studies in philosophy at Paris, and in civil law at Poitiers, he applied to mathematics, theology, sacred and profane history, and civil law, with such assiduity, that he became eminent in each of these departments, and acquired the reputation of an universal genius. As he had

travelled for his improvement into Italy, Germany, Poland, and the Levant, he formed an extensive acquaintance with men of letters, and maintained a correspondence with the most distinguished persons of his time. Although he had been educated a protestant, he changed his profession at the age of 27 years, and became a catholic priest. His life was prolonged to his 89th year; and having retired to the abbey of St. Victor at Paris in 1649, he died there November the 25th, 1694. Besides his pieces concerning ecclesiastical rights, which excited attention, and the history of Ducas, printed at the Louvre, in 1649, in the original Greek, with a Latin version and notes, he was the author of several other works, chiefly mathematical and philosophical. His "Treatise on the Nature of Light," was published in 1638; and his work entitled, "Philolaus, five de vero Systemate Mundi," or true system of the world, according to Philolaus, was printed at Amsterdum in 1638, and republished in 1645, under the title of "Astronomia Philolaica;" grounded upon the hypothesis of the earth's motion, and the elliptical orbit described by the planet, illustrated with various methods of demonstration. To this work were added his "Tabulae Philolaicae," much improved and recommended by Riccioli, who styles the author "Astronomus profundæ indaginis." Upon examining the hypothesis, or approximation of bishop Ward, he found that it did not agree with the planet Mars; and in his defence of the Philolaic astronomy against the bishop, he shewed that from four observations of Tycho on the planet Mars, this planet in the first and third quarters of the mean anomaly was more forward than it ought to have been upon Ward's hypothesis; but that in the second and fourth quadrants of the same, the planet was not so far advanced as that hypothesis required. He therefore undertook the correction of the bishop's hypothesis, and made it more conformable to the orbits of the planets, which were most eccentric, and introduced what Street has called in his "Caroline Tables," the "Variation;" for these tables were calculated by means of the correction of Bullialdus, and were thus more accurate than any which had preceded them. Dr. Gregory esteems this correction a very happy one, considered as a correction of an approximation to the true system; for we are thus enabled to deduce the coequate, or true anomaly *à priori* and directly from the mean, in a manner very well corresponding to the observations; which no one, says Mercator, had effected before. Bullialdus, while he makes every planet move in an ellipse, supposes it to be such a one as if cut out of a cone, would have the axis of the cone pass through one of its foci, or that next the aphelion. See Gregory's Astron. lib. iii. prop. 7.

In 1644 Bullialdus published a translation of "Theophrastus, the Platonist of Smyrna," with notes; and in 1657 his treatise "De Lineis Spiralibus, Exerc. Geom. et Astron.;" Paris, 4to. In 1663 he published a treatise of "Ptolemy de judicandi Facultate;" and in 1682 appeared at Paris, in folio, his large work, entitled "Opus Novum ad Arithmetice Infinitorum," being a diffuse amplification of Dr. Wallis's Arithmetic of Infinites. Upon being consulted by M. Thoinard concerning the appearance of the moon in the month of March, and 33d year of the christian era, he made the requisite calculations, and replied that it could not have been seen in Judæa till the 19th of that month, and that it was probable that Jesus Christ was crucified on the 3d of April of the same year. Bullialdus also published two admonitions or notices to astronomers; the *first*, concerning a new star in the neck of the whale, sometimes appearing, and sometimes disappearing; and the *second*, concerning a nebula in the northern part of Andromeda's girdle, which

had not been discovered by any of the ancients, and which is subject to periodical changes. Moreri. Martin.

BULLIG, in *Geography*, a rocky shoal in the Atlantic near the west coast of Ireland; it is about half a mile S. of Carrikelra island near Gulin head, in the county of Galway. W. long. $9^{\circ} 47'$. N. lat. $53^{\circ} 12'$.

BULLIMONY, or **BOLLIMONG**, denotes a mixture of several sorts of grain, as oats, pease, and vetches, called also *maffin*, or *mong-corn*.

BULLINGER, **HENRY**, in *Biography*, a Swiss reformer, was born in 1504 at Bremgarten, on the borders of the canton of Zurich; and educated at Emmerick in the duchy of Cleves, whither he was sent by his father at the age of 12 years, and where he was supported for three years by the alms he procured for singing from door to door. Having been accustomed to the mortification and hardships attendant on this mode of subsistence, he entertained thoughts of entering among the Carthusians. But diverted from this resolution by the admonitions of his elder brother, he removed to Cologne at the age of 15 years, and devoted himself to the study of the school-philosophy, and of classical literature. About this time his attention was directed to the writings of Melancthon, and other reformers, the perusal of which produced a dislike of the doctrines of the Romish church, though he did not yet separate from it. Having finished his studies at Cologne in 1522, he returned to his father's house, and in the following year he was invited by the abbot of La Chapelle, near Zurich, to be a teacher in his convent, into which the reformation of Zuinglius was introduced in 1526, principally by his instruction. Attaching himself to this reformer, he accompanied him to the conference held at Berne in 1528; and he afterwards settled as reformed pastor at his native place. In 1531, after the victory obtained by the catholic cantons over the protestants, he was obliged to retire to Zurich, where he succeeded Zuinglius, who had lost his life in the battle. In this situation he applied with assiduity to his ministerial labours and his studies, and edified his church by his writings as well as by his sermons. When Bucer attempted to reconcile the Lutherans and Zuinglians, by introducing a kind of middle doctrine with regard to the eucharist, he counteracted his efforts; and he was appointed by the Swiss churches in 1545 to reply to the harsh censures, which were published by Luther against their doctrine respecting the sacrament. In 1549 he concurred with Calvin in drawing up a formulary, expressing the conformity of belief which subsisted between the churches of Zurich and Geneva, and intended on the part of Calvin, for obviating any suspicions that he inclined to the opinion of Luther with respect to the sacrament. In the same year he urged many reasons against renewing the subsidiary treaty between the protestant Swiss and Henry II. king of France, and by his influence the proposal for this purpose was rejected. Among other arguments, he urged upon their consideration, "that it was not lawful for persons to hire themselves, in order to kill those who had done them no wrong;" a position, which, however consonant to the principles and spirit of christianity, many professed believers have too frequently disregarded. Bullinger afforded kind assistance to the English divines who fled into Swisserland from the persecution of queen Mary; and he drew up a confutation of the pope's bull that excommunicated queen Elizabeth, which has been translated into English. He also persuaded the magistrates of Zurich to erect a new college in 1538; and he prevailed with them to establish a school, on the site of an old nunnery, in which 15 youths were taught and maintained, free of expence. In 1551 he wrote a book, the purport of

which was to shew, that the council of Trent had no other design than to oppress the professors of sound religion; and, therefore, that the cantons should pay no regard to the invitations of the pope, which solicited their sending deputies to that council. In 1561 he commenced a controversy with Brentius concerning the ubiquity of the body of Christ, zealously maintained by the one, and as vehemently opposed by Bullinger, which continued till his death, that happened on the 17th of September, 1575. Besides a great number of printed works, amounting to ten volumes, he left several pieces in manuscript. Although Bullinger had been once married, and had eleven children, he was blamed for not taking another wife, when he became a widower at the age of sixty; such was the importance annexed by the first reformers to the connubial state, especially with regard to ministers, as it afforded a manifest proof of their renunciation of popery. Gen. Dict.

BULLION, denotes gold or silver in the mass or billet, before it is coined. 9 Ed. III. st. ii. c. 2.

The word is apparently formed from the French *billon*, a mass of gold or silver below standard, which Du-Cange derives farther from *billa*, as being *aurum aut argentum in massam seu billam*, i. e. *baculum conflatum*.

The term is applied to these metals, either when smelted from the ore, and not perfectly refined, or when so refined, and melted down in bars, or ingots, or any unwrought body of a certain degree of fineness. In order to render gold and silver fit for use, it is necessary to reduce and harden them by an alloy of some baser metal: and the quantity of this alloy is ascertained by the legislative regulations of different countries, so that the proportion of the one to the other may constitute the standard silver of such countries. According to the laws of England all sorts of wrought plate should be made in conformity to the legal standard: and the prices of standard gold and silver, regulate the value of the bullion, consisting of ingots, bars, dust, or foreign specie; consequently, in order to ascertain the value of bullion, it is first assayed. See *ASSAY*. See also *GOLD* and *SILVER*.

Silver bullion is sometimes also denominated *PLATE*.

Silver and gold, whether coined or uncoined (though used for a common measure of other things), are no less a commodity than wine, tobacco, or cloth; and may, in many cases, be exported as much to national advantage as any other commodity.

In all great commercial countries a good deal of bullion is alternately imported and exported for the purposes of foreign trade. This bullion, as it circulates among such countries in the same manner as the national coin circulates in every particular country, may be considered as the money of the great mercantile republic. Whilst the national coin receives its movement and direction from the commodities circulated within the precincts of each particular country, the money of the mercantile republic derives its movements from those that are circulated between different countries. Both are employed in facilitating exchanges, the one between different individuals of the same, the other between those of different nations. However, the importation of gold and silver is not the principal, much less the sole benefit which a nation derives from its foreign trade. It is, indeed, part of the business of foreign commerce to supply countries which have no mines with the gold and silver that are wanted in them: but this is, comparatively, a very insignificant object; nor is it by the importation of gold and silver, that the discovery of America has enriched Europe. But by opening a new and inexhaustible market to all the commodities of Europe, it gave occasion to new divisions of labour and improvements of art, which, in the narrow circle of the an-

cient commerce, could never have taken place for want of a market to take off the greater part of their produce.

Gold and silver, according to Mr. Locke, are the most solid and substantial part of the moveable wealth of a nation; and to multiply these metals should, he thinks, on that account, be the great object of its political economy. Countries that have political connections with foreign nations, and that are obliged to carry on foreign wars, and to maintain fleets and armies in distant countries, and to subsidize foreign princes, are under a necessity of sending money in some form or other abroad; and therefore it has been said, that in time of peace it should endeavour to accumulate gold and silver, that when occasion requires, it may possess the means of carrying on foreign wars. Upon these popular principles all the different nations of Europe have studied, though to little purpose, every possible means of accumulating gold and silver in their respective countries. Spain and Portugal, the proprietors of the principal mines which supply Europe with those metals, have either prohibited the exportation of them under the severest penalties, or subjected it to a considerable duty. The like prohibition seems anciently to have made a part of the policy of most other European nations. But when those countries became commercial, the merchants found this prohibition extremely inconvenient, and remonstrated against it, as hurtful to trade. They represented, first, that the exportation of gold and silver, in order to purchase foreign goods, did not always diminish the quantity of those metals in the kingdom, but might frequently increase that quantity; because these foreign goods, if not consumed in the country, might be re-exported, and sold in foreign countries for profit, which would bring back with increase the treasure originally sent out for the purchase of them. They moreover, represented that this prohibition could not hinder the exportation of gold and silver, which, on account of the smallness of their bulk, is proper to be exported, and could easily be smuggled abroad. These arguments produced the wished-for effect; and the prohibition of exporting gold and silver was restricted in France and England to the coin of these respective countries. The exportation of foreign coin and bullion was made free, and the first law for this purpose in England was passed in 1663. In Holland, and in some other places, this liberty was extended even to the coin of the country. A country that has no mines of its own, must undoubtedly draw its gold and silver from foreign countries; and, on account of their small bulk and great value, they are as easily transported as obtained. When the quantity of gold and silver imported into any country exceeds the effectual demand, no vigilance of government can prevent their exportation. All the sanguinary laws of Spain and Portugal are not sufficient for keeping their gold and silver at home. As they are easily transported from places where they abound, to those where they are wanted, their price does not admit of the same fluctuation with that of many other commodities, that are not so conveniently and speedily removed. The changes which take place in their value are generally slow, gradual, and uniform.

Instead of accumulating gold and silver, with a view to the augmentation of the real wealth of the country, Dr. Adam Smith (*Wealth of Nations*, vol. ii. p. 157.) recommends their being considered, under whatever form they exist, as utensils; and increasing the use for them, by increasing the consumable commodities, which are to be circulated, managed, and prepared by means of them, as the most effectual and most certain method of increasing their quantity, which will ever keep pace with the use to which they are applied; and instead of this no law can ever prevent their being immediately sent out of the country. He adds, that it is not always neces-

sary to accumulate gold and silver, in order to enable a country to carry on foreign wars, and to maintain fleets and armies in distant countries. Fleets and armies are maintained, not with gold and silver, but with consumable goods; and the nation which, from the annual produce of its domestic industry, from the annual revenue arising out of its lands, labour, and consumable stock, has wherewithal to purchase those consumable goods in distant countries, can maintain foreign wars there. See COIN and MONEY.

BULLION is also used for the place where the king's exchange is kept: or where gold and silver are brought in the lump to be tried or exchanged.

BULLIT'S LICK, in *Geography*, a salt-spring lying in Salt river, in Kentucky, America, and giving name to the river. It is distant 20 miles from the rapids of the Ohio, near Saltsburgh, and is the finest spring that was worked in the country.

BULLITS, a county of Kentucky, containing 3446 inhabitants, of whom 944 are slaves.

BULLOCH-MORE, a rocky shoal, about a quarter of a mile long from east to west, which lies above a mile W. of St. John's point, in the mouth of Killibeg's harbour in the west of Ireland: the least water in it is six feet. M'Kenzie.

BULLOCK, in *Rural Economy*, the male of the cattle kind of animals, after being castrated. It is the same with ox. Animals of this kind are generally termed bullocks from two to five, six, or more years old.

The author of the "Synopsis of Husbandry" has observed, that in bullocks "a smooth coat and healthy countenance are proofs of their kindly disposition, and that they will not deceive the buyer in the future progress; whereas, a drooping countenance, a lank belly, and a staring coat, may be considered as unfavourable circumstances, and certain indubitable signs, either that such beasts are unhealthy or by nature unthrifty and unprofitable." Besides these, much depends on the form and construction of the animal: "a close well-set bullock, with a large dewlap, stout legs, deep chest, broad buttocks, and thick flank, will rarely deceive the purchaser; whereas those of a contrary shape, loose jointed, long-legged, with a prominent back-bone, great length of body, sharp buttocks, and a belly tucked up, though to appearance larger than the first mentioned, are not likely to pay so well for their meat, and will be found much lighter in the scale from these defects."

Fattening bullocks, it is observed, "require to be foddered with hay in the severity of the winter months, and for this season it is always a prudent measure, where it can be done, to lay in for mowing a certain portion of marsh or other good grass land, that there may be no want of fodder in the winter and spring of the year; for it is in March and April, if those months turn out to be unpropitious, that stock of every kind is more apt to suffer than in the depth of winter; and when young bullocks become much reduced in flesh at that season, it is a very difficult task to raise them, and they will continue, during the process of their fattening, to betray marks of the check they met with in their youth, so as never to arrive at the weight when fattened, that they would have done if they had not been suffered to pitch in the early stage of their life.

Good water is likewise a very essential requisite in feeding horned cattle; and such graziers will never find their account in setting about this business, whose grounds do not abound with a continual and plentiful supply of it; nor will the beasts thrive on dry lands, though the grass should be in the largest abundance, for bullocks require a large quantity of water, to dilute their victuals, and delight in the summer time to chew the cud in pools or rivulets, where they may enjoy a cool

cool retreat, and with alternate vibrations of the tail defend themselves from the troublesome attacks of flies, gnats, and other insects. The period when beef generally fetches the best price is towards the month of March; hence, those who are fortunate enough to have any fat beasts in the spring, are certain to make a good market of them, especially in years in which the crops of turnips turn out deficient; as when there are large growths of this root, vast numbers of horned cattle are fattened on them in Norfolk, and the adjoining counties, and these are often brought to Smithfield in such herds as to cause a considerable reduction in the market.

Besides the method of fattening bullocks on grass lands, there are several others in the wolds of Kent and Suffex, where the land is the most fertile of any in the southern parts of the kingdom, and where the meadows produce a grass of the most rich and nutritious quality, and in an abundance equal to the strength of the pasture, where the ponds and rivulets yield a continual supply of wholesome and refreshing drink, and where the hay, when well secured, possesses a virtue answerable to the green herbage: on these feeding lands the grazier finds his account in stocking his farm with bullocks of the largest size, either from the isle of Anglesea, or from Yorkshire, Staffordshire, or other places remarkable for breeding the most weighty beasts. These bullocks have generally been worked for some years, a practice which not only serves to render them tractable and docile, whence they lie more quiet in the feeding pastures, but which renders such beasts much more expeditious in getting into flesh, than those which have not been accustomed to the yoke. These bullocks having been raised into good condition by means of the grass without doors, are, at the approach of winter, taken into the house, where they are kept in separate stalls, and tended with a constant supply of this highly nutritious fodder, the intrinsic goodness of which is often alone sufficient to complete the business, and render the oxen fit for the butcher. But in order to accelerate the progress, troughs are set before them, which are constantly filled with ground beans, oats, &c. as likewise with oil-cake reduced into small pieces. This latter substance, though apparently not calculated to please the palate of a graminivorous animal, especially so nice a feeder as a bullock, is coveted by them with such avidity, that, after they have been a few weeks accustomed to the taste of it, they quit any other provender to feast on this diet, so that a very small portion of hay will be required when the beasts begin to feed heartily on the cake. But it is to be observed that water is of the utmost consequence, and therefore should be liberally given them during the time that they are feeding on the cake, at which time they require a more copious supply of liquid than when they are confined to any other diet. Thus provided with a due supply of hay, oil-cake, and water, the beasts make a quick progress in their fattening, and if in pretty good heart when shut up, will be ready for the butcher at the time when beef is most likely to advance in price in the markets.

It is necessary to remark, that in the feeding of bullocks either on hay, corn, oil-cake, or a mixture of each, their feeds should be given them frequently and in small proportions at a time, for, if the fattening beasts are suffered to blow on any part of their food, they can never more be brought to eat of the same again, until compelled by hunger, a sensation which they ought never to be allowed to feel. This shews the great necessity of a constant attendance on these animals, in order that their food may be given in due proportions, their water often changed, and their litter still kept fresh and clean under them, for of all brute animals,

a bullock is the most dainty in the choice of his food; whence, Mr. Bannister supposes, "he has probably obtained the appellation of *neat*, a term perpetually used to discriminate these cattle."

It is stated by the same writer that "when fed with oil-cake, each beast will require eight cakes per day, which are to be broken into pieces, of which one cake will form about four. Many people divide the cake by means of a large mortar and weighty pebble; but there is a far easier and more expeditious method of performing this work, which is, by holding the cake for a few minutes before the fire, which renders it, from a very hard substance, pliable and tender, so that it may be broken with the utmost facility between the fingers to any size that may be thought necessary, though it will be prudent not to break any more at one time than may be supposed wanting for the expenditure of the current day, that the beasts may enjoy their provender every day fresh out of the loft. And here a hint is offered in respect to preserving the cake, which is, that it be laid in a dry, clean loft, where it may be kept free from any extraneous mixture, but to be particularly careful that neither wet nor dampness be admitted to come in contact with it, which would certainly occasion it to be mouldy, and render it totally unfit for use: this caution seems the more necessary, as the cakes are generally purchased in the summer months, when the price is at the lowest, and kept for half a year or longer before they are used, in which time it is evident that either a drip in the thatch or tiling, or a dampness in the walls, or the flooring of the shed or warehouse wherein they are stowed, may bring no small detriment to the cakes; and thus the owner suffers a heavy loss in the first expence, and is utterly disappointed in his future views." Moreover "when bullocks are fattened on turnips and hay, they require only a small allowance of water, as the moisture of the turnips in a great measure supplies the place of other liquid. They may either be turned into the field, and fed with a daily portion, by dividing the close with hurdles in like manner as is practised for sheep, or the turnips may be brought home and given to them in a yard, or other inclosure; or, lastly, the beast may be tied up in stalls, as was directed for the cake-fed bullocks. Of these three methods, the last seems to be the most eligible, as by this means the beast will lie much more at his ease, and having his eyes detached from every object but his food will fatten more kindly, and with greater expedition, than when suffered to enjoy a wider range. The second method of bringing the turnips into a yard, and suffering the beasts to eat them there, is much preferable to that of penning the bullocks in the field, where they will probably not seldom make their way into the standing turnips, and be exposed to the inclemency of the weather; from both which circumstances much time will be lost in their fattening. Besides, they will be less under the inspection of the owner, and therefore liable to various accidents, which might either be prevented or remedied when the other method of feeding is pursued. The dung, likewise, will be totally lost when the bullocks are fed in the field; and this is a matter of great importance to a farmer, and the valuable addition which the muck from the ox stalls makes to the contents of the yard, being replete with the dung and stale of the beasts, may well compensate for the extra-attendance required on this occasion."

Turnips for fattening bullocks should be of the largest size, and, when brought out of the field into the yard, be divested of their tops, and of the dirt which adheres to them. The tops and small turnips may be thrown to the cows and lean beasts, and the large roots, after having been thus cleansed, be divided into three or four pieces, and flung into the trough before the fatting beasts, observing not to

give too large a quantity at one time; and if any of the last serving should casually remain in the troughs when the baiting time comes round, these must be removed for a fresh supply. The hay too, which is allowed to these beasts, either when fed with turnips, or on oil-cake, should be the sweetest that can be got, and be apportioned out to them in small quantities. Turnips are more palatable, and likewise more nutritious, when given to the beasts drawn fresh out of the field; but to guard against the contingency of a frost, or of incessant rains, the first of which would render this business impracticable, and the other inconvenient; it seems a very judicious method to provide a stock of turnips in dry open weather, that they may be in readiness at those times when they cannot be procured fresh carted out of the field. These when divested of their leaves and top roots, and cleansed from dirt, may be piled up in a covered shed, where no moisture can penetrate, and in this manner, maintain their goodness for some length of time.

When bullocks are at first shut up to fatten on turnips, care should be taken that this food be given in moderation, and with a proper allowance of hay; otherwise, the sweetness of the turnip may tempt the beast to feed so voraciously, as to occasion too great a fullness in the maw, which is called *hazing*, or *blowing*, an accident which frequently happens to ruminant animals, when taken from dry meat or natural grafs to turnips, clover, or other succulent sorts of food. See Hoven.

Sometimes accidents happen to bullocks, when feeding on turnips, from pieces slipping into the throat and sticking there. To prevent suffocation, which would frequently be the consequence in such cases, the outside of the gullet should be rubbed down with a stick in order to force the piece down into the stomach; or should that fail, a turned stick, or piece of cane formed so as to make a kind of probang may be introduced into the throat, and the turnip by that means be removed. See STALL-FEEDING.

By some, the black, red, and brindled bullocks are considered as most hardy, and better disposed to fatten than those of other colours. See CATTLE and LIVE STOCK.

Bullock's eye, in *Architecture*. See EYE.

BULLOCK-SHEDS, in *Rural Economy*, the houses in which bullocks are kept while feeding. In the construction of these buildings, attention should always be had to their being well aired, to the facility of feeding and cleaning the animals in them, and to their being kept dry and clean by their having suitable drains and conveniences for urine and dung. In the rural economy of Norfolk, Mr. Marshall remarks, that a bullock-house there, consists of a centre building, thirty-six feet long, nineteen feet wide, and about eleven feet high to the eaves, with a pair of wide folding doors at each end, and a lean-to on each side, the whole length of the building, and eleven feet wide. The centre building is the turnip-house; the lean-toes, sheds for the bullocks, which stand with their heads toward, or rather in the turnip-house, from which they are parted by a range of mangers only; having the full freedom of breathing in its spacious area. By opening the doors at each end, a sufficient degree of air and coolness may be given in close weather, while, behind, the eaves of the sheds are brought down to within five feet of the ground, and are boarded with rough boards, except an opening at each end for the bullocks to creep in at, to prevent too great a coldness in severe weather, thus preserving a due temperature. The shed of these dimensions, thus constructed, holds twenty bullocks, ten on each side, fastened by the neck, with chains, swivels, and rings playing freely upon posts seven feet high. At each corner of the tur-

nip-house, is a triangular bin for containing the topped and tailed turnips, or other provisions.

In autumn, it is farther observed, the entire building is sometimes used as a temporary barn for buck-wheat, peas, &c. and in summer the centre part is an excellent waggon-shed: had the doors been made a foot and a half higher, it is suggested that it would have been an admirable refuge for loads of corn or hay in a showery harvest. The main building is covered with reed, the lean-toes with tiles. And in the rural economy of Gloucestershire, the same writer remarks, that each bullock has a house and a yard to himself, in which he goes loose, occupying them by turns, as appetite or amusement directs him, having a manger and a drinking trough to go to at pleasure; of course, he eats when he is hungry, and drinks when he is thirsty. He is also at liberty to rub or to lick himself, as well as to keep his body in a proper degree of temperature as to heat and cold. Theory, says Mr. Marshall, could not readily suggest more rational principles.

The construction of these, however, varies in the minutiae. The water trough, for instance, is sometimes placed by the manger in the oval or shed, sometimes in the open pen. Others less noticeable variations may likewise be seen in different buildings. But the plan and dimensions, which at present seem to stand highest in esteem, and on which several erections of this nature have been made within the last fifteen or twenty years, are the following: The building fifteen to fifteen feet and a half wide within, and of a length proportioned to the number of stalls required: the height of the plates five feet to six feet four inches, supported on the side to the north or east by close walling; on that to the south or west by posts, set on stone pedestals: the gables walling: the covering plain tiles on a single pitch-roof: against the back wall is a gang way, three and a half to four feet wide, formed by a length of mangers, three feet to three and a half feet wide, from out to out, at the top narrowing to about fifteen inches within at the bottom: the perpendicular depth fourteen or fifteen inches; the height of the top rail from the ground, about two feet nine inches: the materials two inch plank, stayed and supported by posts and cross pieces, and stiffened by strong top-rails: the dimensions of the area of the covered stalls, about eight feet three inches square; of the open pens the same. The partitions between the stalls are of broad nails, passing from the outer pillars to similar posts, rising on the inner or stall side of the manger, and steadied at the top by slender beams, reaching across the building, each stall, or each partition, having a beam and a pair of principals. The partitions of the pens are gates, reaching from the pillars to the boundary wall; and likewise from pillar to pillar. When they are fixed in that situation, each bullock has his stall and his little yard. When in this, each is shut up in his stall, the yards form a lane, or driftway, for taking in or turning out any individual. The boundary wall of the pens is about four feet high, coped with blocks of copper-dross. On the outer side of it is a receptacle of manure; on the inner, a range of water troughs, with a channel of communication for the convenience of filling them. The materials of the troughs, are stone; of the channel, gutter-bricks, covered with slabs. These stone troughs, which are about fourteen inches by two feet six inches within, have a convenience in their construction, which is entitled to notice; instead of the sides and ends being all of them peaked down to an angle, square with the bottom, one of the ends is left bevelling, sloping, making a very obtuse angle with the bottom. This simple variation renders them easy to be cleaned, either with the shovel or the broom.

The floor is paved with hard burnt bricks, laid edgewise in mortar, being formed with a steep descent from the wall to a channel, from three to four feet from it, and with a gentle fall from the manger to the same channel, which becomes the general drain for rain water and urine. At one end of the pens is a pump (where a natural rill cannot be had) for supplying the troughs of water; and, at the other, a stack of stubble for litter, which is used in the stall only, the yard being left unlitteed. At one end of the building is a cake-house, at the other the rick-yard; with a door at each end of the gang-way to receive the hay and the cake.

In some instances, he has seen a double range of stalls on this plan, the area between them being the common receptacle for the dung. When a number of stalls, as twenty or thirty, are required, their arrangement brings them within a convenient compass, and the two ranges, with a proper aspect, become shelter to each other. Beside these loose stalls, there are others built nearly on the same plan, but without gates, and on a somewhat smaller scale, in which the cattle are fastened to the manger or the partition posts, with a long chain, which gives them liberty to rub and lick themselves, and move about in their stalls. In this case, a water-trough is generally placed at the end of every second partition, level with the manger, with a general pipe of communication to fill them, each trough supplying two bullocks. This plan, he observes, lessens the expence in some degree, and prevents the bullocks from fouling their mangers. In the Cotswold hills, he remarks, that each bullock has different troughs, a small one for corn, a larger one for hay, with a water-trough, which runs the whole length of the shed, and is covered by a board, each bullock having a hole to drink at. There are various other constructions of sheds for this use, which will be more particularly described under their proper heads. See CATTLE-SHEDS, and FEEDING-HOUSES.

BULLOCK-stalls, the parts that are partitioned off in the sheds, in which the bullocks stand to eat their food. They should always be made sufficiently roomy. See CATTLE-SHEDS.

BULLOCK, in *Geography*, a county of the state of Georgia in America, divided into four towns, and containing 1913 inhabitants, of whom 269 are slaves.

BULLOCK's point and neck, lie on the eastern side of Providence river, in the state of Rhode island.

BULLS, bay of, lies on the north of Cadiz in Spain, within Rota point, and affords a fine shelter from the N. W. to the N. E. winds; about N. N. W. from Cadiz-bay.

BULLS, bay of, or *Baboul bay*, a noted bay on the east coast of Newfoundland island, about six leagues to the south of St. John's harbour. It has 14 fathoms of water, and is very safe, being land-locked. The only danger depends upon a rock, 20 yards from Bread-and-Cheese point, and another with nine feet water off Magotty cove. N. lat. 50° 50'. W. long. 57° 10'.—Another bay of the same name lies on the west side of Trinity bay, running so far west, that it is scarcely three miles over land from the head or bottom of it to the bay of Placentia.

BULLSKIN, a township of Fayette county, in Pennsylvania, containing 981 inhabitants.

BULLULLOS, a town of Spain, in Andalusia, four leagues from Lucena.

BULLY, a town of France, in the department of the Lower Seine; six leagues N. of Rouen.

BULLY-tree, in *Botany*. See *ACHRAS* and *BUMELIA*.

BULMAN, in *Geography*, a rock or shoal on the south coast of Ireland, on which there is never less water than

four feet. It lies near Hangman's point on the east side of the entry into Kinfale harbour, and must be carefully guarded against by those who enter that port. N. lat. 51° 40'. W. long. 8° 28'.

BULM MONOU, a county of Africa, on the coast of Guinea.

BULONGA island, lies off the mouth of Aracan river, on the east side of the bay of Bengal.

BULSEDI, a town of Arabia, in the county of Yemen, 22 miles S. E. of Loheia.

BULTEAU, LEWIS, in *Biography*, a learned and pious French author, was born at Rouen in 1615, and succeeded his uncle, as king's secretary, which office he occupied for 14 years, till he withdrew from it to study and religious retreat. Having entered as a lay-brother among the Benedictines of St. Maur, he passed the remainder of his days at the abbey of St. Germain des Prez, near Paris. His principal works were "An Essay on the monastic History of the East," 1680, 8vo. describing the manners, &c. of the Cœnobites, and proving that monastic institutions are not so modern as has been supposed. "Abridgment of the History of the Order of St. Benedict, as far as the tenth century, 1684," 2 vols. 4to. "Translation of the Dialogues of Gregory the Great," with Notes, 1689, 12mo. His modesty would not allow his annexing his name to his works; his style was formed on the model of the writers of the Port Royal; and his knowledge of languages was very extensive. He died of an apoplexy in 1693. *Nouv. Dict. Hist.*

BULTEL, derived from the barbarous Latin *bultellus*, or *bultellum*, a searce, or boulder, denotes the bran or refuse of meal after dressing.

BULTEL also denotes a bag wherein meal is dressed, called also a *bulter*, or rather *boulter*. See *BOLTERS*.

BULTER-cloth. See *BOLTING-cloth*.

BULTERS, are strong lines, five hundred feet long, with sixty hooks, eight feet asunder, and baited with pilchards or mackarel, which are used on the coast of Cornwall in the fishery of congers. They are sunk to the ground by a stone fastened to them; and sometimes such a number of these are tied together as to reach a mile.

BULWARK, *Propugnaculum*, in the *Ancient Fortification*, amounts to much the same with bastion in the modern. See *BASTION*, and also *RAMPART*.

BULWER, JOHN, in *Biography*. This writer, who lived in London, and was in repute in his time for his skill in teaching deaf and dumb persons, and others, to communicate their thoughts, by motions of their fingers and hands, is now only known by his works, which are sufficiently singular to merit attention: viz. "Chirologia, or the Natural Language of the Hand; as also Chironomia, or the Art of Manual Rhetorick," London, 1644, 8vo. Rabelais gives an account of a curious contest of this kind, where the disputants, without speaking, communicated their opinions by motions of the hands and fingers. The art is not entirely lost, but is now principally practised as an amusement by young people at schools. "Pathomyotomia, or the significant Muscles of the Passions of the Mind, and Dissection of the Muscles of the Affections," London, 1649, 8vo. He describes the muscles of the head, and denominates them from the expression in the countenance, occasioned by their contractions, as love, fear, rage, &c. "Man transformed, or the Artificial Changeling, shewing the several Ways how divers People alter the Natural Shape of some Parts of their Bodies," 1653, 4to. Joseph Clark, the famous posture-master, was a remarkable instance of a man possessing this power. He made himself tall or short, fat or lean, deformed or straight,

at his discretion. He had also an equal power in altering his countenance, so as to be unknown to his most intimate acquaintance. Haller. Bib. Anat.

BULZIG, in *Geography*, a town of Germany, in the electorate of Saxony, 2 miles S. of Zahna.

BUM-bailiff, or *Bound-bailiff*. See **BAILIFFS** of *Sheriffs*.

BUM-beat, in *Sea Language*. See **Boat**.

BUMALDA, in *Botany*, Thunb. nov. gen. p. 63. Flor. Jap. 8. Schreb. 453. Willd. 515. Juss. 381. Class and ord. *pentandria digyna*. Nat. ord. *rharni*, Juss. Gen. Char. *Cal.* perianth deeply divided into five ovate, obtuse, concave segments, a little shorter than the corolla. *Cor.* petals five, oblong, inserted on the germ. *Stam.* five, thread-shaped, erect, rough with hairs, inserted into the claws of the petals, nearly the length of the corolla; anthers inserted into the back, ovate, twin. *Pist.* germ conic, villous, superior; styles two, erect, villous, the length of the filaments; stigmas simple, headed, truncate. *Capful* not seen by Thunberg in a state of maturity, but supposed by him to be two-celled and two-beaked.

Sp. *B. trifolia*. A small dense shrub, smooth in all its parts. *Branches* cylindrical or obscurely angular, jointed, purple. *Branchlets* opposite, leafy, thread-shaped, much spreading, in other respects similar to the branches. *Leaves* opposite, petioled. *Leaflets* ovate, acuminate, finely serrated, pale underneath; on short capillary, spreading or reflected petioles. *Racemes* terminal. Native of Japan.

BUMBUNNY, a name given by the people of Guinea to a plant common in that place, which serves them as an emetic; they boil a few of the leaves in water, and drink this liquor, which works very easily. Phil. Trans. N° 232.

BUMELIA, (*Bumelia*), the name of a tree in Theophrastus and Pliny. Swartz. Prod. 49. Schreb. Ap. 1736. Willd. 401. Class and ord. *pentandria monogynia*.

Gen. Ch. *Cal.* perianth five-leaved; leaves roundish-ovate, incumbent, concave. *Cor.* one-petalled, five-cleft or five-parted; tube very short, round; border five-parted; segments ovate, entire, spreading, concave, with two little scales at the base of each; nectary with five leaves, smaller than the segments of the corolla, at the base of the filaments, surrounding the germ, acute. *Stam.* filaments five, the length of the tube, inserted into its bottom between its lower segments; anthers ovate, erect. *Pist.* germ superior, ovate; style thick, erect, shorter than the filaments; stigma obtuse. *Drupe* oval; kernel single, oblong, smooth, with a lateral scar.

Ess. Char. *Corolla* five-cleft; *nectary* five-leaved; *drupe* one-seeded.

La Marek says, that all Swartz's species should be referred to *Sideroxylum*, which he describes in his "Illustrations" as submonospermous, or as he expresses it in the alphabetical part, having from one to five seeds. *Bumelia*, as a separate genus, differs from *Sideroxylum* only in the number of seeds. Willdenow enumerates the following twelve species, all natives of America.

1. *B. nigra*, bastard bully-tree. Swartz. (*Achras* 6. Browne Jam.) "Leaves terminating, oblong-lanceolate, smooth, waved about the margin; branches spreading; branchlets wandlike, flower-bearing." A tree. Fruit small, smooth, scattered on the branchlets; seeds roundish with a very small ovate scar. A native of Jamaica. 2. *B. pallida*. Swartz. "Leaves terminating, elliptic, obtuse; peduncles crowded, lateral; branches erect." It resembles *B. nigra*, but is a smaller tree, with whitish bark, having branches less spreading, with larger flowers and drupes. Swartz. A native of Jamaica. 3. *B. tenax*. Willd. (*Sideroxylum tenax*. Linn. Ment. *Chrysophyllum carolinense* Jacq.) "Leaves obovate,

obtusely, silvery tomentous underneath; peduncles axillary, crowded." A tree 20 feet high, with a whitish bark, and very tenacious branches. *Germs* alternate, each producing numerous one-flowered peduncles, about an inch long. *Leaves* five or six, below or among the peduncles, petioled, very entire, deciduous. *Flowers* small. *Calyx* ovate; leaflets five, ovate, obtuse, the outer ones broader, converging. *Corolla* tube the length of the calyx; border five-parted; segments ovate, shorter than the calyx; nectary in the throat of the corolla, five-parted; segments with three clefts, the middle one generally the longest. *Stamens* the length of the corolla. *Pist.* germ pentagonal; style and stigma simple. *Drupe* oval; kernel ovate, shining, with two apertures at the base, separated by a bowed partition. It varies with very short spines, thinly scattered on the branchlets. Linn. Observed by Dr. Garden in the dryer parts of Carolina. 4. *B. retusa*, mountain bastard bully-tree. Swartz. (*Achras* 7. Brown. Jam.) "Leaves wedge-ovate, obtuse, rigid; peduncles crowded, axillary." Native of Jamaica. 5. *B. fetidissima*. Willd. (*Sideroxylum foetidissimum* Linn. Mant.) "Leaves lanceolate-oblong, obtuse, a little emarginate; peduncles crowded, axillary. A shrub, 12 feet high. *Leaves* rather alternate, shining. *Peduncles* one-flowered, numerous. A native of St. Domingo. 6. *B. salicifolia*, Swartz. (*Achras salicifolia*, Linn. Sp. Pl. under which name it has already been given in this work. La Marek refers his *Sideroxylum salicifolium* to the *Achras salicifolium* of Linnæus with a mark of doubt. Willdenow gives, as a synonym to the present plant, Jacquin's *Sideroxylum multichodendrum*, which La Marek has inserted in his Illustrations, but not in the Dictionary under the same name.) "Leaves lanceolate, ovate, acuminate; peduncles crowded, axillary and lateral." Native of Jamaica and the Bahama islands. 7. *B. mangillo*, Willd. (*Sideroxylum mangillo* La Marek Encyc. *Chrysophyllum mangillo* La Marek Illust. Duhamelia mangillo Domb. Peruv. Mangilla Juss. 151.) "Leaves oblong, obtuse, smooth, whitish beneath; flowers axillary and lateral, aggregate, with short peduncles." An evergreen shrub, 10 or 12 feet high. *Leaves* alternate, very entire. *Flowers* small, white, in numerous small fascicles, either in the axils of the leaves, or scattered below the leafy part of the branches. *Peduncles* short. *Style* none. Fruit about the size of a small grain of pepper. Observed by Dombey in the neighbourhood of Lima. 8. *B. montana*. Swartz. "Leaves oblong, obtuse; peduncles long, axillary, distinct." Native of Jamaica. 9. *B. nervosa*. Willd. (*Chrysophyllum macrophyllum* Lam. Illust. C. cainito Aub. guin.) "Leaves alternate, oval, of a different colour beneath; flowers aggregate, lateral, and axillary, tomentous, peduncled." Native of Cayenne. 10. *B. pentagona* Swartz. "Leaves lanceolate, acuminate, shining; peduncles axillary; drupes pentagonal." Native of the West Indies. 11. *B. rotundifolia*. Swartz. "Leaves roundish, margined, veined, leathery, smooth on both sides." Native of Jamaica. 12. *B. cuneata*. "Leaves wedge-obovate." Native of Jamaica. Fruit of this and the preceding unknown.

BUMICILLI, a sect of Mahometans in Africa, said to be great forerunners: they fight against the devil as they say; and frequently run about covered with blood and bruises, in a great fright: they sometimes counterfeit combats with him at noon-day, and in the presence of numbers of people, for the space of two or three hours, with darts, javelins, scimitars, &c. laying desperately about them, till they fall down on the ground oppressed with blows; after resting a moment, they recover their spirits, and walk off. What their rule is, is not well known; but they are said to be an order of religious.

BUMPKIN, or **BOOMKIN**, in *Sea Language*, a short boom or bar of timber, projecting from each bow of a ship, to extend one edge of the forefail to windward; for which purpose there is a large block fixed to its outer end, through which the rope is passed that is fastened to the lower corner of the fail to windward, called the *tack*; and this being drawn tight down brings the corner of the fail close to the block, which being performed, the tack is said to be *aboard*. The bumpkin is secured by a strong rope, which confines it downward to the ship's bow, to counteract the strain it bears from the forefail above dragging it upwards.

BUN, the dry stalk of hemp, stripped of its rind.

BUNCH, a cluster or assemblage of certain things, as of grapes.

BUNCH also denotes a tumor, or protuberance, natural or preternatural, either on an animal or a vegetable body.—The bunch growing about the graft of a plant is a sort of *callus* formed by the extravasated sap.

BUNCH of Camels. See **CAMELS**.

BUNCH, in *Surgery*, denotes an elevation of the back, arising from an exterior luxation of the *vertebrae* thereof. The cure is begun by keeping emollients a long time on the *vertebrae*, whereby to loosen the ligaments, and finished by wearing an iron boddice, which compressing the *vertebrae*, by degrees drive them back to their natural situation.

BUNCHES in horses, called also *knobs*, *warts*, and *wens*, are diseases arising from foul meat, bruises, hard labour, or the like; whereby the blood becoming putrefied and foul, occasions such excrescences.

BUNCHED cods, among *Florists*, are those which stand out, and wherein the seed is lodged.

BUNCHED roots, those round roots which have knobs or knots in them. See **BULB** and **ROOT**.

BUNCRANA, in *Geography*, a small post town of the county of Donegal, Ireland, situated on Lough Swilly, in the peninsula of Inishowen. It is 12 miles N.W. of Londonderry, and 124 N.W. of Dublin.

BUNCOMB, the largest and most western county of North Carolina, and supposed to be the most mountainous in the United States. It lies in Morgan district, and is bounded W. by the state of Tennessee, and S. by that of South Carolina. The Blue ridge passes through this county, and gives rise to many large rivers, as Catabaw, Wateree, Broad river, and Pacolet. It abounds with iron ore. The number of inhabitants is 5774, of whom 334 are slaves.

BUNDAMIR, a central river of Persia, which passes between Schiraz and Iltakar, or the celebrated ruins of Persepolis, and is supposed to be the ancient Araxes, which see. This famous river flows into a salt lake called **BAKTAGAN**. Between this river and the Kuren, a branch of the mountains of Elwend extends S.E. See **ELWEND**.

BÜNDE, a town of Germany, in the circle of Westphalia, county of Ravensberg and prefecture of Limberg. At this place a considerable trade is carried on in yarn and coarse linen, and near it is a medicinal spring, discovered in 1748.

BUNDEH, a ridge of mountains in Hindoostan, which runs parallel to the Godavery river on the south, but at a considerable distance from it.

BUNDELA, or **BUNDELCUND**, a territory of Hindoostan, lying on the south-west side of the Jumnah, and separated from it by a narrow tract of low country. It is inhabited by a tribe of Rajpoots, who are deemed inferior to their brethren of Agimere. Bundelcund is surrounded by the dominions of Oude, Benares, and the Mahrattas, and was formerly subject to a rajah named Hindooput; but it is now chiefly divided among his sons, or their descendants. It

is a mountainous tract of more than 100 miles square, and contains the celebrated diamond mines of Punna or Purna (probably the Panassa of Ptolemy), together with some strong fortresses, the principal of which is Callinger. It is subject to the depredations of the Mahrattas, and has of late years been attempted by Madajee Sindia, who failing to make himself master of the principal fortresses, abandoned the open country. The ancient limits of Bundelcund were much more extensive than the present; extending much further towards the Nerbuddah river. Chatterpour is reckoned the capital. Where the soil is not strong, it produces all sorts of fruits, but neither rice nor sugar. Cotton trees are abundant, and a species of tree from which is gathered a black nut.

The territories of Adjidding are contiguous to Bundelcund, on the west; to the Mahrattas, on the south and south-west; and to the Benares territory, on the east. Their whole extent, including some tributary Zemindars on the south-east, may be about equal to Bundelcund; and like that, subject to the occasional depredations of the Mahrattas. Its capital is Rewah or Rooah, which see. Rennell's Mem. Introd.

BUNDERKOLE, a town of Hindoostan, in the district of Kistewar, seated between the two branches that form the Chunaub river, near the foot of the Imaus or Himmaleh mountains. N. lat. 33° 40'. E. long. 74° 58'.

BUNDLE, a collection of things wrapped up and bound together. A bundle of paper consists of 40 quires; a bundle of Hamburgh yarn contains 20 skeins; and of basket rods, the band is 3 feet.

BUNDLES, in *Law*, denote a sort of records of the chancery, lying in the office of the Rolls, in which are contained the files of bills and answers; of *hab. cor. cum causa*; *certioraris*; attachments, &c.; *scire facias*'s; certificates of statute staple; extents and liberates; *superseas*'s; bails on special pardons; bills from the Exchequer of the names of sheriffs; letters patent surrendered; and deeds cancelled; inquisitions; privy-seals for grants; bills signed by the king; warrants of escheators; customs, &c.

BUNDURAL, in *Geography, a district of Hindoostan, adjoining to the Imaus or Himmaleh mountains, in N. lat. about 33° and E. long. about 75° 30'.*

BUNEL, PETER, in *Biography*, an elegant scholar of distinguished eminence, was born at Toulouse in 1499, and educated at Paris. Unable to procure a subsistence at home, he went to Padua, and afterwards to Venice, where he was entertained in the house of Lazarus du Baif, the French ambassador, and where he studied the Greek and Hebrew languages; of Latin he was before so complete a master, that he wrote it with such purity as to have been deemed the founder of the Ciceronian sect which prevailed so much among the Italian scholars. With George de Selve, bishop of Lavaur, who succeeded du Baif at Venice, he retired to Lavaur, and upon his death, returned to Toulouse, where he was rescued from indigence, and patronized by Messrs. de Faur. He accompanied the son of one of these in the capacity of tutor on a tour to Italy, and at Turin, was carried off by a fever in his 47th year. His reputation for literary taste and for a philosophical contentment of mind was eminently distinguished. In early life he seems to have incurred the suspicion of heresy, by manifesting an inclination to the opinions of the reformers; but he was rejected by Calvin, because he seemed to have had too favourable sentiments of the Pelagian doctrines. A collection of his Latin letters, written with peculiar purity of style, and containing much curious matter, was printed by Stephens in 1551, and afterwards reprinted at

at Toulouse. The capitouls of Toulouse have placed his bust in their town-hall among other ornaments of their city. Gen. Dict.

BUNEL, JACOB, a painter of history, was born at Blois in 1558, and became the disciple of Frederick Zucchero. He was in high reputation as a painter both at Rome and at Paris; and in the church of the Augustines, in the latter city, he painted a "Descent of the Holy Ghost," which was preferred by that excellent judge, Nicolo Poussin, to all the paintings in that city. Pilkington.

BUNG, the stopple of a cask, barrel, or the like.

The bung is a wooden plug, serving to stop the hole left in the top of a vessel to be filled by. It answers to what, among the ancients, was called *epistomium*, and in the middle age *sigillus*, the seal of a vessel, because in those days it was usually sealed.

After tunning new wine, or cyder, the bung is usually left open for some time, that when the liquor comes to work, there may be vent for the froth or scum, and that the hoops may not be in danger of being burst by the violence of the fermentation. Yet, in some cases, they leave wines to ferment, without giving them vent by the bung, in order to render them more brisk and spirituous: in which case, it is necessary the vessel be hooped with iron, and other precautions taken that the bung may not fly.

BUNGAY, in Geography, a town of Suffolk, England, is built on the banks of the river Waveney, which divides this county from Norfolk, and is navigable for barges from Yarmouth on the coast. This place is memorable for a dreadful fire which, in 1688, consumed nearly the whole of the town, and destroyed property to the amount of 29,896l. The town, however, revived after this deplorable event, and its houses, &c. were re-erected in an improved and more convenient style. The town consists of two parishes, and has two handsome churches. That, dedicated to St. Mary, is a large structure, with a lofty steeple. Between the two churches are the ruins of a Benedictine nunnery, which was founded in the time of Henry II. Here are also the remains of a very strong castle, which appears to have been built by the Bygods, earls of Norfolk. In the time of the barons' wars, this place was strongly fortified by Hugh Bygod, who is said to have publicly defied the king, but he was obliged to compound with Henry II., by a sum of money, and hostages, to save it from a siege, and demolition by that monarch. The earl afterwards espoused the cause of Richard, Henry's son, against his father; when the king seized this, and the castle of Framlingham. The castle was demolished in the reign of Henry III., but in the 10th of Edward the first Roger Bygod obtained a licence to embattle his mansion which was built on the site of the castle.

The inhabitants of Bungay have the privilege of a very extensive common in the vicinity of the town. Here are a weekly market on Thursday, and two fairs annually. It is 106 miles N.E. of London, and contains 187 houses, and 903 inhabitants in Trinity parish, and 305 houses, with 1446 inhabitants, belonging to that of St. Mary.

BUNGO. See BONGO.

BUNGO, a province of Africa, in the kingdom of Loango.

BUNGURY, a town of Hindoostan in Lahore, seated near the river Rauvee. N. lat. 32° 30'. E. long. 74° 58'.

BUNGUSH, a district of Cabul, situate to the south of the Cow river and east of the Sindé, terminating on both. N. lat. about 33°, and E. long. about 70°.

BUNIALU, a town of Asiatic Turkey, in the province of Natolia; 28 miles W. of Castamoni.

BUNIAS, in Botany, (the name of a plant with a root like a turnip, in Dioscorides and Pliny, from *βουνος*, a hill), Linn. gen. 523. Schreb. 1070. Willd. 1217. Juss. 241. Vent. vol. iii. p. 114. Gært. 828. Class and order, *tetradynamia siliculosa*, Schreb. Willd. and Smith. *Siliquosa*, Linn. Nat. Ord. *Siliquosa*, Linn. *Crucifera*, Juss. and Vent.

Gen. Char. *Cal.* perianth four-leaved; leaves ovate-oblong, spreading, deciduous. *Cor.* four-petalled, cruciform; petals obovate; claws attenuated, erect. *Stam.* six, the length of the calyx, two opposite ones a little shorter than the others; anthers erect, bifid at the base. *Pist.* germ oblong; stigma obtuse. *Silicle* irregular, ovate-oblong, somewhat four-sided, not opening, deciduous.

Ess. Char. *Silicle* deciduous, four-sided, with unequal acute angles, not opening. Dr. Smith.

Spec. 1. *B. cornuta*, Linn. (*Myagrum cornutum*, Lam. *Pugionium cornutum*, Gært. Willd. and Vent.) "Silicles with two spreading horns, spinous at the base." Linn. *Leaves* tongue-shaped, very entire, glaucous, without veins, half embracing the stem. *Racemes* terminal; very loose in a state of maturity, with wide-spreading peduncles. *Flowers* small, not larger than those of *Draba verna*. *Petals* narrow, very entire, acuminate, white, a little longer than the calyx. *Germ* somewhat hispid, two-celled. *Silicle* membranous, lenticularly-compressed, transversely oval; furnished at each extremity with a long, compressed, sword-shaped process, producing the appearance of two wide-spreading horns; reticulated on each side with veins; somewhat transparent between the veins, and armed with four pair of weak divaricated spines proceeding from the veins. *Cells* naturally two, placed by the side of each other and separated by a thin partition; but, in the mature fruit, one is constantly obliterated. *Seed* single, ovate-oblong, compressed, inclosed in an aril. Gært. Tab. 142. fig. 3. Native of the Levant and of the desert of the Calmucks near the Caspian sea.

2. *B. spinosa*, Linn. Mant. 96. (*Myagrum spinosum*, Lam.) "Racemes spinosecent." Gært. Tab. 142. f. 2. *Root* annual. *Stems* a foot high, erect, branching, subdivided, round, slender, very smooth, green. *Leaves* ovate-oblong, blunt, somewhat angular, smooth, petioled. *Racemes* erect, stiff, rigid, terminating with compound spines, and a few sessile flowers. *Calyx* oblong, closed. *Petals* lanceolate, pale violet. *Germ* heart-shaped. *Style* cylindrical, the length of the germ, permanent. *Stigma* thickish. *Silicle* a spongy drupe, heart-shaped, turgid, smooth, and even terminated by the pyramidal, permanent style; and thick, shell two-celled, hexangular, two opposite angles broader. *Seeds* solitary, roundish, Linn. and Gært. Native of the Levant.

3. *B. Erucago*, Linn. (*Erucago segetum*, Tourn. *Myagrum Erucago*, Lam.) Jacq. Aust. Tab. 340. Gært. Tab. 142. f. 2. "Silicles four-angled, beaked; angles two-celled; lower leaves lyre-shaped; lobes opposite, triangular." La Marck. *Root* annual. *Stems* numerous, a foot and half high, slender, spreading, rough with a very short pile. *Radical leaves* rather straight, with toothed lobes, soon withering. *Stem leaves* small, lanceolate, toothed, and distant. *Flowers* yellow, peduncled, in loose, terminal racemes. *Silicle* a quadrangular drupe with a rough surface, narrowed in the middle, terminated by the long style, and divided at its angles into two very prominent, toothed crests. *Rind* spongy-membranous, thin, whitish. *Shell* bony, four-celled; cells in pairs, one over the other, all fertile. *Seeds* roundish, plano-convex, rufescent. La Marck and Gært. Abundant in corn-fields, in the southern parts of France, 4. *B. aspera*, Willd. "Silicles four-angled, all

all the leaves lanceolate." *Root* annual. *Stem* near a foot high, somewhat branching, rough with minute prickles. *Lower leaves* inversely lanceolate, upper ones lanceolate, a little toothed; with a few white, forked and trifid hairs. *Flowers* yellow, in racemes. *Calyx* somewhat ventricose, converging. *Silicles* very short, muricate, crested with four opposite serrated angles; and terminated by a pyramidal, capitate style, the length of the filicle. Retz. Obs. 2. p. 21. Native country unknown. 5. *B. orientalis*, Linn. (*Crambe orientalis*, Tourn. *Myagrum orient.* La Marck.) Gært. Tab. 142. "Silicles ovate, gibbous, warty; lower leaves runcinate-lyre-shaped, upper ones lanceolate." Willd. *Root* perennial. *Stems* herbaceous, upwards of two feet high, branched. *Flowers* yellow, in long, terminating racemes. *Silicle* drupaceous, roundish or ovate-oblong, gibbous, warty, ending in a short style. *Rind* fungous, straw-coloured. *Shell* bony, of the shape of the filicle, smooth without; with two cells one above the other, the upper one, in such filicles as are roundish, generally obliterated. *Seeds* roundish, rufescent. Miller and Gærtner. Gathered by Tournefort in the Levant, and by Gmelin in Siberia. 6. *B. cochlearioides*, Willd. "Silicles ovate, bluntish, somewhat wrinkled; radical leaves oblong, stem-leaves arrow-shaped, embracing the stem." *Root* annual; a native of France, Italy, Hungary, &c. 7. *B. tatarica*, Willd. (*Vella tenuissima*, Pallas It. tom. 5. Pl. 6. French Translation.) "Silicles globular, somewhat hexagonal, with long beaks; leaves lanceolate, blunt, petioled." *Root* annual. *Stem* erect, branching, half a foot high. *Leaves* very entire; hispid, attenuated into a petiole at the base. *Flowers* white, in filiform racemes. *Silicles* six-furrowed, crowned with the thick, cylindrical, permanent style, two-celled, not opening. 8. *B. myagroides*, Linn. Mant. 96. (*Cakile myagroides*, Vent.) La Marck Illust. Tab. 554. fig. 1? "Silicles two-edged, two-jointed, a little swelling above; leaves pinnate, with reflected sinuses." *Root* annual. *Stem* straight, two feet high, even, irregularly branched. *Lower leaves* pinnate or bipinnate, rather broad, not fleshy, deep green, with oblong, toothed divisions or pinnae; the upper ones very similar, but narrow and linear; all with reflected sinuses. *Racemes* terminal, long, straight. *Flowers* nearly sessile. *Calyx* oblong, closed. *Petals* very entire, pale, purple. *Antthers* yellow. *Style* sword-shaped. *Silicle* subcylindrical, rigid, approximating to the rachis; on a short peduncle; lower joint cylindrical, two-valved, generally with only one feed, the valves marked with a single streak; upper joint compressed, obscurely two-edged, generally with only one feed, blunt, with a protuberant auricle on each side. Linn. A native of Siberia. 9. *B. aegyptiaca*, Linn. Syst. Nat. tom. 3. p. 231. (*Myagrum verrucosum*, La Marck) Gært. Tab. 142. copied by La Marck in Illust. Pl. 553. fig. 3. "Silicles four-angled, rugged with warts on all sides; leaves runcinate." *Root* annual. *Stem* a foot high, branched, hispid below, smoother above. *Leaves* runcinate, somewhat toothed, even; with a few hairs beneath on the petioles. *Racemes* solitary, terminal, long. *Flowers* pedicelled. *Calyx* yellowish, spreading. *Petals* dark yellow, obovate, obtuse, spreading, with erect claws. *Stamens* yellow, distant. *Germ.* ovate, four-angled, green. *Style* none: *stigma* capitate, yellow. *Silicle* drupaceous, small, ovate, four-angled; the two narrower sides rugged with warts; the two broader marked with a double, longitudinal, elevated streak, which is crenulate, or slightly tubercled; rind very thin, membranaceous; shell bony, muricate, two-celled; cells placed side by side. *Seeds* solitary, ovate, convex on one side, flat on the other, rufescent. Linn. and Gært. A native of Egypt. 10. *B. balearica*,

Linn. Mant. 429. (*Myagrum bal.* La Marck) Jacq. hort. Tab. 144. Gowan illust. tab. 20. "Silicles hispid; leaves pinnate; folioles somewhat toothed." *Root* annual. *Stem* a foot high, much branching, spreading, angular, smooth. *Leaves* petioled; pinnae lanceolate, sinuate, obtuse, smooth. *Peduncles* in racemes, very long, erect; pedicels shorter than the flowers. *Calyx* closed, smooth, lanceolate, concave, testaceous. *Corolla* yellow; petals oblong, obtuse, the length of the calyx. *Silicles* globular, echinated on every side with dense, weak spines, and terminated by an awl-shaped, stiff beak, longer than the filicle. A native of Majorca and Minorca. 11. *B. prostrata*, Willd. Desf. Atl. tab. 150. "Silicles one-seeded, toothed; leaves pinnatifid; segments sinuate." *Stems* numerous, prostrate, pubescent from the root. *Leaves* pubescent, deeply pinnatifid; segments obtuse, toothed. *Flowers* white. *Silicles* roundish, compressed, terminated by the permanent style, pubescent. A native of the sandy soil in the northern part of Africa. 12. *B. Cakile*, Linn. Hudson, Withering, Smith. (*Cakile maritima* Tourn. La Marck, Vent. Willd. *Cakile Serapionis* Lob. Gært.) Eng. Bot. Pl. 231. La Marck Illust. Pl. 554. fig. 2. Gært. Tab. 141. "Silicles ovate, two-edged, smooth, one-seeded; leaves fleshy." Smith. *Root* annual, slender, woody, running deep into the sand. *Stem* round, much branched, woody, divided from the base into widely divaricated, zig-zag, twisted branches. *Leaves* alternate, thick and succulent, rather glaucous, smooth, more or less deeply pinnatifid and toothed; their segments all obtuse. *Flowers* pale purple in dense, terminal corymbi, which afterwards grow out into spikes. *Calyx* gibbous at the base. *Silicle* smooth, oblong, acuminate, obsolete four-angled, but so compressed as to make two opposite edges very prominent, two-jointed, separating at the joints; the upper joint largest, deeply emarginate at the base, spongy, constantly fertile, one-celled, not opening spontaneously, but easily separated into two valves at the prominent angles; the lower joint smaller, somewhat top-shaped, sometimes perfectly solid, and sometimes furnished with a cell, which is either barren or contains a single feed; but a fertile lower joint is very rare, and never occurred to the observation of Gærtner, Miller, Gært. and Smith. An inhabitant of the sea-coasts of Europe, Asia, Africa, and America. Willdenow describes the variety β of Vahl, which he conjectures to be *Isatis Egyptiaca* of Linnæus, as a second species of his genus *Cakile*, under the trivial name of *Egyptiaca*. It differs chiefly in having larger leaves, longer peduncles, and a feed always in each cell; but it seems to be only a variety of the common species.

Obs. This genus, like several others of the same natural family, is very perplexed and obscure, and differently treated by different authors. Linnæus, at first, formed it of such species as have rough or muricated filiques or filicles, including the *Erucago* of Tournefort, and framed its generic character accordingly: but afterwards, without changing the character, admitted the *Cakile* of Tournefort, which has not rough or muricated filicles, and which in his *Hortus Cliffortianus* and *Flora Suecica*, he had placed under *Raphanus*. La Marck has abolished it entirely, keeping *Cakile* distinct, and placing the other species under *Myagrum*, which, he says, forms with them a very natural genus, consisting of species with filicles, in some respects so different from each other, that, if not united under one very general character, they must constitute nearly as many genera as species. Jussieu, instead of uniting it with *Myagrum*, is rather inclined to divide it into three, *Bunias*, *Erucago*, *Cakile*. Gærtner makes its essential character depend on a drupaceous silicle, adding that those who are delighted with

with a multitude of genera, may divide it according to the internal structure of the drupe, and the seeds into *Bunias*, *Laelia*, and *Erucego*. In consequence of this established principle, he has not only restored the genus *Cakile* of Tournefort, but has also introduced a new one for the *Bunias cornuta* of Linnæus, under the generic name *Pugionium*, from *pugio*, a dagger, suggested by the shape of the singular processes from the filicle. Willdenow and Ventenat have admitted the three genera, and the latter has also again made *Erucego* a distinct genus. In this diversity of opinion, we have thought it best to keep the Linnæan genus entire, only adopting the essential character given by Dr. Smith in his *Flora Britannica*, which appears to be equally comprehensive of the proper species and exclusive of others.

BUNIAS Syriaca, of Gærtner and Willdenow. See *ANASTATICA Syriaca*. La Marek says that it has the fruit of his *Myagrum*, and consequently cannot belong to the genus *Anastatica*. Gærtner, when his plates were engraved, followed the arrangement of Linnæus, but, when he wrote the descriptions, had discovered that the filicle is properly a drupe, though the rind is so thin as to be scarcely discernible, and that, therefore, it belongs to his genus *Bunias*.

BUNIAS, Gerard. See *BRASSICA Napus*.

BUNIUM, (supposed, like *Bunias*, to be derived from *βουνος*, a hill, as is said, from its affecting high situations, but that being neither its peculiar nor universal character, it is probably so called from the form of its root) Earth-nut, Kipper-nut, Pig-nut, or Hawk-nut. Linn. gen. 335. Schreb. 468. Willden. 532. Juss. 223. Vent. vol. iii. 30. Gert. 807. *Bulbocastanum* Tourn. Clafs and order, *pentandria digynia*. Nat. Ord. *Umbellata* Linn. *Umbellifera* Juss.

Gen. Char. *Umbel universal* manifold, with rays fewer than twenty: *partial*, very short, crowded. *Involucre universal* short, of many linear leaves, sometimes not more than three, or only one, and after the flowers are opened, often entirely wanting: *partial* fetaceous, the length of the *partial* umbel. *Perianth proper* scarcely apparent. *Corolla universal* uniform. *Petals* all fertile. *Cor. proper* of five inflex-cordate, equal petals. *Stam.* filaments five, shorter than the corolla, simple: anthers simple. *Pist.* germ oblong, inferior: styles two, reflexed; stigmas obtuse. *Peric.* none: fruit ovate, splitting in two. *Seeds* two, ovate, convex on one side, flat on the other. Linn. five striated, the spaces between the streaks slightly wrinkled. Gert.

Essen. Char. *Cor.* Uniform. *Umbel* crowded. *Fruit* ovate.

Sp. 1. *B. Bulbocastanum*. Linn. (*B. minus*. Gouan.) La Marek, Ill. 197. "Involucre many-leaved: stem straight and leafy at the base." Dr. Smith. "Leaves uniform, involucre many-leaved." Willd. "Fruit somewhat cylindrical, thicker at the apex; styles reflexed, deciduous." Gouan. *Root* perennial, tuberous, roundish. *Stem* round, alternately branched, leafy, striated, smooth. *Leaves* tripinnate: segments linear, of ten trifid. *Umbels* terminal, erect. *Partial umbels* close, white. *Involucre* three times shorter than the rays. Dr. Smith. Common on the Continent; rare in England; found by Mastyn in the time of Dillenius, near Hornsey wood, and by Mr. William Wood, lately in Kensington gardens. 2. *B. flexuosum*, Stokes in Withering and Dr. Smith. (*B. majus*. Gouan and Willdenow.) "Involucre of three leaves or less; stem naked, tapering, and zig-zag at the base. Dr. Smith. "Stem leaves very narrow, involucre none." Willd. "Fruit ovate, acuminate; styles permanent." Gouan. *Root* tu-

berous, roundish. *Stem* elongated under the earth, tapering, zig-zag, white; about a foot and a half high, erect, branched, leafy, striated, smooth. *Radical leaves* on long petioles, tripinnate; segments linear, pinnatifid and gashed; stem-leaves nearly sessile, triternate, finely divided; sheath short, grooved, smooth, the edge membranous and whitish. *Umbels* several; universal rays from seven to twelve, *partial* about twelve. *Involucre universal* and *partial* various; in Yorkshire specimens, the universal involucre most commonly consists of one or two lanceolate leaves, with three coloured ribs, proceeding from a projecting ring which surrounds the base of the umbel; *partial* one of from one to three leaves, exactly resembling those of the universal involucre and proceeding from a similar ring. *Styles* white, according to Curtis, but in our specimens they are purple, with globular stigmas. A native of heaths, dry pastures, and woods, in almost every part of England. Linnæus confounded these two species, but, as Dr. Smith observes, appears to have drawn his description from the *Bulbocastanum*, the *majus* of old authors. Ray knew only one species, which must have been the *flexuosum*; but Magnol, his contemporary, mentions both in his index of plants growing about Montpellier, and adds that he found them to be specifically different by cultivating them in his garden. Johnson, in his edition of Gerard, distinguished them, and Dillenius was rather inclined to think them distinct; though Professor John Martyn, on whose authority he admitted the *majus* of the old botanists as a British plant, suspected that the difference was owing to the roots growing nearer than usual to the surface of the ground. Gouan, who cultivated them during eight years, is surprised that they have not been distinguished long since, and gives specific differences, which, however, do not satisfy the present professor, Thomas Martyn. But Dr. Stokes and Dr. Smith have, we apprehend, now determined the question. The tuberous roots of both species, on account of their sweetish taste, have long been a favourite esculent with boys, and when boiled or roasted are said to be little inferior to chestnuts. Ray recommends them when seasoned with pepper as a nourishing, stimulating, food; and the old empirics attributed medical virtues to them, which have long since been exploded. Gouan and Willdenow have perversely given the specific name *majus* to the minus of the old authors. 3. *B. aromaticum*, Linn. Mant. 218, "partial involucre of three leaves." *Root* annual, and as Bose observes, probably not tuberous. *Stem* erect, even, alternately branched. *Leaves* resembling those of *Carum Carui*, super-decompound. *Umbel* of ten or twelve rays on a long, striated peduncle. *Partial umbels* short. *Universal involucre* of about six, short, awl-shaped leaves. *Partial involucre* of about three leaves, the length of the little umbel. *Corolla* white. *Petals* equal, inflex-cordate. *Seeds* ovate, minute, yielding an aromatic odour, similar to *Marjoram*. A native of Crete and Syria.

BUNIUM. Sauvage, Monf. See *Sison verticillatum*.

BUNIUS, Dalech. J. Bauh. See *ÆTHUSA Bunius*.

BUNIUS, Rumph. and Burm. See *STILAGO Bunius*, now discovered to be the male of *Antidesma alexiteria*.

BUNKER'S HILL, in *Geography*. See *BREED'S HILL*.

BUNKLE'S MANUSCRIPT, in *Biblical History*, a modern MS. of the four Gospels, noted in Mill Bu. and 70 in the first part of Wettstein's New Testament. When this MS. was collated by Mill, it was the property of Mr. Bunkle of London; but at present it is preserved in the University library of Cambridge. Whether it was written a short time before or a short time after the invention of printing, which last is asserted by Wettstein, in opposition to Mill, is a matter of little importance. It is supposed to have

have been written by George of Sparta, who was sent on an embassy to England by Pope Sixtus IV. in 1476. It has not the ancient *κεφαλαια*, but the modern chapters, which are found in our printed bibles. Michaelis's Int. to the New Testament by Marsh, vol. ii. and iii.

BUNNAS, in *Geography*, a river of Hindoostan, which runs into the Jessul; 25 miles S.E. of Oudipour.

BUNNICK, JOHN VAN, in *Biography*, a painter of history and portrait, was born at Utrecht in 1654, and under the instruction of Herman Sachtleven, became a considerable artist. Having for some time associated with Gerard Hoet in the exercise of his art, he determined to improve himself at Rome; and there became acquainted with Carlo Maratti, and Abraham Genoels, from whose works and conversation he derived great benefit. Intending to return home, he was detained by the duke of Modena, who engaged his service by the grant of an honourable pension, and retained him in his court for eight years. He designed well, disposed his figures with elegance and propriety, and was correct in his outline. He died in 1727.

His brother and disciple, *Jacob Van Bunnik*, became an excellent master, and distinguished himself by painting battles. His subjects were different from those of his brother, but in the manner of his handling and colouring he resembled him entirely. He died in 1725. Pilkington.

BUNNOO, or BANOU, in *Geography*, a town of Cabul, situate between the mountains of Sindhia Baltch, which lie south of Pashawur and the river Cophenes, or Cow river, or the great river of Bungush, which is formed by the waters of Ghizni and Gurdais, and passing by Nughz and Bunnoo, discharges itself into the Indus or Sindé, at Deinkote. N. lat. 33°. E. long. 70° 20'.

BUNNUEL, a town of Spain in Navarre, seated on the Ebro; 7 leagues from Tudela.

BUNOLA, a small town in the island of Majorca.

BUNOWEN, a village on the coast of Connemara, in the western part of the county of Galway, Ireland, which gives name to a bay, in which small vessels may ride in the summer time, or in moderate weather, the ground holding well, and the water from 2 to 2½ fathoms. N. lat. 53° 24'. W. long. 10° 8'.

BUNRATTY, a barony in the county of Clare, Ireland, which derives its name from the old castle of Bunratty, or Bonratti, which was built near the mouth of the small river Gearnna, that flows into the Shannon, and was considered a fortress of great strength and importance. It was built by Thomas de Clare in 1277 for the protection of the English settlers; and was afterwards the occasional residence of the earls of Thomond. Being taken possession of by the adherents of the parliament in 1646, it was besieged by the Irish under lord Muskerry, and held out six weeks. It is about 8 miles west from Limerick. Hollinshead.

BUNT of a sail, in *Sea Language*, is the middle part of it, formed into a kind of bag, or pouch, that it may catch and receive the more wind.

The bunt is chiefly used in topails, the foremost leech of which is cut with a neck; for courses are for the most part cut square, or at least with a small allowance for bunt or compass, which is the middle part of the foot of such sails. They say, *the bunt holds much leeward wind*; that is, it hangs too much to leeward.

Seamen all agree, that a bellying or bunting sail carries a vessel faster to the windward than a straight or fast sail: the contrary of which is asserted by Dr. Hooke, who has a discourse to shew the preference of straight to bunting sails. See Hooke's *Posthum. Works*, p. 563, seq.

BUNT-lines, are small lines made fast to the bottom of the

square sails, in the middle part of the bolt-rope to a crenelle; and so are reeved through a small block, seized to the yard: their use is to trice up the bunt of the sail, for the better furling it up.

BUNT-line-cloth, is the lining sewed up the sail, in the direction of the bunt-line, to prevent the sails being chafed.

BUNTINE, a thin woollen stuff, of which the colours and signals of a ship are usually made.

BUNTING, in *Ornithology*, the English name of the birds of the *EMBERIZA* genus. See *EMBERIZA*.—*Bunting* is the name applied in common to *Emberiza Miliaria*.

BUNTINGFORD, in *Geography*, a small market-town in the county of Hertford, England. It stands on the banks of the river Rib, near the spot where the Roman road called Enning-street crossed it. Edward the third, in the 21st year of his reign, granted to this town the privilege of a yearly market, and a fair. In the 41st year of his reign he further endowed it with a weekly market on Saturdays, and a fair in June. This town is only a chapelry to Layston, where the church is situated, but the inhabitants are accommodated with a neat and commodious chapel, which was finished in 1626. Here are a free-school, an alms-house, and other charities. The present market day is Monday; but the markets are very inconsiderable. Buntingford is 31 miles north from London, and with the remainder of the parish, contains 163 houses, and 792 inhabitants. *Magna Britannia*, vol. ii. 973.

BUNTSPECHT, in *Ornithology*; Frisch has the greater woodpecker, *picus major*, under this name.—*Kleiner Buntspecht* is the lesser spotted woodpecker, *picus minor*, in the same author.

BUNTZLAU, or BUNZEL, in Latin *Boleslavia*, in *Geography*, a town of Silesia, in a circle of the same name, and in the principality of Jauer. It is seated in a fertile country, on the Bober; and exports great quantities of its beautiful brown earthen ware. It was formerly noted for the rich mines in its vicinity, and the Silesian bards have celebrated the limpid and salubrious waters of the queck-brunn or quick-spring that lies near it. N. lat. 51° 12'. E. long. 15° 50'.

BUNTZLAU, *Alt*, an ancient town of Bohemia, in the circle of Boleslaw, founded by Wratislaus in 915, but reduced by the troubles of the 15th and 16th centuries to an inconsiderable place. It is seated on the Elbe, 8 miles S.S.W. of Benatek or Benatky.

BUNTZLAU, *Jung*, a town of Bohemia, and capital of the circle of Boleslaw, built in 973 by Boleslaw the younger, and ranked in 1600 among the royal boroughs by the emperor Rudolph. It is seated on the Iser, 28 miles N.N.E. of Prague.

BUNYAN, JOHN, in *Biography*, a very popular writer among persons of a particular description, sprung from an obscure origin, being the son of a tinker, and was born at Elstow near Bedford, in 1628. His parents gave him an education suitable to their condition, and taught him to read and write; but his conversation and conduct in early life were remarkably vicious and profane, though not without some checks, which indicated very strong religious impressions. In process of time these impressions, revived and cherished by the conversation of some pious women, with whom he accidentally associated, terminated in a thorough reformation, so that he became as much distinguished for his piety as he had once been for his profligacy. For several years he followed his father's occupation, and in the exercise of it travelled about the country, particularly in the neighbourhood of Bedford. He enlisted as a soldier in the parliament army, and at the siege of Leicester in 1645, his

life

life was singularly preserved by his consenting to give up his place as sential to a comrade, whose head was taken off by a musket ball. At the time of his marriage, his poverty was such, that neither he nor his wife possessed so much as a dish or a spoon; but she had, what he deemed of greater value, "The Plain Man's Path-way to Heaven," and "The Practice of Piety," which he was accustomed to read with her, and which afforded him singular satisfaction and advantage. Of the sincerity of his conversion he had exhibited such evidence, that he was admitted in 1655 a member of a Baptist congregation at Bedford; and he was so regular an attendant on meetings held for religious purposes, that, soon after the restoration, he was convicted of associating with others in unlawful assemblies and conventicles, sentenced to perpetual banishment, but afterwards committed to prison, where he supported himself and family, during a confinement of twelve years and a half, by making tagged laces, and where he employed part of his time in preaching to and praying with his fellow-prisoners. His library at this time consisted only of the Bible, and the Book of Martyrs; and yet he composed many of his works, and, particularly, his "Pilgrim's Progress," whilst he remained in prison. In the last year of his confinement, such was the estimation in which his talents and character were held, that he was unanimously chosen pastor of the congregation at Bedford. After his enlargement, for which he was indebted to the compassionate interference of Dr. Barlow, bishop of Lincoln, he travelled into several parts of England, for the purpose of visiting and confirming persons of the same profession; whence he obtained the appellation of "Bishop Bunyan." Upon the publication of King James II.'s declaration for liberty of conscience, Bunyan was enabled, by the voluntary contributions of his friends, to build a meeting-house at Bedford, where he constantly preached to very large congregations. He also frequently visited London, and preached there among the non-conformists; but in one of these visits he was seized with a fever, and died at his lodgings on Snow-hill, August the 31st, 1688, aged 60. His remains were interred in the burying ground belonging to the dissenters in Bunhill Fields. His religious sentiments were those of the most rigid Calvinists, to which he was zealously attached; his piety, though blended with some degree of enthusiasm, was sincere and uniform; and his moral conduct, after the period of his conversion, was not only irreproachable, but exemplary, though his zeal exposed both his principles and character to many unfounded reproaches and calumnies. As he never enjoyed the advantages of a liberal education, his public performances, as a preacher, and his writings, as an author, indicate very extraordinary talents. In his preaching, he spoke with considerable fluency, though not without some hesitation; and his ministerial labours were countenanced by the learned Dr. John Owen, who occasionally attended his sermons. Of his numerous works the most celebrated, both for its composition and popularity, is his "Pilgrim's Progress." This work, which has passed through more than fifty editions, and which has been translated into various languages, has been admired and applauded by some of the best judges: and there are few persons who have not read it, whatever may be their opinion of the theological system on which it is founded, and of the terrific ideas which it is adapted to excite in the minds of the young. The allegory is well conducted and sustained; the characters that are introduced are justly drawn; it abounds with lively description, and manifests the exuberance of invention. Lord Kames, speaking in his "Sketches of the History of Man," (vol. i.) of this work, and "Robinson Crusoe," the great favourites

of the vulgar, says, that "they are composed in a style enlivened, like that of Homer, by a proper mixture of the dramatic and narrative:" and Bunyan's genius, displayed in this performance, has been, perhaps, extravagantly extolled by other writers, among whom we may reckon Mr. Granger, Mr. Merrick, and Dr. Roberts, to whose sentiments great deference is due. Many of Mr. Bunyan's other works are of the allegorical or parabolical kind; and though not equally popular with the "Pilgrim's Progress," are much read by a certain class of persons. The most considerable of these is the "Holy War, made by Shaddai upon Diabolus." One of the most interesting of his works is "Grace abounding to the Chief of Sinners," containing an account of his own life. All his works were collected together in 2 vols. folio, London, 1736, 1737: and a new edition, more complete than any of the preceding, with copper-plates, and a commendatory preface, by Mr. George Whitfield, was published in 2 vols. folio, in 1767. Biog. Brit.

BUOMMATTEI, **Benedict**, an early Italian grammarian, was born at Florence in 1581, and having entered into the priesthood, discharged the duties of his function, and pursued literary studies at Rome and Padua, and chiefly in his native city. He was a member of several academies, and particularly of those of Della Crusca and the Apatisti, where he recited lectures and discourses, many of which have been published. But he is principally known by his two books "On the Tuscan Language," being the first work that deserves the title of a grammar of the Italian language, and still popular and highly esteemed. Buommattei died at Florence in 1647. Tiraboschi. Gen. Biog.

BUON, in *Geography*, a town of the kingdom of Naples, and Principato Ultra; 7 miles E.N.E. of Benevento.

BUONACCORDO, a small stringed musical instrument, resembling a spinet, used by children to learn to play on, because of the shortness of their fingers.

The word is Italian, and properly denotes a harpsichord.

BUONACCORSI, **Philip**, in *Biography*, an elegant modern Latin writer, was born of a noble family at S. Gimignano, in Tuscany, in 1437, and residing at Rome in his youth, he was one of the founders of the Roman academy, according to the custom of which he assumed the name of "Callimaco," adding to it "Esperiente," in allusion to the vicissitudes of his life. Being suspected by pope Paul II. of a concern in a conspiracy against his life, he was under a necessity of securing himself by flight; and having wandered through Greece, Egypt, Cyprus, Rhodes, and other islands in the Archipelago, Thrace, and Macedonia, he at length took refuge in Poland; where he was introduced to king Casimir, who made him tutor to his son Albert, and his own secretary. He also employed him in several embassies. After the death of Casimir, he was entrusted by Albert, his successor, with the conduct of all the affairs of his court and kingdom; and though these marks of distinction excited the envy of Albert's courtiers, and many attempts were made to ruin him, he retained his sovereign's favour till his death, which happened at Cracow, in 1496. Callimaco, for such was the name by which he is distinguished as a writer, wrote in 3 books the life of Ladislaus, brother and predecessor of Casimir, with an account of the battle of Varna, in which he was killed. He also composed a life of Attila, and a small treatise on the attempts of the Venetians to excite the Tartars and Persians against the Turks. These pieces, with some orations and letters, have been published together, and passed through several editions. The style in which they are written is elegant and forcible, and in the opinion of Paul

Giovio, no historian since Tacitus has equalled Buonaccorsi. Many unpublished works are preserved in the Vatican, and other libraries. Tiraboschi. Gen. Biog.

BUONACCORSI. See PIERINO DEL VAGA.

BUONAMICI, CASTRUCCIO, was born at Lucca in 1710, and having entered into the ecclesiastical state, sought advancement at Rome; but being disappointed in his views, he assumed a military character, and engaged in the service of the king of the two Sicilies. He still, however, indulged his taste for the pursuits of literature. His principal works are a relation in Latin of the war of Velletri in 1745, between the Austrians and Neapolitans, printed in 1746, under the title of "*De Rebus ad Velitris gestis Commentarius*," 4to.; for which work he was recompensed with a pension by the king of Naples, and the rank of commissary-general of Artillery: and "*De Bello Italico Commentarii*," 4to. in 3 books, 1750, 1751; containing the history of the war in Italy, for which he was honoured by the duke of Parma with the title of count. These histories, equally admired for accuracy of detail, and purity of Latin, have been several times re-printed. The author's treatise "*De Scientia Militari*," remains unpublished. He died at Lucca in 1761. *Nouv. Dict. Hist.*

BUONAMICI, LAZZARO, was born at Bassano in 1479, and educated in the university of Padua, where he gained such reputation, that Pomponazzi, his tutor in philosophy, sometimes applied to him for the explanation of a passage in Aristotle. From Bologna, where he was employed in the instruction of the young persons of the Campeggi family, he removed to Rome, and became professor of the belles lettres in the college of Sapienza. In 1527, when the city was sacked, he lost his library, writings, and all his effects, and with difficulty saved his life. At Padua he occupied the chair of Greek and Latin eloquence, to which he was invited in 1530, and in this situation, where he was highly respected, and where he had a great concourse of students, he remained, notwithstanding several applications made for removing him by universities and sovereign princes, till his death, which happened in 1552. He was borne to his grave on the shoulders of his students. His writings, consisting of letters, prefaces, and Latin poems, are few, but they are sufficient to establish his character as an elegant writer. Notwithstanding his professional reputation, he dissipated much of his time in the intercourses of society and in play, to which he was so much addicted, that he sometimes devoted whole nights to it. His dread of criticism might also prevent his appearing before the public as an author. A collection of his poems was printed for the first time at Venice in 1572. Tiraboschi. Gen. Biog.

BUONAMICO, of CRISTOPHANO, called BUFFALMACCO, was a Florentine painter, born in the year 1262, and a pupil of Andrea Tafi. He was an artist of great merit, and by Boccaccio celebrated for his wit and humour (vide *Il Decamerone*); and Franco Sacchetti in his "*Tre Cento Novelle*," relates a story of him when he was a boy, which shews the early bias of his mind; and as it portrays the character of the man, it may not be without its interest. Andrea Tafi was a painter of great industry, and used to rise before it was light to pursue his avocation, considering the gain more than the honour of his profession. Early rising, unfortunately, had no charms for his scholar, and therefore he devised a scheme to make him lie in bed till daylight. At the hour Tafi was about to rise, having previously provided himself with thirty black beetles, and on their backs fastened small pieces of wax taper, he lit them up, and sent them, one by one, through a hole in the door, into his master's bed room; making a procession of moving light mysteriously unintelli-

gible; which so alarmed the old man, that he prayed and recommended his soul to mercy, and hid his face under the bed clothes. In the morning he told Buonamico he had seen ten thousand devils, and that his thoughts were so disturbed he could not rise to pursue his profession. On the succeeding night, Buonamico diminished the number of the beetles; but the repetition produced the same effect, and so frightened his master, that he determined to remove, being persuaded the house was haunted by evil spirits. Buonamico then sent to the parish priest that he might administer comfort. The priest came and soothed his mind; and Buonamico availed himself of the opportunity to make his observations on the probable cause of this perplexing event. He observed that he had always heard devils were great enemies to God; and consequently they must be so to all painters, as their practice was to paint saints and angels as perfect as possible, and endeavour to improve mankind, by shewing, through all the circumstances of human life, the happiness of heaven and the torments of hell; besides, whenever fiends were represented, they were made as hideous as the painters' imagination could suggest: and as it was well known that devils had more power by night than by day, they played him this trick to keep him in bed, that he might not interfere with their region of darkness: by such observations, which the priest thought very plausible, the old man was persuaded that it would be proper to lie in bed till day-light. After a few months, however, as the devils grew fainter in his recollection, Tafi's industry returned; but as they had played their part so well, Buonamico recurred to his former expedient, which produced an effect not less frightful and impressive. Priests were again sent for to restore him to tranquillity, who agreeing with Buonamico in the probable cause of this strange appearance, he determined to paint no more by candle-light; and this story was so generally circulated and believed, that all the painters in Florence were afterwards afraid to paint at night.

Among the first works of Buffalmacco, were a series of religious pictures representing the life of Christ, painted in a church at Faenza, and other subjects from the Old and New Testament; among which the massacre of the Innocents is particularly mentioned by Vasari, where despair and terror, agony and distress, were forcibly expressed. Of this work nothing now remains, except the original drawings be in existence, which the same author describes to have been preserved in his time. He also painted in the cloisters of the abbey of Septimus, several historical subjects relating to St. James, to whom the church was dedicated; and on the ceiling he painted the four evangelists. He painted also many historical pictures on the outside of this building, which were well composed, and executed with skill. In these pictures he employed salt in the purple used for the shade tint of the flesh, which so corroded and destroyed all the other colours, that, in Vasari's time, nothing remained but the purple; which premature decay this author at first attributed to dampness, but, upon minute inspection, found it was owing to the salt that was employed.

For the monastery of the Carthusians at Florence he painted upon panel two pictures in distemper; and for the church of San Giovanni several, which were destroyed when the walls were beaten down in the war of 1529. He executed other works at Cortona and Peruggia, Ascise and Arezzo, and painted several pictures in the church of St. Petronio in Bologna.

In the cathedral of Sienna is a Mosaic pavement, made from his drawings; which at this day is a specimen of his abilities in design and composition, very honourable to his reputation. Some of his latest works were executed at Pisa, for

for the abbey church of St. Paul, taken from the Old and New Testament; and in one of these, representing Noah's ark, he introduced his own portrait, which is the only portrait known of him, and is the same Vasari introduced into the second edition of his "Lives of the Painters."

Buffalmacco enjoyed considerable reputation, nor was the age wanting, in affording him opportunity to exert his talents; yet, from the following anecdote, he appears occasionally to have worked at a very low price. Vasari has recorded, that he painted a whole length figure of St. Christopher, 12 braccia in height, nearly 23 feet, for 8 florins; and this fact is preserved for the sake of a whimsical circumstance that attended the execution of it. The picture was ordered by a countryman, and was to occupy a wall in a church at Florence; when Buffalmacco went to paint, he found the wall only 9 braccia in height: that his employer, therefore, might have his measure, he painted St. Christopher lying upon his back; but unfortunately even in this position, the wall did not admit of his whole length; he then turned up the legs perpendicular to the body, which was so exceedingly ridiculous, that when the countryman came to see his faint, he flew in a violent passion, and demanded his money, declaring that he was both cheated and insulted, but the painter insisted that he had executed the commission with the strictest fidelity, and therefore could neither agree with him, nor comply with his request: upon which the countryman brought an action against him, and in the result was not more successful.

This propensity to make merry with life, made Buffalmacco regardless of the means by which its decline is supported; and at the advanced age of 78 years he died in extreme poverty and distress, supported in his last illness by the charity of an hospital, and buried by the company of the Misericordia. Vasari has written his life in 13 quarto pages, containing little more than general commendation and whimsical anecdotes connected with the exercise of his profession.

BUONAROTI. See ANGELO.

BUON-CONVENTO, in *Geography*. See BONCONVENTO.

BUONHABITACULO, a town of Naples; 8 miles N. of Policastro.

BUONTALENTI, BERNARDO, called GIRANDOLE, in *Biography*, a painter of history and portrait in miniature, acquired correctness of design, and the knowledge of colouring, from Salvati, Bronzino, and Vasari, and the art of miniature-painting from Julio Clovio. His works were much admired for the beauty of the colouring, and for a certain dignity of expression in his Madonnas, as well as in his portraits. Besides his merit as a painter, he was much approved as a statuary and an architect. He was born at Florence in 1547, and died in 1608. Pilkington.

BUONVICINO, in *Geography*, a town of Naples, in the province of Calabria Citra; 11 miles S.E. of Scalea.

BUOY, a small island on the east coast of Newfoundland, between Ferryland head and harbour. See BROYLE.

Buoy, in *Sea Language*, a body floating in water, to shew either the situation of a ship's anchor, or a danger, as sands, shoals, &c. that it may be avoided. Buoys are of various forms, and constructed of buoyant materials, as wood, cork, &c. The names of the principal kinds of buoys are *can*, *cask*, or *cable*, *nun*, and *wooden* buoys.

A *can buoy* is made in the form of a cone. This kind is particularly employed in pointing out the extremities or sides of any dangerous bank, sand, &c. A buoy for this purpose is, therefore, large, that it may be seen at some considerable distance, and is fastened to an anchor, sunk in a proper situa-

tion, to point out the danger. When there are several buoys on the same sand or shoal, they are generally painted of different colours, to prevent mistake, as black, white, and red; this last colour is that which is best perceived, for a white buoy is not easily observed in broken water, and in many cases a black painted buoy is very indistinct. In going through a narrow channel, in place of having buoys on one side only, there are sometimes buoys on one side and beacons on the other; but as these last are more easily broke down by the violence of the waves, buoys may, therefore, be placed on each side; and to prevent mistake, those on the one side should be can-buoys, and cask-buoys on the other side. For this purpose it has been proposed, in going in to all ports, to have can-buoys on the starboard hand, and cask-buoys placed on the larboard hand; which varieties, experience has shewn, may be perceived at a considerable distance. For the can-buoy, in consequence of its broad heavy end, swims chiefly on its side; while the cask-buoy, being much narrower and lighter at this upper end, swims more upright, and higher out of the water.

Cask-buoys are any common casks used for buoys. When casks are employed to float, or buoy up the cable in different places to prevent it from being injured by rocks, &c. at the bottom, they are called *cable buoys*.

Nun-buoys are in form of the middle frustum of two cones, abutting upon a common base, being casks, which are large in the middle, and tapering greatly towards each end.

Wooden-buoys are solid pieces of timber, being in form either of a cylinder, or nun-buoy. They are furnished with one or two holes, in which to fix a short piece of rope, whose two ends being spliced together, make a sort of circle or ring called a *strop*. These several buoys are represented in the *Plates of Ships*.

Buoy rope, the rope that connects the buoy with the anchor. The length of this rope should be very little more than equal to the depth of the water where the anchor is to lie, that the buoy may thereby float, as nearly as possible, immediately above the anchor, and consequently point out its situation. The buoy rope is useful in weighing the anchor, either by means of a boat, or when the cable is broke or run out; and, therefore, it should always be of a sufficient strength for this purpose, otherwise the anchor may be lost. See *Plate of Ships*.

Buoy, *Slings of the*, the ropes which are fastened about it, and by which it is hung. They are curiously spliced round the buoy, somewhat resembling the braces of a drum.

Buoy, *to stream the*, is to let it fall from the ship's side into the water. This is always done before the anchor is let go, that it may not be retarded by the buoy rope, in its descent to the bottom.

Buoy of the Nore, is situated about N.E. from Sheerness fort, on the N.W. point of the isle of Sheppey, the east entrance into Chatham river, or the Medway; and it is at the extreme point of a sand, which runs E.N.E. from the island of Grain, or west entrance of the Medway.

BUOYANT, denotes a thing floating, or apt to float.

BUPALUS, in *Biography*, a celebrated sculptor, descended from a line of ancestors of the same profession, was a native of Chios, and flourished in the 60th olympiad, or 540 years B.C. His brother *Athenis* was also of the same profession. They worked only in the white marble of the isle of Paros, and executed several statues at Rome. They were contemporaries with *Hippias*, a poet of a deformed and contemptible figure, whom, for their diversion,

they represented under a ridiculous form. The poet revenged himself by writing against them a sharp satire, which, as some say, caused them to hang themselves. But Pliny says, on the contrary, that after Hipponax had taken his revenge, they made several very fine statues, and particularly one of a Diana at Chios, which was placed at a great height, and exhibited a frowning countenance to those who entered, and a pleasant one to those that departed. Pausanias (l. iv. c. 30. p. 355. and l. ix. c. 35. p. 781. ed. Kuhnii) mentions Bupalus as a good architect as well as sculptor.

BUPARIA, in *Entomology*, a species of *PIMELIA* of the winged kind; black, and glabrous; thorax lunated; jaws strong, toothed, and as long as the head. *Gmel.*

Obf. This is described by Forster under the name of *TE-NEBRIO BUPARIUS*. It inhabits Spain.

BUPARITI, in *Botany*, Rheed. Mal. See *HIBISCUS populæus*.

BUPHAGA, in *Ornithology*, a genus in the order *PICÆ*, of which only a single species has been hitherto discovered; and which, being a native of Africa, has received the name of *Africana*. The generic definition consists in having the bill straight, and somewhat quadrangular; mandibles gibbous, entire, and more gibbous on the outside. Legs formed for walking.

Linnæus and Brisson have given this bird the name of *Buphaga*, and Buffon that of *Pic-bœuf*, from whence the epithet of beef-eater is derived. French authors of the present day write it *Picque Bœuf*. All these names refer to a peculiarity of the African *Buphaga*, which sometimes alights upon the backs of the cattle, and picks holes in them, in order to get at the larvæ of the *osfri*, or gad-flies, deposited by those tormenting creatures in the flesh, directly below the skin.

The species *Africana* is between eight and nine inches in length. The prevailing colour of the plumage above is brown; beneath, and also the rump, yellowish. Bill scarcely an inch in length. Tail cuneated, and consisting of pointed feathers. Legs and claws black.

BUPHAGIUM, in *Ancient Geography*, a town of Arcadia, situate in the western part of it, south of Teiphusa. It derived its name from that of the hero Buphagus, the son of Japetus and Thormax, who was slain on the mountain Pholoe, for daring to offer insult to Diana. Pausanias, l. viii. c. 27. p. 658. Ed. Kuhnii.

BUPHAGUS, a river of Arcadia, which took its rise near Buphagium, and discharged itself in the river Alpheus. Pausanias.

BUPHONIA, from βύς, ox, and φων, slaughter, in *Antiquity*, an Athenian feast or ceremony, denominated from a bullock slain therein with quaint formalities.

The buphonia was properly a part or appendage of the ceremony of *DIIPOLIA*.

For the origin of the buphonia we are told it was forbidden by the laws of Attica to kill an ox: but it once happened, at the feast of the *diipolia*, that an ox eat the corn, others say the cakes, which had been dressed for the sacrifice. Thaulon the priest enraged at this, presently killed him, and fled for it. On which the Athenians, fearing the resentment of the gods, and feigning themselves ignorant who had committed the fact, brought the bloody axe before the judges, where it was solemnly arraigned, tried, found guilty, and condemned. And, in memory of this event, a feast was instituted under the denomination of *buphonia*; in which it was still customary for the priest to fly, and judgment to be given about the slaughter of the ox.

BUPHTHALMUM, in *Botany*, (from βους, bull, and φθαλμος, eye) Linn. gen. 977. Schreb. 1321. Juss. 186.

Gært. 1006. Vent. vol. ii. 521. (*Asteriscus* and *Asteroides*, Tournef.) La Marck Illust. Pl. 682. Class and order, *Syngenesia polygamia superflua*. Nat. Ord. *Compositæ*, Linn. *Corymbifera*, Juss.

Gen. Char. *Cal. common*, imbricated with a double or triple series of scales, in some species all equal and shorter than the ray of the flower; in others, the outer series longer and exceeding the ray. *Cor.* compound, radiate; florets of the disc numerous, funnel-shaped, with a five-parted rather spreading border; of the ray more than ten, ligulate, spreading, three-toothed. *Stam.* filaments five, capillary, very short; anthers cylindrical, united into a tube. *Pist.* of the disc. Germ ovate, compressed; style thread-shaped, the length of the stamens; stigma, thickish, either simple or bifid. Of the ray, germ ancipital; style thread-shaped; stigmas two, oblong. *Peric.* common, the calyx unchanged. *Seeds* of the disc oblong; of the ray compressed, with sharp edges; both crowned either with a toothed, or gashed, and almost leafy margin. *Receptacle* chaffy, convex.

Ess. Char. *Receptacle* chaffy. *Seeds* crowned with a toothed or gashed margin; with sharp edges, particularly in the ray.

Species 1. *B. frutescens*. Linn. "Leaves opposite, lanceolate; petioles two-toothed; stem shrubby." A small shrub about four feet high. *Stem* straight, jointed. *Bark* greyish. *Branches* bushy. *Leaves* opposite, oblong, broader towards their summit, narrowed into a petiole towards their base, connate like those of *Lychnis*, glaucous; covered with a very close, short down, and marked with three longitudinal nerves. *Flowers* yellow, terminal, solitary, peduncled. *Calyx-scales* oval, a little tomentous. *Semi-florets* rather broad, short, and toothed. *Chaff* terminated by a sharp point. La Marck, from a living plant. A native of the West-Indies and Virginia. Cultivated in the royal garden at Hampton Court in 1699. 2. *B. Peruvianum*. La Marck Encyc. "Leaves linear-lanceolate, silky, obscurely toothed about the middle; stem shrubby." Similar to the preceding but smaller, and of a more silvery appearance. *Leaves* narrower, and without teeth at their base. *Flowers* yellow, terminal, solitary. *Calyx-scales* ovate; semi-florets scarcely extending beyond the calyx. La Marck, from a living plant. Found by Dombey in Peru. 3. *B. arborescens*. Dill. Elt. Tab. 38. fig. 43. Plum. sp. tab. 106. f. 2. "Leaves opposite, lanceolate, without teeth, thick, green." La Marck. An ever-green shrub. *Stems* two or three feet high. *Leaves* opposite, connate, lanceolate, narrowed at their base, very entire, entirely green and glossy. *Flowers* yellow, terminal, solitary; semi-florets short; calyx-scales, large and smooth. La Marck, from a living plant. 4. *B. repens*. Linn. Hort. Clif. 44 (*Verbena mutica* spec. plant. ? but not *Chrysanthemum humile* of Plumier) "Leaves opposite, sessile, three-lobed; stem creeping." *Stem* jointed, producing at its joints small fibrous roots, and straight, leafy, flower bearing branches. *Leaves* opposite, sessile, broad toward their summit, irregularly toothed, with three sharp pointed lobes. *Flowers* yellow, solitary, terminal. La Marck. Native of South America. 5. *B. durum*. Linn. "Leaves alternate, lanceolate, very entire; stem somewhat shrubby." *Root* perennial. *Stem* a little woody, branched near the top. *Leaves* alternate, oblong, entire, narrowed at their base, a little broader towards the summit, and terminated by a short point. *Flowers* terminal, solitary. *Calyx-leaves* rather large. La Marck. A native of the Cape of Good Hope. 6. *B. sericeum*. Linn. Jun. Sup. "Leaves opposite, crowded, spatulate oblong, silky; calyx-scales brittle-shaped, shaggy; stem woody." *Branches* thick, woody, covered with the marks of former leaves. *Leaves*

Leaves on the smaller branches, very entire, clothed with a white, close, and very soft pile. *Flowers* terminal, large, yellow. *Lower calyx-scales* longer, linear. Linn. Jun. Gathered by Masson in the island of Teneriffe. 7. *B. speciosissimum*. Linn. Mant. "Leaves alternate, embracing the stem, ovate, naked, serrated, somewhat ciliate; stem one-flowered." *Root* perennial, spindle-shaped. *Stem* two feet high, smooth, and even, marked with very fine white lines. *Leaves* alternate, acute, somewhat heart-shaped, compact, reticulated with veins; petioles dilated at the base, somewhat membranaceous. *Calyx* common imbricated with obtuse, ovate, large leaflets. *Florets* of the ray folded, two or three toothed, yellow; of the disc four-parted, erect, pedicelled. *Stamens* of the disc four, brown, without a germ. *Germ* of the ray ovate. *Seed* of the disc none; of the ray ovate, membranaceous. *Receptacle* hemispherical. Zoega, quoted by Linnæus. Linnæus places this species under *Bupthalmum*, but doubts whether it is not rather a *Silphium*. From Zoega's description it clearly belongs to the order *polygamia necessaria*. A native of the mountains about Brixen in the Tyrol. 8. *B. grandiflorum*. Linn. La Marck. Illust. Pl. 682. fig. 1. "Leaves alternate, lanceolate, somewhat toothed, smooth, calyxes naked, stem herbaceous." *Root* perennial. *Stems* numerous, growing in tufts, generally simple, about a foot and a half high. *Leaves* alternate, linear-lanceolate, sharp-pointed, smooth, slightly toothed. *Flowers* yellow, large, about two inches in diameter, terminal. *Calyx* rather short: composed of two rows of narrow-pointed leaflets. La Marck, from a living plant. 9. *B. fasciculatum*. Linn. (Gært. Tab. 169. f. 1. copied by La Marck Ill. Pl. 682.) "Leaves alternate, lanceolate, somewhat serrated, pubescent, calyxes naked: stem herbaceous." *Root* perennial. *Stem* a foot and a half high, straight, cylindrical, pubescent, reddish, divided at its summit into two or three short branches. *Leaves* embracing the stem. *Flowers* large, yellow, terminal, solitary, semi-florets very narrow. La Marck, from a dried specimen. *Receptacle* slightly convex; chaff the length of the calyx, broader upwards, keeled, toothed, the keel extended into a short, flexible arm. *Seeds of the disc* smaller, oblong, narrow, three or four-cornered, a little compressed, straight; *of the ray*, larger, incurved, three-sided, drawn out at the sides into a kind of wing; in both, truncate at the top, and crowned with a toothed rim. The rim of the seeds of the disc is sometimes so deeply gashed, as to appear composed of several chaffy brittle-shaped leaflets. Gært. A native of the South of France, Auvergne, Switzerland, and Lusatia, allied to the preceding, to which Gouan joins it, but differs in being abundantly pubescent, and having narrower semi-florets. 10. *B. helianthoides*. Linn. (G. Heretier. Stirp. nov. Tab. 45. *Helianthus lævis*. Lin. spec. 1278. *Silphium Solidaginoides*. Linn. spec. 1302. *Rudbeckia oppositifolia*. Linn. spec. 1280.) "Leaves opposite, ovate, serrated, triply-nerved; calyxes leafy; stem herbaceous." *Root* perennial, whitish, branched, fragrant. *Stems* several, two yards high, upright, branched at the top, naked at the base, round, the thickness of a quill, of a sea green colour; branches opposite, stiff like the stem. *Leaves* remote, acuminate, serrated about the middle, decurrent, veined, and wrinkled, flat, reclining, four inches long, two and a half broad. *Petioles* spreading, embracing the stem with a kind of ring, round on one side, channelled on the other, edged at the top by the leaf running along them. *Flowers* terminating, yellow, from two to three inches broad; peduncles commonly three, accompanying the uppermost leaves, stiff, very long, one-flowered, obscurely angular, thickened at the top, fistulous, sometimes with one or two linear sharp bristles. *Common calyx* concave, spreading, pubescent; scales

lanceolate, acute, a little serrated; those of the inner row spreading, and reflexed at the tip: those of the outer row few, twice the length of the other, and a little hanging down. *Florets* in the disc numerous, with a sharp, revolute border; in the ray about twelve, lanceolate, retuse, two-furrowed above, two-nerved beneath, spreading very wide, twice or three times the length of the calyx. *Germ* in the disc oblong, four-cornered and truncate; in the ray three-cornered. *Seeds* without any pappus or down, except the rim, which is scarcely thickened. *Receptacle* conical; chaff membranaceous, linear, acute, channelled-concave. This plant has the generic character of *bupthalmum*, the calyx of *silphium* or *rudbeckia*, and the habit of *helianthus*. Hence it has inadvertently been given by Linnæus under four different names. L'Heretier. A native of North America, whence it was sent by Catesby to the botanic garden at Chelsea, but is said by Forster to be found wild every where within the tropics. La Marck describes a plant under the same specific name, brought from South America, cultivated in the royal garden at Paris, which does not correspond with the above description, and with some doubt whether it be that intended by Linnæus. Its *stems* are herbaceous, feeble, not much more than a foot high, growing in loose tufts. Its *leaves* petioled, generally opposite, ovate, a little pointed, obtusely dentate, green, almost smooth, and scarcely an inch broad. *Flowers* yellow, rather small, solitary, peduncled and terminal. *Calyx* of two rows of oblong scales, those in one row not longer than those in the other. The juice of the plant is a little caustic. 11. *B. spinosum*. Linn. (La Marck, Pl. 682. fig. 2.) "Calyxes acutely leaved; leaves alternate, lanceolate, embracing the stem, very entire; stem herbaceous." *Root* annual. *Stem* a foot and half high, stiff, hairy, with two or three alternate branches at the top. *Root-leaves* long, spreading, broader and almost obtuse at their summit, narrowed at their base. *Stem leaves* lanceolate, hairy. *External calyx-leaves* very long, three-nerved, ending in a spine, spread open immediately under the flower like the points of a star. *Flowers* yellow, solitary, terminal; semi-florets very narrow. La Marck, from a living plant. A native of Languedoc, Spain, and Italy. 12. *B. aquaticum*. Linn. (Gært. Tab. 169. copied in La Marck, Illust. Pl. 682. fig. 4.) "Calyxes obtusely-leaved, sessile, axillary; leaves alternate, oblong, obtuse; stem herbaceous." *Root* annual, white, fibrous. *Stem* about a foot high, much branched, cylindrical, pubescent. *Leaves* alternate, sessile, oblong, obtuse, hairy. *Flowers* yellow, rather small; some sessile and axillary, others terminating; semi-florets broader and shorter than those of the preceding species. *Outer calyx leaves* obtuse, soft, forming a kind of involucre to the flower. La Marck, from a living plant. *Calyx* leafy at the base. *Seeds* compressed, bay coloured, hispid, with whitish bristles, nearly uniform; those of the disc smaller, ovate, acuminate downwards; those of the ray larger, triangular-wedge-shaped, much compressed at the sides, and almost winged; both of them crowned with a many-leaved pappus, the leaflets of which are membranaceous, acuminate, ciliate-toothed, half the length of the seed. Gært. A native of the south of France, Portugal, and the Isle of Candia. 13. *B. maritimum*. Linn. (La Marck, Pl. 682. fig. 5.) "Calyxes obtusely leafy, peduncled; leaves alternate, spatula-shaped; stem herbaceous." *Root* perennial. *Stems* numerous, six or seven inches high, hairy, branched. *Leaves* long, obtuse, very narrow at their base, hairy. *Flowers* yellow, rather large, solitary, terminal. *External calyx-leaves* resembling those of the stem. Native of Sicily and the southern parts of France. La Marck. 14. *B. oleraceum*, Martyn's Miller. "Calyxine leaflets acute, connected laterally; leaves opposite, lanceolate,

late, curved back." *Stem* herbaceous, two feet high, upright, round, whitish, smooth, branched. *Leaves* linear-lanceolate, unequally toothed, smooth, juicy, thick, ash-coloured. *Flower* large, solitary. *Calyx* hemispherical, with sharp leaflets, connected by a lateral membrane. *Disc* of the *corolla* flat, with yellow florets; ray wide, spreading, with many white trifid florets. *Receptacle* flattish, with very small chaff; crown of the seeds margined. *Stigma* in the florets of the disc simple. *Lour. Coch.* It is an odorous plant, and cultivated in the gardens of China as a pot-herb. *Forster* in *Flor. Austral.* names two other species; *B. uniflorum*, found in Norfolk Island; and *B. procumbens*, found in the Friendly Islands. *Obs.* *Jussieu* doubts whether the frutescent species, with opposite leaves, should be placed in the same genus with those that are herbaceous and have alternate leaves. And *Gærtner* is of opinion, that if the seed in all the *Asterisci* of *Tournefort*, be not merely margined, but leafy, they ought to form a separate genus.

Propagation and Culture. The first two species can be propagated in this country, only by cuttings, which should be taken off in July when the plants have for some time been exposed to the open air; planted in small pots filled with light loamy earth, and plunged into a hot-bed of a very gentle warmth; shaded from the heat of the sun, and occasionally refreshed with a small quantity of water. In about six weeks they may be gradually inured to the open air, and soon after should be transplanted into fresh pots: when they have taken root, they may remain in a sheltered situation till the middle of October, and should then be removed into the green-house. The first sort is hardier than the other. The seeds of *spinosum* and *aquaticum* may be sown on open borders, either in the beginning of April, or, which is better, in Autumn, and will require no other care. The *maritimum* is easily propagated by slips during the summer season, and requires the same treatment as the first and second, but will thrive better in a common frame, screened from frost, than in a green-house. The *salicifolium*, *grandiflorum*, and *helianthoides*, may be propagated by parting the roots towards the end of October.

BUPHTHALMUM canariense leucanthemum, Pluk. See *CHRYSANTHEMUM frutescens*.

BUPHTHALMUM lanuginosum, C. Bauh. See *ANACYCLUS valentinus*.

BUPHTHALMUM cotula folio, and *flore luteo*, 2. 3. C. Bauh.; *tenuifolium*, J. Bauh.; *creticum*, Breyn.; *alterum penae*, Dalch.; *flore purpurascens*, Cam.; and *narbonense*, Cæus. See *ANTHEMIS valentina*.

BUPHTHALMUM, Linn. Hort. Clif. 414. *Flor. Succ.* 698. *alpinum triumph.* See *ANTHEMIS tinctoria*.

BUPHTHALMUM, Linn. Hort. Clif. 415. See *AMELLUS lychnitis*.

BUPHTHALMUM, Linn. Sp. Pl. Ed. 2. See *OEDERA prolifera*.

BUPHTHALMUM hirsutum, Brown Jam. 321. See *SILPHIUM trilobatum*.

BUPLEURARIA, in *Entomology*, a species of *PHALÆNA*, (Geometra.) The wings are dentated, green, with a white streak, and a smaller one of the same colour; margin dotted with brown. Fabr.

This inhabits Europe. *Knock* describes it under the name of *Phalæna sesquifoliata*.

BUPLEURIFOLIA, in *Botany*, Pluk. See *CORYMBIUM scabrum*.

BUPLEURIODES, Walth. See *PHYLLIS nobilis*.

BUPLEURUM, (from *βους* and *πλευρον*, bovis costa, the rib or side of an ox, alluding, as explained by professor Martyn, to a supposed ill quality of bursting kine that feed

upon it; but this explanation is better suited to the etymology of *βερρυς*, from *βου* and *πρυς*, to inflame, a name given by the Greeks, not only to an insect of the cantharis kind, but also to a plant noxious to cattle, which has been supposed to be the same with the bupleurum of Nicander, Pliny, and other ancient writers. *Ventenat*, with greater probability, is of opinion, that the name bupleurum alludes to the stiffness, (roidéur) of the leaves of several species of this genus. The same derivation was intimated long ago by *Dodonæus*, who, speaking of the probable identity of the plant, now called bupleurum, with the ancient one, says, "nec pessime quadrare nomenclaturæ et effigiaturæ videtur: foliis namque longis—multis striis lirivæ rigidis, quasi costas in foliis singulis effigiantibus, et laterum modo inclusis, ut de heptapleuro loquitur Plinius—" Linn. gen. 328, Schr. 460. Gært. 144. Juss. 224. Willd. 523.

Gen. Ch. Cal. Umbel universal, with fewer than ten rays; partial with scarcely ten, erect-expanding. *Involucre* universal, either of many leaves, or from three to five, or none; partial of several broad leaves, either distinct or all united at the bottom; *perianth* proper, obsolete. *Cor.* universal, uniform; florets all fertile, proper, petals five, involute, entire, very short. *Stam.* five, simple, anthers roundish. *Pist.* Germ inferior. *Styles* two, reflexed, small; *stigmas* very small. *Peric.* none. *Fruit* roundish, compressed, splitting in two. *Seeds* two, ovate-oblong, convex on one side, flat on the other. *Obs.* In most of the species, the partial involucre is specious, often longer than the corolla.

Essen. Char. *Leaves* of the partial involucre broad, spreading. *Fruit* ovate, gibbous, small, not crowned at the top.

*Spec. * Herbaceous.* 1. *B. rotundifolium*. Linn. Hudf. 111. Wuth. 267. Smith 124. (Perfoliata C. Bauh. &c.) Gært. Tab. 22. f. 7. La Marck, Illust. Pl. 189. Eng. Bot. 99. Thorough-wax. "Universal involucre none, leaves perfoliate." Linn. *Root* annual, small, and fibrous; whole plant rigid and smooth. *Stem* erect, alternately branched, round, leafy, perfoliate. *Leaves* alternate, ovate, acute, very entire, somewhat glaucous, nerved. *Umbels* axillary and terminal, solitary, on long peduncles, six or seven rayed, entirely destitute of an universal involucre; little umbels of about eight flowers; partial involucre of five, ovate, acute, unequal leaves, longer than the flower. *Flowers* yellow, on short peduncles. Dr. Smith, and La Marck. *Fruit* small, ovate, striated, gibbous, black. *Seeds* ovate-oblong, gibbous, terminated at the top by a very narrow, reddish brown disc; marked on the convex side with thirteen elevated, linear striæ or streaks; on the flat side with a simple furrow. Gært. It derives its English name from its perfoliate leaves, or, as professor Martyn accurately expresses it, from the singular circumstance of the stalk *waking* or growing *through* the leaf, by which it may be distinguished from all our other indigenous plants. Like the fanicle, it has the reputation of being a vulnerary; but this, says Dr. Smith, (Eng. Bot.) is a quality which no medicine can have, any otherwise than as a tonic, strengthening the constitution; nor can any external application be specifically healing or consolidating, or be useful in any other way than as a defence from the air. La Marck speaks of it as an astringent, and says that it is used as a cataplasm in umbilical ruptures; but in this case, its operation can be only mechanical. A native of most parts of Europe, chiefly on a calcareous soil, but not very common in England. Martyn intimates, that it is peculiar to the southern counties, and says, that he has never observed it, except among wheat. We have occasionally found it in the neighbourhood of Leeds, but always among beans. 2. *B. stellatum*. Linn.

BUPLEURUM.

Linn. (Tourn. 310. Ital. Helv. 77. Tab. 18.) "Leaves of the partial involucre united; universal involucre of three leaves." *Root* perennial. *Stem* about a foot high, round, almost naked, often simple. *Root-leaves* very long, smooth and grass-like. *Universal umbel* loose, of five or six rays. *Universal involucre* of one, two, or three lanceolate leaves. *Partial involucre* of one leaf, slightly cut at the edge into eight or nine segments, surrounding the flowers in the form of a cup, or basin. La Marek and Martyn. A native of the Alps of Switzerland, and Dauphiné, introduced into England in 1775 by Dr. Pitcairn and Dr. Fothergill. 3. *B. petraeum*, Linn. and Willd. "Partial involucre united; universal involucre of five leaves." Linn. "Little involucre of about five united leaves; universal involucre of five leaves; stem leaves heart-shaped-lanceolate, embracing the stem; radical leaves linear." Willd. Radical leaves linear, sessile. *Leaves* of the universal involucre five, equal, rather broad; of the partial involucre five, united as far as the middle, Linn. A native of the Alps of Switzerland. According to Villars this is only a variety of the preceding. 4. *B. graminifolium*, Willd. (*B. petraeum*, Jacq. Coelec. 1. p. 209. Linn. var. 1. t. 56. Vill. delph. 2. p. 576. t. 14. Adion. Auct. p. 24. La Marek, Flor. Franc. 990. 10. Encyc. vol. i. 517. Martyn in Miller; description but not the specific character nor all the synonyms. *Sedum petraeum* bupleuri folio, Pon. bald. 247. *B. alpinum*, Seguier Veron. 2. p. 15. 3. p. 221.) "Root-leaves long, very narrow, grass-like; partial involucre distinct, general one of about five leaves." La Marek. *Root* perennial, long, thick toward the top. *Root-leaves* numerous, five or six inches long. *Stem* about eight inches high, round, simple and leafless, or having a single branch near the top, with one leaf at the base, and an umbel of flowers at the end, smaller than that which terminates the stem. *Umbel* loose, of six or seven rays. *Universal involucre* of three or five leaves; *partial involucre* of five, six or seven small, lanceolate, nerved, very distinct leaves. A native of the mountains of Dauphiné, Provence, and Switzerland. 5. *B. angulosum*, Linn. (*B. ranunculoides* & La Marek.) "Partial involucre five-leaved, orbiculate, general involucre three-leaved, ovate; leaves embracing the stem, heart-shaped-lanceolate." Nearly allied to *B. stellatum*, but the leaves of the partial involucre are always distinct: it varies in having its leaves very narrow and striated, or lanceolate, and not striated. Linn. The former variety is a native of Switzerland, the latter, of the Pyrenées. 6. *B. pyrenaicum*, Willd. (*B. pyrenaicum*, Gouan and La Marek.) "Partial involucre roundish, emarginate, united; universal three-leaved, cut at the base; leaves lanceolate, heart-shaped, embracing the stem." Willd. It differs from *B. angulosum* in having much broader, lanceolate, acute leaves, the radical ones narrowed at the base; and in the rays of the umbel being shorter and fewer; as well as in the peculiar shape of the general and partial involucre expressed in the specific character: from *B. stellatum* which it resembles in habit, in its broader leaves, those of the stem being more numerous and heart-shaped at the base; and in the number of the divisions of the partial involucre. Willd. A native of the Pyrenées. 7. *B. longifolium*, Linn. "Partial involucre five-leaved, ovate; general one of about five leaves; leaves embracing the stem." *Root* perennial. *Root-leaves* narrowed into a petiole at their base, and broad towards their summit. *Stem-leaves* ovate, acuminate. *Umbel* terminal, composed of from six to nine rays. It resembles *B. rotundifolium*, but differs in its perennial root and longer leaves. Native of mountains in Germany, Switzerland, &c. 8. *B. folcatum*, Linn. Hare's ear. "Partial involucre five-leaved, acute; general, commonly five-leaved;

leaves lanceolate; stem zig-zag." *Root* perennial. *Stem* upright, about a foot high, slender, round, slightly zig-zag, much branched, sometimes tinged with purple. *Leaves* frequently sickle-shaped; those next the root narrowed at their base into petioles, ovate-lanceolate, bright green, smooth, a little nerved; the others almost linear. *Universal umbel* loose, small, terminal, of about seven rays; *partial*, of ten or twelve. *Universal involucre* of from two to five, very unequal, lanceolate, sharp leaves; *partial*, of five lanceolate, regular leaves, the length of the partial umbel. A native of dry rocky soil in the south of Europe. It has the character of being a vulnerary and febrifuge. La Marek and Martyn. 9. *B. caricifolium*, Willd. (*B. gramineum*, Villars) "Partial involucre, five-leaved, sharp pointed; universal one-leaved, lanceolate; leaves linear, attenuated at the base." *Root* perennial. *Radical leaves* very long, acute; *stem-leaves*, the lower ones a little attenuated, the rest sessile. *Umbel* of five or six unequal rays longer than the involucre. *Partial involucre* five-leaved, lanceolate, sharp-pointed. Willd. From a dried specimen. A native of the south of France and Switzerland. 10. *B. odontoides*, Linn. "Partial involucre, five-leaved, acute; universal, three-leaved; the central floret higher; branches divaricated." Linn. "Both involucre five-leaved, stellate; leaflets lanceolate, three-nerved; rays of the umbel very unequal." La Marek. *Root* annual. *Stem* from three to eight inches high, somewhat angular, much branched. *Leaves* linear-lanceolate, narrow, smooth, sessile. *Involucre* awned, concealing the umbels. La Marek and Martyn. *Seeds* only a quarter the size of those of *B. rotundifolium*, not striated, either slightly wrinkled or entirely plain, ovate-cylindrical, brown or blackish. Gertner. A native of the south of Europe. 11. *B. semicompositum*, Linn. "Umbels both compound and simple." *Root* annual. *Stem* six inches high, furnished from its base with alternate, rather divaricated branches. *Leaves* oblong, narrowed into petioles at their base, broad and obtuse at their summit, and ending in a particular small point. *Simple umbels* peduncled; *compound*, almost sessile. Allied to the preceding, but differing from it constantly in such remarkable characters, that it ought to be regarded as more than a variety. La Marek. A native of the south of Europe. 12. *B. ranunculoides*, Linn. "Partial involucre, five-leaved, longer; universal, three-leaved; stem-leaves lanceolate." *Root* perennial, creeping. *Stem* about eight inches high, simple. *Leaves* grass-like, stiff. *Umbel* unequal. *Universal involucre* ovate, acute, short; *partial*, equal, obovate, acute. *Partial umbels* small, the length of the involucre. La Marek follows Haller in uniting this species with the *angulosum*. Gouan adds the *petraeum*, to which Villars objects as far as the *sedum petraeum* bupleuri folio, gathered by Pona on Mount Baldo is concerned, the *graminifolium* of Vake and this dictionary; but Villars himself suspects that the *angulosum*, and his *graminum*, which is Willdenow's and our *caricifolium*, may be only varieties of *ranunculoides*. A native of Switzerland and the Pyrenées. 13. *B. rigidum*, Linn. "Stem dichotomous, almost naked; involucre very small, acute." Linn. "Stem much branched, pinnated, almost naked; lower leaves petioled, nerved, rigid; umbels generally of three rays." La Marek. *Root* perennial. *Stem* slender, nearly two feet high. *Lower leaves* lanceolate-elliptic, with strong white nerves; *upper-leaves* very small and distant. *Umbels* terminal, of two, three, or four rays. *Universal involucre* of three awl-shaped, very short leaves; *partial*, of five. Linn. and La Marek. A native of the south of France. 14. *B. tenuissimum*, Linn. "Slender thorough-wax, or least hare's ear." (Eng. Bot. 478.) "Umbels

BUPLEURUM.

"Umbels simple, alternate, generally three-flowered; involucre of five awl-shaped leaves." D. Smith. "Terminal umbels compound; lateral, simple, with few flowers; involucre universal and partial, short." La Marck. *Root* annual, tapering, but little branched. *Stem* about a foot high, zig-zag, slender, stiff, smooth, erect, with several alternate branches. *Leaves* alternate, lanceolate, narrow, pointed, entire, tapering at the base. *Umbels* axillary, nearly sessile, solitary, generally three flowered; involucre awl shaped, longer than the flowers. Dr. Smith. *Terminating umbels* compound, of from three to five rays; with a general involucre of from three to five short, pointed leaves; lateral, simple, and extremely small. La Marck. Haller remarks that the umbels can scarcely be said to be really compound. *Fruit* small, ovate-oblong, transversely thicker, rounded on each side, somewhat emarginate. *Seeds* pentagonal-prismatic, marked on the convex side with three acute-angled and distant ribs; the intervals a little wrinkled, of a pale or ash colour. A native of Germany, France, Italy, and England. It is found plentifully in salt water ditches on the coasts of Norfolk, Suffex, &c. and, as is asserted by Hudson, more sparingly inland, about Cambridge and Huntingdon; but professor Martyn observes, that it has probably been overlooked in many other places; being a plant of little appearance and almost lost among the grass. 15. *B. baldense*, Willd. "Stem erect, branched; leaves linear; universal involucre of about four unequal leaves, shorter than the umbel; partial involucre five-leaved." *Root* perennial. *Radical leaves* linear, broader at the base. *Universal involucre* of three or four leaves, two larger than the others. A native of Croatia, Carniola, and mount Baldo. 16. *B. Gerardi*, Murray Syst. 274. (*B. junceum*, Mönch. Roth. Pollich. *junceum* and La Marck.) Ger. Prov. 233. Tab. 9. good. "Stem erect, much branched; leaves linear, acuminate; universal involucre five-leaved; partial, five-leaved, linear-awl-shaped, longer than the umbel." *Root* annual. *Stem* from six to nine inches high, slender, smooth, with straight filiform branches. *Leaves* linear, grass-like, clasping the stem, ending in a very short point, marked with three fine nerves. *Umbels* on long peduncles, lateral and terminating. *Universal involucre* four or five-leaved, linear, awl-shaped, very unequal; *partial*, four or five-leaved, linear-fetaceous, unequal, longer than the flowers. *Flowers* nearly sessile. *Seeds* oblong, striated, appearing as if cut off at the tip. A native of Provence and Austria. 17. *B. junceum*, Linn. & La Marck. "Stem erect, panicled; leaves linear; universal involucre three-leaved; partial, five-leaved." *Root* annual. *Stem* from two to three feet high, straight, round, hollow within, branched in the upper part. *Umbels* small; lateral ones simple, of one or two flowers; terminating ones compound, of two or three short rays. *Universal involucre* of two or three leaves, awl-shaped and unequal; *partial*, of about four linear awl-shaped leaves. A native of the south of France, of Switzerland, Germany, and Italy. 18. *B. nudum*, Aiton. Kew. "Stem branched, without leaves; root-leaves decomposed, plain, gashed; involucre universal and partial lanceolate-oblong." *Root* perennial. A native of the Cape of Good Hope. Introduced in 1778, by Dr. P. Ruffel.

* Shrubby.

19. *B. fruticosum*, Linn. "Leaves lanceolate-obovate, very entire, sessile." Willd. "Rather obtuse." La Marck. An ever-green shrub, four or five feet high. *Stems* straight, branched, bushy; bark of the trunk greyish, of the branches, brown or purplish. *Leaves* alternate, oval-oblong, rather obtuse, with a very small point, coriaceous, smooth, of a glaucous colour. *Umbels* terminal. A native

of the south of France, Italy, and the Levant. 20. *B. arborescens*, Willd. "Leaves oblong, very entire, petioled." Thunb. Prod. 50. It differs from the preceding in having petioled leaves, very acutely, not bluntly, pointed at their summit; and umbels only half as large, on short peduncles. 21. *B. coriaceum*, Martyn and Willd. Ait. Kew. P'Heret. Stirp. nov. (*arborescens* Jacq. Ic. Rar. 2. tab. 351. *obliquum* Vahl. Symb. gibraltericum, La Marck Encyc.) "Leaves lanceolate, attenuated on both sides, very entire, sessile." Willd. "Leaves lanceolate, coriaceous, oblique." Hort. Kew. *Root* perennial. *Stems* from three to four feet high, upright, sparingly branched, round, annulated with the scars left by the fallen leaves. *Branches* alternate, upright, marked with lines, fistulous. *Leaves* alternate, approximating, long, acuminate, a little coriaceous, half embracing the stem, with a sharp, reflexed point, and one whitish nerve, glaucous, permanent, five inches long and near an inch broad. *Umbels* of about fifteen rays, alternate; on a common peduncle terminating each branch, with a few leaves on its lower part, a foot and a half long, and not half the thickness of the branch from which it springs. *Universal involucre* of about eight, oblong, acuminate, slightly convex, reflexed leaves, partial, five-leaved, smaller, ovate. *Seeds* oblong, rounded on one side with five wings, flat on the other. The whole plant is very fragrant when rubbed. La Marck and Martyn from P'Heretier. A native of Spain near Gibraltar; found by Maffon, and introduced in 1784. 22. *B. frutescens*, Linn. "Leaves linear; involucre universal and partial." An under shrub, about a foot and a half high. *Stem* woody, divided into several knotty, twisted ramifications, with slender, herbaceous twigs. *Leaves* alternate, linear, glaucous. *Umbels* small, of from three to five rays. *Universal involucre* of three, short, pointed leaves. La Marck. A native of Spain. 23. *B. spinosum*, Linn. jun. Supp. "Old branches of the panicle naked, thorny; leaves linear." *Root* perennial. *Stem* low, irregular, with divaricated branches. *Leaves* acuminate, three-nerved. *Universal umbel* terminal, generally of three rays, which change into spines after the fructification is completed; *partial*, of five rays. *Involucre* of very small leaves, equal in number to the rays. Linn. jun. and La Marck. A native of Spain. 24. *B. difforme*, Linn. "Spring leaves decomposed, flat, gashed; summer leaves filiform, angular, trifid." *Stem* from five to six feet high, straight, a little twisted, branched. In winter, and the beginning of spring, it bears two sorts of leaves; the first small, petioled, composed of three, flat, trifid, gashed leaflets resembling those of parsley; the others longer, slender, filiform, angular, divided half way down into three filiform segments, the middle one the longest, and each terminated by a very small point. In summer the former kind fall off. La Marck. *Universal involucre* of many awl-shaped, shrivelling leaves, connected at the base; *partial*, of five leaves. *Umbels* some simple, others compound. Linn. A native of the Cape of Good Hope.

Propagation and Culture. The bupleurums in general are cultivated only in botanic gardens. The seed should be sown in autumn, where the plants are designed to remain, for they are injured by transplanting. The fruticosum, called by our gardeners shrubby Ethiopian Hartwort, will thrive in the open air, and is propagated by cuttings planted in pots filled with fresh loamy earth, and sheltered in winter under a hot-bed frame; they will take root in spring, should be placed in a shady situation in summer, and will not be fit to transplant till the autumn. The frutescens may be treated in the same manner, but is not so hardy. The difforme may also be propagated by cuttings, which readily take

take root if planted in April, in pots filled with light earth, and plunged into a moderate hot-bed. They should afterwards be enured to the open air by degrees, be transplanted into separate pots, placed with other exotics in a sheltered situation till autumn, and then removed into the green-house or dry stove. If propagated from seeds, they should be sown in autumn, sheltered under a frame in winter, removed to a very gentle hot-bed in spring, and finally treated like those raised from cuttings. The spinosum, nudum and coriaceum may all be propagated by cuttings, and treated as the disforme. They will probably bear the open air in mild seasons, but are not yet sufficiently common to run that hazard. Martyn's Miller.

BUPHURUM villosum. Linn. Sp. Pl. and Syst. Nat. See *HERMAS Depuperata*.

BUPHATHMUS, in *Ancient Geography*, a mountain at the extremity of the peninsula formed by the Argolide, south-east of Peloponnesus. Upon this mountain were two temples, one of Ceres and Proserpine, and another of Minerva. Pausanias.

BUPRASIIUM, a town of Achaia, at a small distance north of the river Peneus and of the town of Elis, which gave name to a fruitful country in which it was situated. It did not exist in the time of Strabo.—Also, a river of Peloponnesus, in the country of Elis. Steph. Byz.

BUPRESTIS, in *Entomology*, a genus of coleopterous insects, distinguished in a peculiar manner for the uncommon brilliancy and highly metallic splendour of their colours, which emulate the finest and most beautifully polished metals. The insects of this kind have the antennæ ferrated, and as long as the thorax; feelers four, which are also filiform, with the last joint obtuse, or truncated; head partly retracted within the thorax.

Linnaeus, Fabricius and Gmelin describe the following species: unidentata, bicolor, gigantea, vittata, fastuosa, punctatissima, herolinenis, corrusca, decora, lurida, obscura, punctata, fasciata, rufa, striata, ritulans, octoguttata, ignita, lineata, ocellata, aenea, maculata, maculosa, striata, sternicornis, chrysis, violacea, aegyptica, mariana, farinosa, fulminans, cyanipes, modesta, blanda, aurata, tripunctata, elegans, chrysostigma, dorsata, impressa, ornata, taeniata, cayennensis, cylindrica, scabra, trochilus, decastigma, rustica, canaliculata, acuminata, plebeja, tranquebarica, lugubris, cariosa, undata, austriaca, sibirica, splendens, fusca, aurulenta, tenebrionis, fascicularis, varicolaris, onopordi, hirta, rubi, deaurata, nitidula, lutea, salicis, cyanea, discoidea, bimaculata, quadrimaculata, novem-maculata, trilis, aenea, cuprea, nobilis, barbarica, umbellatarum, quadripunctata, cruciata, manca, pygmaea, minuta, mediatubunda, viridis, biguttata, atra, elata, ruficollis, fustiva, linearis, granularis, depressa, calcarata, fuliginosa, hamonoidalis, quercus, hirsuta, 11-maculata, sex-maculata, varicornis, acuta, naevia, picta, inaurata, tatarica, virginica, nana, marginata, nigra, rosacea, ungarica, nebulosa, brutia, stephanelli, rugosa, and coccinea, which see respectively.

A monographia of the buprestis tribe is expected from the pen of Dr. Schreiber of Vienna, which, in all probability, will contain a greater number of species than those enumerated above. Several entirely new species are also described by Mr. Donovan in his recent elucidation of the entomological productions of New Holland; the most remarkable of which are buprestis grandis, macularia, limbata, suturalis, guttata, and several varieties of variabilis, and imperialis, the last of which is mentioned by Fabricius. Syst. Eleuth.

Some writers affirm that the larvæ of the buprestes live in the solid wood, or in the trunks of decayed trees; but this is rather uncertain, since they do not appear to be exactly

known in that state. The conjecture is, however, plausible, the perfect insects being almost constantly found upon trees, or plants, and flowers. Few species of this beautiful tribe of insects are found in Europe; the largest and most brilliant of those hitherto discovered, are from the Brasils, and other hot climates.

BUPRESTOIDES, a species of *ATTELABUS* (Spondylis), the colour of which is black; shells nervous; thorax somewhat globular. Gmel. Fabr. &c. Described as *Buprestis ater* by Linn. Cerambyx maxillofus, &c. Degeer. Scarabeus, &c. Frisch.

BUPRESTOIDES, a species of *CARABUS*, of a black colour; antennæ and feelers ferruginous; legs piceous. Inhabits the south of Europe. Gmel. &c.

BUQUOI, in *Geography*, a town of France, in the department of the Straits of Calais, and district of Arras; 5 miles W. of Bapaume. N. lat. 50° 12'. E. long. 2° 40'.

BUR-Parley, in *Botany*. See *CAUCALIS*.

BUR-weed. See *SPARGANIUM*.

BURA, in *Ancient Geography*, a town of the Peloponnesus, seated on the ridge of a mountain, west of the river Crathis. It suffered much from an earthquake in the year 373 B. C. Pausanias mentions several fine statues of this city; and particularly those of Ceres, Venus, Bacchus, and Lucina. Venus had a temple, in which was placed her marble statue, made by Euclid, an Athenian statuary.

BURA, in *Geography*, one of the smaller Orkney islands, between Pomona and Ronaldsha.

BURACO de velta, in *Ichthyology*, the name of a fish caught on the shores of the Brasils, and more usually known among authors by its Brazilian name, *GUAIBI-coara*.

BURAGRAG, in *Geography*, a river on the coast of Barbary, which rises in mount Atlas and falls into the Atlantic ocean at the town of Salce.

BURAMOS, an idolatrous people of Africa, in Nigritia, on the borders of the river St. Domingo. Their country extends to the mouth of the Rio-Grande.

BURANELLO, in *Biography*. See *GALUPPI*.

BURATTI, or **BURATS**, in *Geography*, the name of a barbarous and idolatrous nation, which occupies part of Siberia. They are called *Bratski* by the Russians, and among themselves *Barga Buratt*. About the time of the Mongolian monarchy, or perhaps at an earlier period, they seem to have taken refuge in the wild mountainous region on the north side of the Baikal, which they still inhabit. The Russians found this nation in Siberia, when they conquered that country; and from the year 1644 they have peaceably submitted to the Russian supremacy. The whole Burat nation is at present, in consequence of the border treaty, under the dominion of Russia, and comprises numerous heathenish people in the government of Irkutsk, where it inhabits the region from the Yenissey, along the Mongole-Chinese borders, on the Angara, Tunguska, and the upper Lena, about the southern Baikal, on the Selenga, the Argoon, and its rivers. Several years ago this government was computed to contain 32,000 tributary Burats; but their present number is probably four times as large. They are divided into a great number of tribes, called "Kolbondas," which are subdivided into casts, or "Aimaks," and each Aimak is composed of a certain number of "Chottons," or villages, containing 10 or 20 families. The oldest of the Chottons governs it, and six of these Chottons are subject to a "Schulenga," or judge, chosen from among their chiefs, and confirmed in his office by the governor of the province. Twenty-four Schulengas form a tribe or Kolbonda, which is commanded by a common chief, selected from among the families of their ancient princes. It is his province to watch

the observance of the laws, to decide disputes, to diminish or augment the tribes, and to assemble and command the proportion of recruits, which are furnished by the nation in time of war, till they are united to the main body of the army. Catharine II. with a view of annexing dignity to this chief, gave orders that he should wear a girdle ornamented with silver, on which is inscribed the name of the cast he commands; and the Buratt has become proud of this decoration, though it is merely a mark of his slavery. According to the accounts taken in 1782, this nation forms 65 casts, containing 33,000 bows or heads of families; and as they speak the Mongol language, profess the religion of the Kalmuks, lead a similar kind of life, and manage their flocks in the same manner with the Barschkirians, it will be sufficient to refer for an account of several particulars relating to them to the articles BASHKIRS, KALMUKS, and MONGOLS. They have, however, some customs peculiar to themselves. They are allowed to marry as many wives as they can afford to purchase; and the price of a bride is paid in cattle of different kinds. A young girl, according to her beauty and character, may, among the rich, receive 100 horses, 20 camels, 50 horned cattle, 200 sheep, and 30 goats. When the cattle are delivered, the nuptials are celebrated. For this purpose they erect a "Jurte," of felt, entirely new, of a white colour, and very neat. The three first days are spent in feasting, singing, and dancing; and on these occasions the musical instrument is a guitar with two strings, resembling that which the Russians call "Balalaika." At the expiration of these three days, the marriage is consummated. When a husband dies and leaves several wives, she who has borne him children, or the eldest of such as have had children, becomes the mistress of the Jurte. Those who have had no children, return to their relations on fine horses, and carry with them the clothes and presents which they received from the husband. If they have no place of retirement, they continue in the Jurte, subordinate to the wife mother, and are entitled to the tenth of the cattle left by the husband. The Buratti resemble the Kalmuks in outward form, with some slight variations. Their countenance is fallow, and though they are tall, their bodily structure is feeble, and they seldom attain to an advanced age. They formerly suffered much from the small-pox, but since an inoculation hospital has been instituted at Irkutsk, the mortality seems to have been much diminished. They now frequently inoculate their own children. They are much subject to the itch, from their manner of living, food, and clothing. In chronic diseases they use the warm baths on the east side of the Baikal. Their physicians are the Schamanes, who pretend to heal them more by sacrifices, incantations, and spells, than by natural means. They subsist by the chase and by their flocks. A Burat is known to possess a thousand sheep, besides horses, and other cattle. Their habitations are hexagonal cabins, constructed with beams laid over one another, to the height of about 3 feet, with an opening formed at the top by staves for the discharge of the smoke. The Burats are a principal branch of the Kalmuks, and differ from the Tunguses only in their language, which is Mongolian. Tooke's View of the Russian Empire, vol. i. and ii. Chantreau's Travels in Russia, vol. ii. Eng. ed.

BURAZ, a town of Asiatic Turkey, in the province of Natolia; 28 miles S. E. of Degnizlu.

BURBACH, a town of Hungary, celebrated for its wine; 8 miles E. of Eisenstadt.

BURBARUS, in *Ichthyology*, the name given by Paul Jovius, and some other writers on fishes, to the common carp, *Cyprinus carpio*.

BURBAS, in *Commerce*, a small coin at Algiers, with

the arms of the dey struck on both sides, worth half an asper.

BURBER, an Egyptian piece of money. It is a thick piece of copper, about as broad as a sixpence; twelve of these make a *medine* there.

BURBIDA, in *Ancient Geography*, a town of Spain, between Tuda and Turoqua. Anton. Itin.

BURBOT, in *Ichthyology*, the English name of *gadus lota*, a fish common in the Trent, and some few other of our rivers. It is also known by the appellation of the eelpout. This is *muscula fluvialis* of two or three old Latin writers.

BURCA, among the Turks, the name of the rich covering of the door of the house at Mecca; it is ten feet long, and five wide; and there are several figures and Arabic letters on it, very richly embroidered in gold, on a ground of red and green. This is carried about in their solemn processions, and is often made to stop, that the people may touch it.

BURCA, in *Ancient Geography*, a town of Africa in Mauritania Cæsariensis Ptolemy.

BURCARDIA, in *Botany* (from J. H. Burckhard, M. D. who published Charac. Plant. 1702), a genus formed by Scopoli, and adopted by Schreber, for a plant described by Aublet in his account of the plants of Guiana, and called by him Piriqueta, which has been referred by Willdenow and Bosc to the genus Turnera. See TURNERA rugosa.

BURCHANA, or BURCHANIS, in *Ancient Geography*, an island placed by Pliny between the Rhine and the Cimbric promontory. It was reduced by Drusus, who employed for this purpose all the Roman forces in those parts.

BURCHARDIA, in *Botany*. See CALLICARPA Americana.

BURCHAUSEN. See BURKHAUSEN.

BURCHEIM. See BURKEIM.

BURCHIELLO, in *Biography*, an Italian poet, whose family name was *Domenico*, was a native of Florence, where he exercised the trade of a barber, and where his shop was the usual rendezvous of the men of letters in that city. He died at Rome in 1448. His poems, which were a singular kind of burlesque, abounded with ludicrous expressions, old proverbs, and various extravagancies, often unintelligible, and frequently low and indecent, but intermixed with flashes of wit and vivacity, that became very popular, and established a kind of style, called the "Burchellesque," which had several imitators. The pieces of this poet are chiefly sonnets, of which the first edition appeared at Bologna in 1475; and another edition, with a comment, no less hard to be understood than the original, was given at Venice in 1553. The Junti at Florence published all his poems in 1552 and 1568. Whatever amusement performances of this kind might afford in a rude age, and in the infancy of poetry, they have sunk into obscurity by the prevalence of good taste and decorum. Mr. Roscoe, in his "Life of Lorenzo de Medici," informs us, that a satire of Burchiello in *terza rima*, after the manner of Dante, exists in MS. in the library of the duke of Tuscany.

BURCKERSDORF, in *Geography*, a town of Germany, in the circle of Upper Saxony, and territory of Newstadt; 2 miles N.W. of Weyda.

BURCUS, in *Ancient Geography*, a river of Asiatic Sarmatia, on the banks of which was built the city of Cucunda, according to Ptolemy.

BURDA, in *Geography*, a river of Hindostan, which runs into the Godavery, 60 miles E. of Neermul.

BURDA,

BURDA, in some *Middle Age Writers*, denotes a garment made of rushes.

BURDACK, an Egyptian vessel, which sheep usually drink out of at Cairo. They are made of a peculiar sort of earth, which is supposed to cool the water, and are always set out to the north, to keep the cooler, and covered with a strainer, to prevent any thing falling into the water; they are of so porous a structure, that the water put into them will get through them in a few days.

BURDAH, in *Geography*, a town of Africa, near the river Gambia, in the kingdom of Tomani.

BURDALO, a river of Spain, in Extremadura de Leon, which rises in the vicinity of Truxillo, and discharges itself into the Guadiana.

BURDEGALA, or **BURDIGALA**, in *Ancient Geography*, now *Bordeaux*, a trading port-town of Gaul, in the second Aquitania, the capital of the Bituriges Vivisci, seated on the Garumna. Strabo is the most ancient author who mentions it, and by his description he intimates, that the sea-water formed a marsh in its vicinity. The poet Ausonius leads us to conclude, that the Druids had a school in this city; it was the place of his nativity, and he had been a professor in its school. He has given a poetical description of this city. See *BOURDEAUX*.

BURDEN properly signifies a heavy weight or load.

Ringelberg recommends the bearing-burdens as the best sort of exercise; especially to strengthen men of study. To this end, he had a gown lined with plates of lead, which he could just lift with both his hands. This load he bore six or seven days together, either increasing or diminishing it as he found occasion; by which means he could both write and exercise at the same time.

BURDEN also denotes a fixed quantity of certain commodities. A burden of gad-steel, is two score, or 120 pounds.

BURDEN, or **BURTHEN**, the weight of a ship when not overloaded to go to sea, and is usually expressed in *tons*, and sometimes in *lasts*. The common method employed by ship-builders to find the tonnage of a ship, is to multiply the length of the keel by the extreme breadth, and the product by half the extreme breadth; then, this last being divided by 94, the quotient is the burden in tons. If the ship is afloat, and the tonnage required, the length of the keel cannot be ascertained; in this case, therefore, ship-builders use the following rule. From the extreme length subtract three-fifths of the extreme breadth, the remainder is the assumed length of the keel. Now the length of the keel thus found being multiplied by the extreme breadth, and that product by half the breadth, which last product being divided by 94, will give the tonnage for merchants' ships; but for ships of war the divisor is 100.

According to an act as settled by the 13 Geo. III. chap. lxxiv. the burden or tonnage of a ship is to be found as follows. Measure the length from the after part of the main stern-post along the rabbet of the keel to a line perpendicular thereto, from the fore part of the main stem under the bowsprit; from which subtract three-fifths of the extreme breadth, exclusive of any doubling, and the remainder is to be esteemed the length of the keel for ascertaining the tonnage; which, being multiplied by the breadth and half-breadth, and divided by 94, as formerly, will give the tonnage. When it becomes necessary to ascertain the burden of a ship which is afloat, the following method is to be observed. Measure the nearest distance, at the load water mark, between the after-part of the stern-post, and a plumb line suspended from the stern; which, deducted from the length measured from the point on the stern where the plumb-line was suspended to a point perpendicularly above the load water mark at the fore part of the stern, the remainder

is the extreme length of the ship: from which subtract three-fifths of the extreme breadth measured from outside to outside of the plank, exclusive of doubling or sheathing, and also one-fourth of the depth of the load water line abaft, and the remainder will be the length of the keel for tonnage; which, being multiplied by the breadth, and by the half-breadth, and the product divided by 94, will give the burthen in tons.

In Dr. Mackay's treatise on "Navigation," a rule, adapted to logarithms, is given to find the tonnage of a ship; and in his treatise on "the description and use of the sliding rule," is contained the method of ascertaining the tonnage by that means.

From the slightest reflection it will be evident the above-mentioned rules, although sanctioned by practice and by the legislature, cannot give the true burthen of a ship. Neither is the depth taken into the account; and although the length, extreme breadth and depth are taken into consideration, yet the form of the bottom, and the dimensions of the ship at various other parts are neglected; and hence, full built, deep ships will carry considerably more than according to the rule; and sharp low built ships will be greatly over-rated. Since, therefore, the several duties on shipping increase with the tonnage, ships are generally made deeper than their other dimensions require, which has the tendency of making them crank. For a more accurate method of ascertaining the burthen of a ship, see the article *Ton*.

BURDEN, *ships of*, denote those of a larger and heavier sort, carrying 500 tons, or upwards.

BURDEN, or **BURTHEN**, from *Bourden*, Fr. a drone. Hence, in *Music*, a base of only one note, a *pedale*, and the drone of a bagpipe, is called a *drone-base*. And hence, that part of a song which is repeated at the end of every verse or stanza, is called the *burden of the song*.

"At every close she made, th' attending throng
Replied, and bore the burden of the long."

Dryden.

Pope writes burthen:

"Sacred to ridicule, his whole life long,
And the sad burthen of some merry song."

BURDEN also denotes the pipe, or string by which such a sound is given.

Matth. Paris will have the name *burden* to have been originally given this pipe, on account of its resemblance to a pilgrim's staff, anciently called also *burdo*.

BURDO, in *Physiology*, a mongrel beast of burden, produced by a horse and she-ass, by which it is distinguished from the mule, which is that produced of a male ass by a mare.

BURDO, or **BURDON**, in *Middle Age Writers*, denotes a pilgrim's long staff, as doing the office on that occasion of a mule, or other vehicle.

BURDOA, or **BURDOVA**, in *Ancient Geography*, a town of Hispania, in Lusitania. Ptolemy.

BURDOCK, in *Botany*. See *ARCTIUM Lappa*, and *XANTHIUM Strumarium*.

BURDONARI, an appellation sometimes given to pilgrims, or those who went out of devotion to the holy land.

The word is formed from **BURDO**, an appellation given to the staff wherewith they travelled.

BURDUGNO, in *Geography*, a small town of the Morea, seated on the Vasilipotamo, between the mouth of this river and the town of Misitra.

BURDWAN, or **BURWAH**, a town of Hindostan, in the country of Bengal; 50 miles N. W. of Calcutta. N. lat. 23° 10'. E. long 84° 30'.

BURE, WILLIAM-FRANCIS DE, in *Biography*, a bookseller of Paris, eminently skilled in bibliography, published

a standard work on this subject, entitled, "*Bibliographie Instructive, ou Traité des Livres Rares et Singulières*," Paris, 1763, &c. 7 vols. 8vo. He also published a "*Catalogue of the Library of M. de la Valiere*," 1767, 2 vols. 8vo.; and "*Museum Typographicum*," 1775, 12mo. His accounts, of different editions are very exact. He died in July 1782, respected for integrity as well as skill in his profession. *Nouv. Dict. Hist.*

BUREBA, in *Geography*, a country of Spain, in Old Castile, which was formerly a part of Navarre: its principal town is Birviesca.

BUREDGIAT, *El*, a town of Egypt, on the west side of the Nile, 10 miles W. of Menuf.

BUREIL, a town of Asiatic Turkey, in the province of Caramania; 10 miles S. of Yurcup.

BURELLE, in *Heraldry*, a term used by the French heralds for emblazoning barry; the same as the English call barrulet.

BURELLE, or *Civitate Borelle*, in *Geography*, a small episcopal town of Naples, in the province of Abruzzo Citra, on the east side of the river Sangro. N. lat. 41° 56'. E. long. 15° 5'.

BUREN, a town of Germany, in the circle of Westphalia, and bishopric of Paderborn, seated on the Alme; 13 miles S. S. W. of Paderborn. N. lat. 51° 35'. E. long. 8° 25'.

BUREN, a town of the United Provinces, in the duchy of Gueldres, and capital of a fine corn country, belonging, before the late revolution, to the house of Orange, to which it descended in 1551, by the marriage of prince William I. with Anne heiress to Maximilian count of Egmond; 5 leagues N. of Bois-le-Duc, and 6 S. E. of Utrecht. Without the town is a good castle, walled and surrounded by a double moat. N. lat. 52°. E. long. 5° 22'.

BUREN, a town of Switzerland, in that district of the canton of Berne, called the Upper Argow, seated on the east side of the Aar, over which it has a bridge; 9 miles S. W. of Soleure. N. lat. 47° 6'. E. long. 7° 11'.

BURETRAS, the name of a village of Sweden, in West Bothnia.

BURETTE, **PIERRE-JEAN**, in *Biography*, born at Paris in 1665, was the son of a surgeon, who, not being very prosperous in his practice, had recourse for his support to music, which he had learned of his mother, an excellent performer on the harp and harpsichord. He first performed, professionally, at Lyons, and afterwards went to Paris and played on the harp to Louis XIV., who was much pleased with his performance.

His son, Peter-John, was so sickly and feeble during infancy, that he passed almost his whole youth in amusing himself on the spinet, and in the study of music; but he had so strong a passion for this instrument that he had scarcely arrived at his ninth year when he was heard at court, accompanied by his father on the harp. Two years after, the king heard him again, when he performed a duet with his father on the harp; and at eleven years of age, he assisted him in giving lessons to his scholars.

It is not generally known that the learned academician, Burette, who had written so copiously on the subject of ancient music, was so well acquainted with the modern; which must have rendered his opinions more valid, and given weight to his reasoning on musical subjects in general, which a mere man of letters seldom obtains. His taste for music, however, did not extinguish his passion for other sciences. He taught himself Latin and Greek with little assistance from others; and the study of these languages inclined him to medical inquiries. At eighteen years old he attended for the first time the public schools, went through a course of

philosophy, and took lessons in the schools of medicine. And even during this time he learned Hebrew, Syriac, Arabic, Italian, Spanish, German, and English, sufficiently to understand them in books.

He was at length admitted of the faculty at Paris, and practised with reputation during thirty-three years, having for his disciples almost all his brethren who have since enjoyed the highest reputation in that capital.

In 1705, he was received into the Academie de Belles Lettres; and in 1706, he had a considerable share in the publication of the "*Journal des Sçavans*," at which he laboured more than thirty years. In 1718, he had an appointment in the Bibliotheque du Roi.

The public are obliged to the abbé Fraguier for the learned dissertation which M. Burette produced on the music of the ancients. This learned abbé, supposing that the Greeks applied the same sense to the word *harmony*, as is given to it by the moderns, and that, consequently, they knew counterpoint, or music in parts, Burette proved that he was mistaken, and that the ancients meant no more by the term *harmony*, than we do by proportion. He demonstrated, that the Greeks practised no other simultaneous consonances than unisons and octaves.

This learned and indefatigable inquirer after the music of the ancient Greeks, was seized, in 1745, with a paralytic affection, and after languishing during the whole year 1746, he died in 1747, at 82. His library, consisting of 15,000 volumes, was composed of the most curious and well-chosen books that could be procured in all languages.

He has supplied the memoirs of the Acad. des Insc. et Belles Lettres with dissertations on the dancing of the ancients, on play or gaming, on single combat, and on horseracing. He enriched these memoirs with a translation of Plutarch's treatise on music, with notes and remarks, which are dispersed through many volumes of the memoirs of that learned society. And this writer must be allowed, on every subject concerning ancient music, the merit of great diligence and learning; but he does not seem always to have been possessed of an equal share of sagacity, or with courage sufficient to confess himself unable to explain inexplicable passages in his author. He never sees a difficulty; he explains all. Hence, amidst great erudition, and knowledge of antiquity, there are a thousand unintelligible explanations in his notes upon Plutarch. "*En écrivant*," said Fontenelle, "*j'ai toujours taché de m'entendre*."—An admirable rule! which every writer ought to adopt.

Thus much is said, not with a view to depreciate the merit of M. Burette, to whom almost all late writers on music have had great obligations, and whose labours have been of singular service to ourselves, among the rest; but to shew how few authors are to be always followed implicitly, or read without precaution. But though we have frequently differed from him, we have adopted his opinion when we thought it well founded; and there has been no subsequent writer on ancient music, who has not frequently availed himself of his labours.

BURFORD, in *Geography*, an ancient town of Oxfordshire, in England, is supposed by some writers to be one of the oldest towns of the Mercian kingdom. It is remarkable in the page of history, and in the annals of sporting. Near this town was the scene of that decisive engagement between the West Saxons and Mercians, which liberated the former from the tyranny of the latter. In the year 752, a pitched battle was fought here between Cuthred, king of Wesssex, and Ethelbald, king of Mercia, "two princes of high spirit and ambitious schemes." The conflict was violent, and the latter monarch was compelled to fly for safety; yet, during the engagement, the banner of Mercia, a golden dragon,

was seized and torn by Edelhun. The scene of this conflict is still pointed out by the name of a field a little westward of the town called Battle-edge; and the memory of the event is preserved by an annual procession on the eve of Midsummer day. At the conclusion of the seventh century, an ecclesiastical synod was held here to determine the time when Easter should be held. It was then decreed that Aldhelm, abbot of Malmesbury, should announce to the British church a stated and proper period for the celebration of this festival in future. The horse-races of Burford are frequent, and much frequented by the students from Oxford, and the neighbouring gentry, &c. Here are manufactories for duffels and for rugs. The town is seated in a low, narrow valley on the banks of the river Windrush. The high grounds are mostly appropriated to corn, in consequence of which, the markets at this place and at Whitney are abundantly supplied with that necessary article. The church is a spacious and interesting pile of building; displaying some curious specimens of ancient ecclesiastical architecture. Its western door is formed with a semicircular arch, ornamented with birds' heads, &c. and the south porch displays a highly decorated exterior. Near this town is an ancient manor-house, which was a religious foundation belonging to the abbey of Keynsham in Somersetshire. This belongs to John Leuthal, esq. a descendant from the famous speaker to the long parliament. Burford had a charter from Henry II. and is governed by two bailiffs, burgesses, &c. It is distant 72 miles N. W. from London, contains 304 houses, and 1516 inhabitants. Here are a market on Saturdays, and two annual fairs. Plott's History of Oxfordshire. Magna Britannia, vol. iv. 4to.

BURFORD Saddle. See SADDLE.

BURG. See BORG.

BURG, a bailiwick and castle of Germany, in the circle of Upper Saxony, and county of Reuss; 4 miles S. W. of Schleitz.—Also, a town in the circle of Lower Saxony, and duchy of Magdeburg, seated on the Ihle, in which are woollen manufactures; 14 miles N. E. of Magdeburg.—Also, a town of the United Netherlands, in the county of Zutphen, seated on the Old Issel, between Anholt and Deutkem. N. lat. 52°. E. long. 6° 12'.

BURG, or BOURG, a town of Germany, in the circle of Westphalia, and duchy of Berg, seated on the Wippe; 6 miles S. of Solingen.

BURG-Bernheim, Mark, a town of Germany, in the circle of Franconia, and principality of Culmbach; 14 miles N. N. W. of Anspach.

BURG-Lengenfeld, a town of Germany, in the circle of Bavaria, and principality of Neuburg, on the Nab; 15 miles N. of Ratibon.

BURG-Schleiden, an ancient fortified town, but now a church-village of Germany, in the circle of Thuringia; 3 miles S. E. of Nebra.

BURG-Schwalbach, a town of Germany, in the circle of the Upper Rhine, and county of Nassau-Saarbruck, and in a prefecture of the same name.

BURGH-upon the sands, a place lying at a small distance west of Carlisle, in the county of Cumberland, and remarkable for the monument erected there in honour of Edward I. who died there in 1307, on his return from a successful expedition against the Scots.

BURGAGE, in Law, a tenure proper to boroughs and towns, whereby the inhabitants hold their lands and tenements of the king, or other lord, at a certain yearly rate.

This tenure is described by Glanvil (l. vii. c. 3.), and is expressly said by Littleton (s. 162.) to be but tenure in socage. It is indeed only a kind of town socage; as common socage, by which other lands are holden, is usually of

a rural nature. A borough (see BOROUGH) is usually distinguished from other towns by the right of sending members to parliament; and where the right of election is by burgage tenure, that alone is a proof of the antiquity of the borough. Tenure in burgage, therefore, or burgage tenure, is where houses, or lands which were formerly the site of houses, in an ancient borough, are held by some lord in common socage, by a certain established rent. The free socage, in which these tenements are held, seems to be plainly a remnant of Saxon liberty; and this may account for the great variety of customs, affecting many of these tenements so held in ancient burgage; the principal and most remarkable of which is that called *Borough-English*; which see. There are also other special customs in different burgage tenures; as in some, that the wife shall be endowed of all her husband's tenements (Litt. § 166.), and not of the third part only, as at the common law; and in others, that a man might dispose of his tenements by will (Litt. § 167.), which in general was not permitted after the conquest, till the reign of Henry VIII; though in the Saxon times it was allowable. A pregnant proof, says judge Blackstone (Com. vol. ii. p. 84.), that these liberties of socage tenure were fragments of Saxon liberty.

BURGAGE is sometimes used to denote the rent, or quit-rent paid to the chief lord for the houses and tenements in a town or borough.

BURGAGE free, *Burgagium liberum*, denotes a tenure, whereby the tenants, after having paid their rent to the superior lord, were exempted from the service.

BURGANET, in Armoury, a steel-cap formerly worn by soldiers in battle. It has also been used in armorial bearings.

BURGAS, in Geography. See BERGASE.

BURGAU, a town and castle in a margraviate of the same name, in Austrian Swabia, seated on the river Mindel; 5 leagues N. of Augsburg.

BURGAU, a considerable village of Germany, in the circle of Upper Saxony, and principality of Eisenach; 3 miles S. of Iena.

BURGAU, in Natural History, the name of a large species of Top-shell or Trochus. It is very beautifully lined with a coat, of the nature of the mother of pearl; and the artificers take this out, to use under the name of mother of pearl, though some call it after the name of the shell they take it from, *burgaudine*. Some other shells, however, appear pearly, when divested of their external covering. Among the modern French, *Burgau* is a trivial name for several different kinds of shells of the *Turbo* genus.

BURGAUDINE, the name given by the French artificers to what we call mother of pearl. In their works, they do not use the common naere shell for this, but the lining of the American bergau. Hence some call the mother of pearl *burgaudine*, and others the *burgaudine* mother of pearl.

BURGDORF, in Geography, a town of Switzerland, in the canton of Berne, and chief place of a bailiwick, seated on the river Emme; about a league from the town are sulphureous fountains and baths, which are said to be beneficial in paralytic and nervous complaints; 8 miles N. E. of Berne, and 12 S. S. E. of Soleure. N. lat. 47° 2'. E. long. 7° 29'.

BURGDORF, a town of Germany, in the circle of Lower Saxony, and principality of Lüneburg-Zell, seated on the Aue; it is walled and moated, and has a castle; 14 miles E. N. E. of Hanover, and 9 S. of Zell.

BURGE-LES-BAINS, a town of France, in the department of the Allier, and chief place of a canton, in the district

district of Moulins. The town contains 2,542, and the canton 10,104 inhabitants: the territory includes 342½ kilometres, and 10 communes.

BURGE-MASTER of Greenland, in *Ornithology*. See *PROCELLARIA GLACIALIS*. The same name is given by Ray to the wagel gull, *Larus naevius*; it is also called Burgo-master, and Burgermeister. In Martin's Spitzb. *Larus glaucus*, the glaucous gull, is termed Burgermeister.

BURGEIN, in *Geography*, a town of Egypt, on the west side of the Nile; 17 miles N. of Achmounain.

BURGEL, a town of Germany, in the circle of Upper Saxony, and margraviate of Meissen, seated on the Sala; 6 miles S. E. of Dornburg.

BURGEL, *Birgel*, or *Mark-Burgel*, a very ancient town of Germany, in the circle of Franconia, and principality of Culmbach, seated on a high mountain near the river; 13 miles N. N. W. of Anspach.

BURGEON, a small island near the south coast of Newfoundland; 22 leagues N.W. of Miquelon. N. lat. 47° 20'. W. long. 57° 20'.

BURGEON, in *Botany*, as the term is used by English gardeners, is only another name for a gem or bud. The French botanists distinguish three stages of its growth, by three different names. At its first appearance in spring it is an eye, *œil*; about the solstice it becomes a bud, *bouton*, which continues to increase during the autumn; and in the following spring is a burgeon, *bourgeon*.

BURGESS, an inhabitant of a borough or a walled town, or one who possesses a tenement therein. In other countries, burgeses and citizen are confounded together; but with us they are distinguished. Stat. 5 R. II. c. 4. See **BOROUGH**. The word is also applied to the magistrates of corporate towns.

Anciently, burgeses were held in great contempt, being reputed servile, base, and unfit for war; so that the gentry were not allowed to intermarry in their families, or fight with them; but, in lieu thereof, were to appoint champions. A burges's son was reputed of age when he could distinctly count money, measure cloth, &c. Spelm. Gloss. Glanvil. lib. vii. cap. 9.

BURGESS, *king's*, *Burgenfis regis*, was he who, though residing in another's jurisdiction, was exempt therefrom, and only subject to the jurisdiction of the king, unless the lord also enjoyed royal jurisdiction.

In statute 5 Rich. II. c. 4. where the several classes of persons in the commonwealth are enumerated, we meet with count, baron, banneret, *chevalier de countee*, *citizain de citie*, and *burgess de bourg*.

BURGESS is now ordinarily used for the representative of a borough town in parliament. See **BOROUGH**.

Burgeses are supposed to represent the mercantile part or trading interest of the nation. They were formerly allowed, by a rate established in the reign of Edw. III. two shillings a day as wages. It is much to be regretted, that the members for boroughs bear above a quadruple proportion to those for counties. The Universities were, in general, not empowered to send burgeses to parliament; though once, in 28 Edw. I. when a parliament was summoned to consider of the king's right to Scotland, writs were issued, requiring the University of Oxford to send up four or five, and that of Cambridge two or three, of their most discreet and learned lawyers for that purpose. But king James I. indulged them with the permanent privilege of sending constantly two of their own body, to serve for those students, who, though useful members of the community were neither concerned in the landed nor the trading interest; and to protect in the legislature the rights of the republic of letters. The right of

election of burgeses depends on several local charters and customs, which have occasioned infinite disputes; though, by 2 Geo. II. c. 24. the right, for the future, shall be allowed according to the last determination of the house of commons concerning it: and by 3 Geo. III. c. 15. no freeman, except such as claim by birth, servitude, or marriage, shall be entitled to vote, unless he hath been admitted to his freedom twelve calendar months before. No person is eligible as a burges, who hath not a clear estate of 300l. a year. Stat. 9 Ann. c. 7. See **PARLIAMENT**.

BURG-GEMÜNDE, in *Geography*, a town of Germany, in the circle of the Upper Rhine, and principality of Upper Hesse; 14 miles S. E. of Marburg.

BURGGRAVE, properly denotes the hereditary governor of a castle, or fortified town, chiefly in Germany.

The word is compounded of *bourg*, *town*, and *graf*, or *grave*, *count*.

The burgraves were originally the same with what we otherwise call *castellans*, or *comites castellani*; but their dignity was considerably advanced under Rudolph of Hapsburg; before this time they were ranked only as counts, and below the princes, but under him began to be esteemed on a footing with princes. In some parts the dignity is much degenerated, especially in the Palatinate. There were formerly, according to Leti, fifteen families who enjoyed the title of burgraves, thirteen of which are now extinct. But this is differently represented by others. In Bohemia, the title burgrave is given to the chief officer, or to him that commands in quality of viceroy. In Prussia, the burgrave is one of the four chief officers of the province. In Guelderland, the burgrave of Nimeguen is president of the states of the province.

BURGGRAVE, JOHN-PHILIP, M. D. in *Biography*, practised physic several years, first at Darmstadt, and afterwards at Frankfort, and was author of several interesting works. "Libitina ovans Fatis Hygiæ, seu de Medicæ Artis æque ac Medicorum præcipuis Fatis," Frank. 1701, 8vo.; in which he recounts the principal occurrences in the lives of the most celebrated physicians from the time of Hippocrates. This was again printed in the year 1706, with some alterations, under the title of "Iatrice Hominum Lethique Curiosa. De Existentia Spirituum nervorum, eorumque vera Origine, Indole, Motu, Effectibus, &c. in Corpore Humano vivo," &c. 1725, 4to. Dr. Goellicke wrote an answer to this under the title of "Spiritus Animalis ex Foro Medico relegatus;" which produced, from our author, "Spiritus Nervosus restitutus," 4to. 1729; so this unmeaning controversy ended. His next work, which gave him much credit with his countrymen, was, "De Aere, Aquis, et Locis Urbis Francofurtanæ Commentatio," 1751, 8vo. He also published an edition of "Herman Conringius, de Habitibus Corporum Germanicorum Antiqui et Novi Causis," with a commentary, 1727, 8vo. Eloy. Dict. Hist.

BURGH, JAMES, an esteemed moral and political writer, was born in 1714, at Madderty, in Perthshire, and educated at the University of St. Andrew's, with a view to the ministry, which was his father's profession; but, obliged to decline it on account of his health, he embarked in the linen business, and lost his whole property. This misfortune reduced him to the necessity of seeking a subsistence in London, where he was first employed in correcting the press and making indexes, and afterwards as usher in a school. Whilst he occupied this situation at Great Marlow, in the county of Bucks, he published without his name, in 1745, a pamphlet entitled, "Britain's Remembrancer," which passed through five editions. In 1747 he became master of an academy, which he removed from Stoke-Newington to Newington.

ington-green, and which he supported with great reputation to himself and benefit to his scholars for 19 years. Independently of the attention which he devoted to his school, he composed and published several valuable works; of which the principal appeared in 1754, under the title of "The Dignity of Human Nature; or a brief Account of the certain and established Means for attaining the true End of our Existence," 4to. reprinted in 2 vols. 8vo. In 1762 he published "The Art of Speaking," containing rules for elocution, and lessons selected from ancient and modern writers, in which the emphatical words were distinguished by Italics. The first volume of his "Crito, or Essays on various Subjects, political, moral, and metaphysical," was published in 1766, and a second volume in 1767. In discussing the question concerning the origin of evil, he ascribes it to the machinations of powerful malignant spiritual beings, from which Christianity was designed to deliver us. In 1771 he gave up the charge of his school, and, though he suffered excruciating pain from the stone, pursued with great vigour of mind the composition of a work, for which he had collected a mass of materials, entitled "Political Disquisitions." The first two volumes of this work, comprehending a vast variety of political subjects, appeared in 1774, and the third in 1775; and they were well received by those who were zealous in the cause of public reform. Whilst he was prosecuting this work, the painful disease, which he had long sustained with patience and resignation, terminated his life in 1775. Those who were in habits of intimate acquaintance and frequent intercourse with him, highly esteemed him for his piety and integrity, his social cheerful temper, and the benevolent ardour with which he devoted himself to the promotion of the public good. If he was sanguine in his projects, they were such as tended, according to his judgment, to the general improvement of society and of mankind: and though his compositions are distinguished more by the variety of their subjects than by accurate arrangement, and by energy rather than eloquence of language, many of them will be read with satisfaction and advantage. Besides the treatises already mentioned, he published, at different times, "Thoughts on Education;" "An Hymn to the Creator of the World;" "A Warning to Dram-drinkers," 12mo. written at the request of Dr. Stephen Hales, and Dr. Hayter, bishop of Norwich; "Directions, Prudential, Moral, Religious, and Scientific," printed for the use of his scholars, and since pirated by booksellers, and sold under the title of "Youth's friendly Monitor;" and several periodical Essays on the topics of the times, in the news-papers. Biog. Brit.

BURGH, the same with borough, which see.

BURGH-bote, from *burg*, *castellum*, and *bote*, *compensatio*, is chiefly used for an aid or contribution levied for the repairing of a town or castle.

By the law of king Athelstan, the castles and walls of towns were to be repaired, and burgh-bote levied every year, within a fortnight after Rogation days. No person whatever was exempt from this service; the king himself could not release a man from burgh-bote: yet, in after-times, exemptions appear to have been frequently granted; inasmuch that, according to Cowel, the word burgh-bote came to be chiefly used to denote, not the service, but the liberty or exemption from it.

BURGH-brecche, or *brech*, a fine imposed on the community of a town, or burgh, for the breach of peace among them.

BURGH-mails, were yearly payments to the crown of Scotland, introduced by Malcolm III. and resembling the *fee-farm* rents of burghs in England. See *MAIL*.

BURGH-master, an officer in the tin mines, who directs

and lays out the meers for the workmen. &c. otherwise denominated bailiff and bar-master, which see.

BURGH *find busy*, in *Sea Language*, lies on the coast of Holland, W. by S. from the beacons on Voogel land. On the Texel island are four churches, of which Burgh is the most northerly, except Oogh, which has no steeple.

BURGHHAUN, or BURGHHAUN, in *Geography*, a small town and citadel of Germany, in a bailiwick of the same name, in the circle of the Upper Rhine, and bishopric of Fulda, seated on the river Haun, and having two churches, one for the Lutherans, and another for the Catholics; 8 miles N. N. E. of Fulda.

BURGHMASTER, BOURGERMASTERS, BURGMASTERS, or BURGOMASTERS, chief magistrates in the cities of Germany, Holland, and Flanders; to whom belong the giving of orders for the government, administration of justice, policy, and finances of the place: though the authority and office are not every where alike; each city having its particular laws and statutes.

The word is formed from the two Flemish words, *borger*, *burghs*, or *citizen*; and *mesler*, *mayster*. Some express it in Latin by *consul*, others by *senator*.—M. Bruneau observes, that *burghermaster*, in Holland, answers to what is called *alderman* and *sheriff* in England; *attorney* at Compeigne; *capitoul* at Tholouse; *consul* at Languedoc, &c.

BURGHMOTE, a borough-court; or court held for a town or borough. See *COURT* and *MOTE*.

The word is also written *burgemotus*, *burgimotus*, *burgmotus*, and *burgemote*, from *burgh*, *oppidum*; and *mote* or *gemete*, *conventus*.

The *burghmote*, by the laws of king Edgar, was to be held thrice in the year: by those of Henry I. twelve times. Burghmote is different from *berghmote*, derived from *berg*, a hill, and *mote*, assembly, which denotes an assembly or court upon a hill, and is held in Derbyshire for deciding pleas and controversies among the miners.

BURGEONES, in *Ancient Geography*, the name of a people placed by Ptolemy in European Sarmatia.

BURGLARY, in *Law*, or *nocturnal house-breaking*, *burglatrocinium*, called by our ancient law, and now in Scotland *homefecken*, an unlawful entering into another man's dwelling, wherein some person is, or into a church in the night-time; in order to commit some felony, or to kill some person, or to steal something thence, or do some other felonious act; whether the same be executed, or not. This crime has been always regarded as very heinous; partly on account of the terror which it occasions, and partly because it is a forcible invasion and disturbance of that right of habitation, which every individual might require even in a state of nature, and against which the laws of civil society have particularly guarded. Whilst they allow the possessor to kill the aggressor, who attempts to break into a house in the night time, they also protect and avenge him, in case the assailant should be too powerful. Such regard, indeed, has the law of England to the immunity of a man's house, that it styles it his castle, and will never suffer it to be violated with impunity; agreeing in this respect with the sentiments of ancient Rome, as expressed in the words of Tully (*Pro Domo*, 41) "*quid enim sanctius, quid omni religione munitius, quam domus unuscujusque civium?*" For this reason no outward doors can in general be broken open to execute any civil process; though, in criminal causes, the public safety supercedes the private. See *ARREST*. Hence, also, in part, arises the animadversion of the law upon eaves droppers, nufancers, and incendiaries; and to this principle it must be assigned, that a man may assemble people together lawfully (at least if they do not ex-

ceed eleven) without danger of raising a riot, rout, or unlawful assembly, in order to protect and defend his house; which he is not permitted to do in any other case. 1 Hal. P. C. 547.

The definition of a burglar, as given by Sir Edward Coke (3 Inst. 63) is, "he that by night breaketh and entereth into a mansion-house, with intent to commit a felony." In this definition, says Judge Blackstone (Comment. vol. iv. p. 224) there are four things to be considered; the *time*, the *place*, the *manner*, and the *intent*.

1. The *time* must be by night, and not by day; for in the day-time there is no burglary. In considering what is reckoned night, the day was anciently accounted to begin at sun-rising and to end immediately upon sun-set: but the better opinion seems to be, that if there be daylight or twilight sufficient, begun or left, for discerning a man's face, it is no burglary. 3 Inst. 63. 1 Hal. P. C. 350. 1 Hawk. P. C. 101. But this does not extend to moon-light: for then many midnight burglaries would go unpunished; and besides, the malignity of the offence does not so properly arise from its being done in the dark, as at the dead of night; when the whole creation, except beasts of prey, is at rest; when sleep has disarmed the owner, and rendered his castle defenceless.

2. As to the *place*. It must be by the definition a mansion-house; and, therefore, in order to account for the reason why breaking open a church is burglary, as it undoubtedly is, Sir Edward Coke quaintly observes, that it is "*domus mansionis Dei*." But it is not necessary that it should in all cases be a mansion house; for it may be committed by breaking the gates or walls of a town in the night. Accordingly Spelman defines burglary to be "*Nocturna diruptio alicujus habitaculi, vel ecclesie, etiam murorum portarumve burgi, ad feloniam perpetranda*." No distant barn, warehouse, or the like, has the same privileges as a mansion or dwelling-house, nor is regarded as a man's castle of defence: nor is a breaking open of houses in which no man resides, and which, therefore, for the time being are not mansion-houses, attended with the same circumstances of midnight terror. A house, however, in which a man sometimes resides, and which the owner hath only left for a short season, *animo revertendi*, is the object of a burglary, though no one be in it at the time when the fact is committed. 1 Hal. P. C. 566. Fost. 77. If a barn, stable, or warehouse be parcel of the mansion-house, and within the same common fence, though not under the same roof, or contiguous, a burglary may be committed in it; for the capital house protects and privileges all its branches and appurtenants, if within the curtilage or homestead. 1 Hal. P. C. 558. 1 Hawk. P. C. 104. A chamber in a college or an inn of court, where each inhabitant has a distinct property, is, to all other purposes as well as to this, the mansion-house of the owner. 1 Hal. P. C. 556. A room, or lodging, in any private house, is also the mansion for the time being of the lodger; if the owner doth not himself dwell in the house, or if he and the lodger enter by different outward doors. But, if the owner himself lies in the house, and hath only one outward door at which he and his lodger enter, such lodgers seem only to be inmates, and all their apartments to be parcel of the one dwelling-house of the owner. Kel. 84. 1 Hal. P. C. 556. Thus also the house of a corporation, inhabited in separate apartments by the officers of the body corporate, is the mansion-house of the corporation, and not of the respective officers. Foster, 38, 39. If I hire a shop, parcel of another man's house, and work or trade in it, but never lie there, it is no dwelling-house, nor can burglary be committed in it; but if I or my

servant, usually or often lodge in the shop at night, it then becomes a mansion-house and the object of burglary. If the shop-keeper sleep in any part of the building, however distinct that part is from the shop, it may be alleged to be his mansion-house; provided the owner does not sleep under the same roof also. Leach's Hawk. P. C. 1. c. 38. § 16. By 13 Geo. III. c. 38. burglary in the workshops of the plate-glass manufactory, with intent to steal the stock or utensils, is declared to be single felony, and punished with transportation for seven years. No burglary can be committed in a tent or booth, erected in a market or fair, though the owner may lodge in it. 1 Hawk. P. C. 104; but by Stat. 5 and 6 Ed. VI. c. 9. clergy is taken from this offence.

3. As to the *manner* of committing burglary; there must be both a breaking and an entry to complete this offence. But they need not be done at once: for, if a hole be broken one night, and the same breakers enter the next night through the same, they are burglars. 1 Hal. P. C. 551. There must in general be an actual breaking, so that it may be regarded as a substantial and forcible irruption. Such are breaking, or taking out the glass of, or otherwise opening, a window, and taking out goods; picking a lock, or opening it with a key; and lifting up the latch of a door, or loosing any other fastenings which the owner has provided. But if a person leaves his doors or windows of his house open, and a man enters by them, or with a hook or by any other means draws out some of the goods of the owner, it is no burglary; but if, having entered, he afterwards unlocks an inner or chamber door, or if he comes down a chimney, he is deemed a burglar. If a person enters by the open door of a house, and breaks open a chest and steals goods, this is no burglary by the common law, because the chest is no part of the house; though this is felony ousted of clergy by Stat. 3 W. and M. c. 9; but if one break open a cup-board or counter, fixed to a house, it is burglary. 1 Hal. P. C. 552, 553, 554. 1 Hawk. P. C. 102. So also to knock at the door, and upon its being open to rush in with a felonious intent; or under pretence of taking lodgings, to fall upon the landlord and rob him; or to procure a constable to gain admittance, in order to search for traitors; and then to bind the constable and rob the house; are all deemed burglarious acts, aggravated by the evaluations that attend any of them. 1 Hawk. P. C. 102. And also, if a servant opens and enters his master's chamber-door with a felonious design; or if any other person lodging in the same house, or in a public inn, opens and enters another's door with such evil intent; it is burglary. Nay, if a servant conspires with a robber, and lets him into the house by night, this is burglary in both (Stra. 881. 1 Hal. P. C. 553. 1 Hawk. P. C. 103); for the servant is doing an unlawful act, and the opportunity afforded him of doing it with greater ease rather aggravates than extenuates the guilt. As for the entry, any the least degree of it, with any part of the body, or with an instrument held in the hand, is sufficient; as, to step over the threshold, to put a hand or a hook in at a window to draw out goods, or a pistol to demand one's money, are all of them burglarious entries. 1 Hal. P. C. 535. 1 Hawk. P. C. 103. Fost. 108. When several come with a design to commit burglary, and one does it while the rest watch near the house, the act of one is, by interpretation, the act of all of them. The entry may be before the breaking as well as after; for by Statute 12 Ann. c. 7. if a person enters into the dwelling-house of another, without breaking in, either by day or by night, with intent to commit felony, or being in such house, shall commit any felony; and shall in the night

might break out of the same, this is declared to be burglary, although before this act different opinions were held concerning it; Lord Bacon (*Elem.* 65) holding the affirmative, and Sir Matthew Hale (1 Hal. P. C. 554) the negative. But it is universally agreed, that there must be both a breaking, either in fact or by implication, and also an entry, in order to complete the burglary.

4. As to the *intent*: it is clear, that such breaking and entry must be with a felonious intent, otherwise it is only a trespass. And it is the same, whether such intention be actually carried into execution, or only demonstrated by some attempt or overt act, of which the jury is to judge. And therefore such a breach and entry of a house as has been before described, by night, with intent to commit a robbery, a murder, a rape, or any other felony, are burglary; whether the crime be actually perpetrated or not. Nor does it make any difference, whether the offence were felony at common law, or only created such by statute. 1 Hawk. P. C. 165.

Burglary, as above described, is a felony at common law, but within the benefit of clergy. The statutes, however, of 1 Edw. VI. c. 12. and 15 Eliz. c. 7. take away clergy from the principals, and that of 3 and 4 W. and M. c. 9. from all abettors and accessories before the fact. And, in like manner, the laws of Athens, which punished no simple theft with death, made burglary a capital crime. Pott. *Antiq.* b. 1. c. 26. For encouraging the prosecution of offenders, it is enacted by statute 10 and 11 W. III. c. 23, that any person who shall convict a burglar shall be exempted from parish and ward offices, where the offence was committed. To this, the statutes 5 Ann. c. 31. and 6 Geo. I. c. 23. have superadded a reward of 40l. And if an accomplice, being out of prison, shall convict two or more offenders, he is entitled to a pardon of the felonies enumerated in the act. Moreover, the statutes 25 Geo. II. c. 36, 27 Geo. II. c. 3, and 18 Geo. III. c. 19, provide, that the charges of prosecuting and convicting a burglar shall be paid by the treasurer of the county where the burglary was committed, to the prosecutor and poor witnesses. The statute 10 Geo. III. c. 48, provides, for preventing the frequent commission of burglaries, that buyers or receivers of stolen jewels, gold, or silver plate, where the stealing shall have been accompanied by burglary (or robbery), may be tried and transported for 14 years, before the conviction of the principal. And the statute 23 Geo. III. c. 28. enacts, that any person apprehended, having upon him any pick-lock key, &c. or other implement, with intent to commit a burglary, shall be deemed a rogue and a vagabond, within statute 17 Geo. II. c. 5.

BURGLE, an article of diet of universal use in the eastern cookery. It consists of wheat, prepared by first softening the grain in hot water, and then breaking and unhusking it by means of a hand-mill; it is afterwards dried in the sun, and thus preserved for use. This food is sometimes, like rice, made into a "pilaw" (which see); but more commonly mixed up with minced meat, beet and spices, is formed into large balls, and either boiled or fried. Russell's *Aleppo*, vol. i. p. 117.

BURGLEN, in *Geography*, a lordship of Switzerland, which had formerly its own counts, afterwards barons, to both of whom it gave title, but purchased, in 1579, by the town of St. Gall. To this lordship belongs a parochial village and seat of the same name, once forming a town, but laid in ashes by the Appenzellers and the town of St. Gall.

BURGO DE OSMÁ, a small town of Spain, in Old Castile, seated on a small river that soon after runs into the

Duero, near the town of Osma; 40 miles S.E. of Burgos.

BURGO SAND, lies on the larboard side of the channel at the entrance into Liverpool, which see.

BURGOMASTER of Greenland, in *Ornithology*. See *BURGE-mast*.

BURGOO, or BURGOUT, a sea-faring dish, made of whole oatmeal, or groats, boiled in water, till they burst; then mixed with butter. It is made in Scotland and in Wales, by mixing oatmeal and water, and boiling it into a moderate consistence. It is a cheap and strengthening diet.

Burgoo, otherwise called *loblolly*, is held by Cockburn very proper to correct that thickens of humours and colliculness to which the other diet of sailors much disposes them. Yet the burgoo victualling is the least liked of all their provisions, because of the scanty allowance of butter to it. The same author thinks it might be worth the consideration of those to whom the care of the seamen is committed, to contrive to render this food more agreeable to them.

BURGOS, in *Geography*, a large old city of Spain, the capital of Old Castile, and of a province of the same name, forming a kind of semicircle round a hill, on which is a castle, and extending itself along the plain to the small rapid river of Arlançon, or Arlanza, over which it has a bridge, and along the bank of which is a handsome paved walk. It is the see of an archbishop, erected in 1574. The city is irregular, most of its streets being narrow and crooked, and its houses high. It has, however, many fine squares adorned with fountains and statues, public buildings, and noblemen's houses; and presents, at a distance, by its numerous steeples and edifices, and particularly the episcopal palace, situate without the town, a pleasing view. The cathedral is one of the most beautiful and best preserved Gothic structures in Spain; and the chapel, belonging to the convent of the Augustines, is magnificent, and famous for its crucifix, to which extraordinary devotion is paid. Bega, one of its suburbs, has many convents and hospitals; and, among others, a very large one for pilgrims. One of the nunneries is said to contain 150 nuns, most of them being of noble extraction; and the royal hospital is richly endowed. This city was built in the 9th or 10th century, on the ruins of the ancient Auca. Its situation, as it is surrounded by mountains, renders the air extremely cold for nine months in the year, and for the other three months very hot. The inhabitants of Burgos are said to speak the best Castilian, or purest Spanish, of any in the kingdom. N. lat. 42° 17'. W. long. 3° 42'.

BURGSTADT, or BURGSTADTEL, a small town of Germany, in the circle of Upper Saxony, and lordship of Schonberg, in which are some stuff-manufactures; 3 miles E. of Penig.

BURGSTALL, a town of Germany, in the archduchy of Austria, seated on the river Erlaph; 12 miles S. E. of Ip.

BURGUETTA, or ELBURQUETTA, a town of Spain, in Navarre, situate in the valley of Ronceval, where the rear-guard of Charlemagne, on his return to Spain, was defeated by the Saracens, and Roland, his nephew, slain, in the year 778: 8 leagues E.N.E. of Pampeluna.

BURGUI, a town of Spain, in Navarre, seated on the Esea.

BURGUILLER, a town of Spain in Andalusia, 3 leagues from Seville.

BURGUNDIAN CROSS, in *Heraldry*. Knights of this order were instituted on St. Mary Magdalen's day, in 1535,

by Charles V. emperor of Germany and king of Spain, after he had restored Muleaffes, king of Tunis, who was driven out of his kingdom by the noted pirate Barbarossa. The emperor being desirous to gain the love of all those who had valiantly signalized themselves in that war, did, as a reward for their services, confer on them this honour of knighthood, on the day he made his public entry into Tunis; having on the coat he wore in battle, embroidered with a Burgundian cross, to which was added a steel striking sparks of fire out of a flint, with this inscription, *BARBARIA*, which badge was pendant from a gold collar.

BURGUNDIANS, **BURGUNDIONES**, in *History*, were a warlike and numerous people, who, upon the decline of the Roman empire, obtained a permanent seat and dominion in the provinces of Gaul. According to Ammianus Marcellinus (l. 28.), and Orosius (l. 7. c. 19.), they were originally descended from the Romans. The latter writer says, that Drusus Nero, and his brother Tiberius, the adopted sons of Cæsar Augustus, having subdued the interior parts of Germany, left several camps in the country, and part of their army to keep the neighbouring people in subjection: from the Roman soldiers, who were on this occasion left to guard the Roman camps, are defended the Burgundians. The castles and strong holds, built for the defence of a country, are called by the Germans "*burgs*;" and hence the Romans, who guarded them, and their descendants, were named "*Burgundians*." As they embraced the Catholic faith, the ecclesiastics, whose spiritual jurisdiction they acknowledged, have described them as mild and tractable in their disposition; for in the countries where they settled, they treated the natives, not as strangers whom they had subdued, but as Christian brethren. Pliny the elder (l. iv. c. 16.) supposes them to be a German nation, descended from the Vindili, supposed to be the same people with the Vandals. Valesius (*Rer. Franc.* p. 48.) distinguishes the Burgundians of Germany from those of the same name, who dwelt more to the east, on the banks of the Danube. The Burgundians of Germany were sometimes in alliance, and sometimes at war, with the empire; and they are represented by contemporary writers as inferior in bravery to the other Germans, and as dwelling in castles and fortified places, whereas the other German nations scorned any fence besides their arms. See Socrat. *Hist. Eccles.* l. vii. c. 30. Most of them were mechanics, and, before they settled in Gaul, resorted in great numbers to that country, to earn a subsistence by their respective professions. As to their form of government, they were divided into several tribes, each of which had its respective chief or king, whose authority was so far from being hereditary, that it was not continued during life. If the events of the war accused the courage or conduct of the king or general, called "*Hendinos*," he was immediately deposed; and the injustice of his subjects made him responsible for the fertility of the earth, and the regularity of the seasons, which seemed to fall more properly within the sacerdotal department. The person of the priest, denominated "*Sinistus*," was sacred, and his dignity perpetual. The kings of the Burgundians did not think themselves degraded by serving in the Roman armies, by executing some of the chief offices of the empire, and by receiving, from the emperors, such dignities as they usually conferred upon their subjects. To the Burgundians is ascribed the first introduction into Gaul of legal duels, or duels ordered by the magistrates or judges, established in order to discover, from the event, the truth of contested facts. Gundebald is said to have been the first who established by law this maxim, that the best champion is the best man, and ought to be believed; a maxim, indeed, which has often proved fatal to

innocence. This unjust and sanguinary law was formally issued at Lyons, the 27th of June, Abienus being consul, that is, in 501.

In the history of the Burgundians nothing particularly worthy of notice occurs till the year 275, the first of the emperor Tacitus's reign, when, in conjunction with other barbarians, they crossed the Rhine, overran all Gaul, and made themselves masters of more than 70 cities in that country. But they were soon after defeated, and compelled to sue for peace, by Probus, the successor of Tacitus. In 287 they made another irruption into Gaul, together with the Alemanni; but were defeated by Maximian. See *ALEMANNI*. In the year 370, the 7th of Valentinian I. an army of 80,000 Burgundians appeared on the banks of the Rhine, impatiently expecting the support and subsidies promised by Valentinian; but after long and fruitless expectation, they were compelled to retire. In the year 407, they followed the Vandals, Sueves, and Alans, who had entered Gaul the last day of the preceding year, in order to partake in the spoils of these wealthy provinces; but they did not settle in that country till the year 413, when, as it is said, they obtained that part of Gaul which borders on the Rhine, or the present Alsace, and the remaining part of Germania Prima, which were ceded to them by Honorius. Thus commenced the kingdom of the Burgundians in Gaul, under Gundicar their first king. They afterwards, viz. in 435, in conjunction with the Heruli, the Huns, and the Franks, entered Belgic Gaul, committing dreadful ravages wherever they came; though, upon their first settling in Gaul, they had promised to assist the Romans, and serve in their armies as subjects of the empire. Aetius, having defeated their army, reduced them to the necessity of suing for peace, which, however, was of no long continuance. About this time they embraced Christianity. Having continued on the banks of the Rhine till the year 438, they were removed by Aetius to the present duchy of Savoy. During their residence here, they made themselves masters of several cities and places in Gaul; such as Lyons, Dié, Vienne, Auvergne, &c. Before the year 490, the Burgundians were masters of the whole of Lugdunensis Prima, styled by Sidonius Germania Lugdunensis; and in the years 514 and 528, it appears, from the acts of the councils of Agde and Epaune, that they were masters of above 28 cities; and, among others, of Lyons, Vienne, Besançon, and Embrun. In the year 490, Gundebald, or Gondebaud, conducted them into Italy, where they committed unparalleled ravages in Liguria. At this time the kingdom of the Burgundians was defined by the course of the rivers Saone and Rhone, and extended from the forest of Vosges to the Alps and the sea of Marseilles. Gondebaud, who died in 509, was succeeded by his son Sigismund, who dispatched an account of his accession to the emperor Anastasius at Constantinople, and acknowledged himself a subject of the empire. Sigismund, by the inhuman assassination of his son Sigeric, though he has acquired the honours of a saint and martyr, greatly irritated the Ostrogoths and their king Theodoric, and occasioned a war between the Franks and Burgundians. In a battle that took place A. D. 523, Sigismund was defeated and taken prisoner; and afterwards put to death, being buried alive in a deep well at Orleans; and the greater part of the country submitted to the Franks. The Burgundians, however, soon revolted, and proclaimed Gondemar, brother of Sigismund, their king, who, after a severe conflict with the Franks, concluded a peace with them, on condition that they should restore to him all the countries which they had seized during the war. This peace lasted 8 years; but in 532 a war broke out between these two nations; and Childbert and Clotharius, entering the

the territories of the Burgundians, laid siege to Augustodunum, now Autun, and obliged Gondemar to save himself by flight, and made themselves masters of his kingdom, which agreed to serve in their wars, and to pay them an annual tribute. But they continued, by agreement with their conquerors, to be governed by their own laws; till the reign of Louis-le-Debonnaire. *Anc. Un. Hist.* vol. 17. Gibbon's *Hist. Decl. and Fall of the Roman Empire*, vol. iv, v, vi.

BURGUNDIANS, the denomination of a political party, which, together with the Armagnacs, divided the whole kingdom of France, about the commencement of the 15th century. See **ARMAGNAC**.

BURGUNDY, in *Geography*, derives its name from the **BURGUNDIANS** (see the preceding article), and, before the revolution, was a very considerable province of France; bounded on the east by Franche-Comté, on the south by Lyonnais, on the west by Bourbonnois and Nivernois, and on the north by Champagne. The government or province of Burgundy contained, besides the duchy of the same name, La Bresse, of which le Bugey and le Valromey form a part, and the county of Gex. Its extent from north to south is about 60 French leagues, and from west to east about 30 leagues. Burgundy is divided lengthways by a chain of mountains, extending from Dijon to Lyons; the eastern part of the province is an immense rich plain, which terminates in the mountains of Franche-Comté and Savoy, and which is watered by the Saone and other rivers that flow into it; the other part of the province is mountainous, and in many places dry and uncultivated. The principal rivers that water it, besides the Saone, are the Seine, the Armançon, the Yonne, the Serain, the Ouche, the Deune, which runs into the Saone near Verdun, the Arroux, the Bourbonnais, the Rhone, the Loire, and the Doubs. The mineral waters of this duchy are those of Apoini near Seignelay, Premeau near Nuits, Vevelay, Sainte-Reine, and Bourbon-l'Ancy. The province is fertile in various kinds of grain and fruit, tobacco, hemp, and flax; and among its wines, which are excellent, we may reckon those of Nuits, Beaune, Dijon, Volvenay, Pomard, Chassagne, Meursault, Vosne, Savignè, Mercy, Chambolle, Givri, Mercurey, Romanée-la Tache, Richebourg, Saint-George, and Chamberlin. The mountains furnish excellent pasture for cattle and horses. Its mines afford ores of various metals, particularly iron, different sorts of stones, marble, granite, and also coal, and ochre for dyeing. Its forests supply abundance of wood. It has also various manufactures of iron, wool, linen, and cotton. Its corn, wine, iron, wood, wool, and cattle, furnish the principal articles of commerce. The district of Bresse has subterraneous lakes; and the cave of Arcy, as well as the salt spring of Vezelay, are worthy of notice. The principal towns of Burgundy are Dijon, the capital, Beaune, Châtillon-sur-Seine, Auxerre, Autun, Chalon, Maçon, Bourg, Belley, Gex, &c. Since the revolution, Burgundy is distributed into the departments of the Yonne, Côte d'Or, the Saone and Loire, and the Ain.

The ancient kingdom of Burgundy formed three provinces in the 5th and 10th centuries. The first was that of Provence, which some authors have called the kingdom of Burgundy Cis-Jurana, in reference to mount Jura, now called Mont St. Claude. This was established in 855, in favour of Charles, third son of the emperor Lothario I, and comprehended Provence, properly so called, i. e. the country contained between the Durance, the Alps, the Mediterranean, and the Rhone, together with the duchy of Lyons. The second was formed in 888 on the other side of mount Jura, and called Burgundy Trans-Jurana. It comprehended

little besides Switzerland, the Valais, the Genevese and Chablais. The third kingdom was that of Arles, founded in 930, by the re-union of the kingdoms of Provence and Burgundy Trans-Jurana, in favour of Rodolphus II., who was before king of Burgundy Trans-Jurana only. The kings of France possessed themselves successively of this state: but the duchy of Burgundy, part of the late government of Burgundy, was never comprehended within the kingdom of Burgundy Cis-Jurana, or in that of Burgundy Trans-Jurana. It formed a distinct state, which continued subject to the kings of France. In the partition which took place in 843 between the sons of Louis le-Debonnaire, Charles-le-Chauve had the part of the kingdom which was situated to the west of the Saone; and it was governed by dukes. But the power of these dukes gradually advanced to such a height, that one of them, named Rodolphus, in the time of Charles the Simple, was elected king of France. This duchy passed afterwards to Hugh the Great, duke of France, who proved a troublesome neighbour to Rodolph; and his son, Hugh Capet, seated himself and family on the throne of France. His son and successor, Robert, having inherited Burgundy, gave it to Henry, his eldest son, who succeeding to the throne of France, assigned it in 1032 to Robert I., his younger son, who was the head of the first ducal race of Burgundy. This subsisted for 330 years, and became extinct in 1361 in the person of Philip I., who died without issue. King John, being son to a princess of Burgundy, in 1361 united this duchy with the crown, and in 1363 conferred it on his son Philip the Bold, in whom the second ducal line commenced. With his great grandson Charles the Warlike, who lost his life before Nancy in 1477, the second line terminated. Although he left a daughter, Mary, who married Maximilian, archduke of Austria, and John, prince of Burgundy, count of Nevers and Rethel, who did not die till 1491; Lewis XI. seized upon the duchy, and united it to his crown, which has since retained it, notwithstanding the repeated claims and endeavours of the house of Austria to recover it. The various possessions of the dukes of Burgundy rendered them the most considerable power in Europe; and in 1433 a decree of Bayle assigned to Philip the Good the first rank after kings, and named him the first duke of the Christian world. The dukes of Burgundy were the first ancient peers of France. At the king's coronation they bore the crown, and girded on him the sword.

BURGUNDY, *Circle of*, a circle of the German empire, made a part of it in 1512 under the emperor Maximilian. It took its name from the province of Burgundy, now dismembered from the empire, and belonging to France, and has long since ceased to be reckoned among the circles of the empire. It was formerly under the directorship and sovereignty of the king of Spain, and comprehended not only Higher Burgundy, or Franche Comté, but likewise the 17 provinces of the Low Countries, which in the reign of Charles V. were received as members of the empire.

BURGUNDY Pitch, see **PITCH**.

BURGUNDY Pitch, platter of. See **PLASTER**.

BURGWARD, *Burgwardus*, or *Burgwardum*, in *Middle Age Writers*, the same with **BULWARK**. The name is also extended to the town, and even the country about such a fortress. It is formed from the Teutonic *burg*, *town*, and *ward*, *custody*, *keeping*.

BURHANPOUR, in *Geography*, a city of Hindoostan, and capital of the Candesh country, and at one period, of the Deccan also. It is a fine flourishing city, and is situated in the midst of a delightful country. This was one of the earliest conquests in the Deccan; and it is now in the hands of the Poonah, or western Maharrattas. About 20 miles to

BURIAL.

the N. E. of it is a very strong fortress, named Aseer, or Aseergur. It has a considerable trade in fine cottons, white and painted, plain, and mixed with gold and silver, for veils, shawls, handkerchiefs, &c.; 135 miles N. of Aurungabad, and 625 S. of Delhi. N. lat. $21^{\circ} 19'$. E. long. $76^{\circ} 22'$.

BURHANPOUR, a town of Hindoostan, in the country of Bengal; 10 miles S. of Moorshedabad, and 100 miles N. of Calcutta.

BURIAH, a river of Hindoostan, which runs into the Jumnah, 25 miles S. of Delhi.

BURIAL. The act of interring a deceased person.

Of the various modes of burial which have prevailed in the world, it was Cicero's opinion, (*De Leg. ii. 22*) that *inhumation* was the oldest: and the records of history undoubtedly corroborate the notion. *Burning*, and inclosing the remains in urns, were perhaps never found expedient, till national animosities had given rise to inhuman treatment of the dead.

The common consent of mankind, from the beginning of time to the present moment, has concurred in the propriety and decency of interment: it is a natural act inspired by humanity; a practice, which has been continually observed by enemies in time of war; and but rarely denied in any country, but to those who have violated either the laws of God or nature. The duty of sepulture, and instances of the discharge of it, continually occur in Scripture. David passes high encomiums on the men of Jabez-Gilead who rescued the bones of their king and prince from the enemy's walls, and committed them to their family vault. (*2 Sam. ii. 5.*) It is part of the praise of Tobit that he went about burying his murdered countrymen, at the hazard of his life. And Jeremiah threatens it as the greatest of punishments, that the wicked should be deprived of burial, and left on a dunghill: (*Jer. viii. 2.*) or as it is emphatically expressed, buried with the burial of an ass. Herodotus tells us, (*Euterpe, xc.*) that in Egypt, if either a native or a foreigner was found either destroyed by a crocodile, or drowned in the water, the city nearest which the body was discovered was obliged to embalm it, and pay it every respectful attention, and afterwards deposit it in some consecrated place. *Isæus* brings it as a proof that Cleon was not the son of *Asthyphylus*, because he neither buried him, nor performed his funeral exequies. (*Orat. de Hereditate Asthyphili.*) A law of Athens compelled the burial of a dead body found by accident, and pronounced the refuser impious. *Servius* on *Virgil* (*Æn. vi. 176.*) says, writers on moral duties place the duty of interring the dead among the first. It was profanation for a priest to look on a dead body, but the height of impiety to leave it unburied. The Athenians carried their attention to the dead beyond the grave: and *Solon*, by an express law, forbade any reflections on their character. On this law *Plutarch* thus comments: "Piety should induce us to reverence the dead; justice should prevent us from intermeddling with the affairs of those who no longer exist; and policy should lead us to prevent the perpetuity of enmity." (*Solon, p. 89. E.*) *Demosthenes* extends the caution still further: not even any provocation from survivors of the family should urge us to any reflections on the dead; (*in Lepitonein, p. 298.*) and every citizen was at liberty to bring an action against the abusive party. (*Ulpian in loc. Demosthenes in Boeotus, p. 588. Suidas.*) The Cynics, however, seem to have regarded burial with contempt; and *Pliny* (*H. N. l. vii.*) ranks concern about it amongst the weaknesses peculiar to man.

Among the earliest inhabitants of the world, neither the modes nor the appropriate place of burial can now be ascertained. Nor does it seem that the latter, even in the middle

periods of Jewish history, was always particularly determined. For we find they had graves and sepulchres both in the town and country, in fields, upon the highways, in gardens, in their own houses, and upon mountains: though the general custom seems to have been, that the dead should be interred without the city. They appear in many cases also to have thought it a misfortune not to be buried with their fathers. In *Genesis* (*xv. 15.*) when the affliction of *Abraham's* posterity was foretold, it was promised that he should go to his fathers in peace, and be buried in a good old age. He afterwards pleads most pathetically with the sons of *Heth* (*xxiii. 3—13.*) for the purchase of a burial place for *Sarah*. It was in the cave of the field of *Machpelah*; and it afterwards received the bodies of himself, of *Isaac*, and of *Jacob*.

Joseph's body, having been embalmed, and put into a coffin, in Egypt, was brought away by the Israelites when they quitted the country, and buried in a plot of ground in *Shechem*, which *Jacob* had purchased of the sons of *Hamor* (*Gen. l. 25. Josh. xxiv. 32.*) *Moses* was secretly buried in a valley in the land of *Moab*, (*Deut. xxxiv. 6.*) and no man knew of his sepulchre. *Eleazar*, the son of *Aaron*, was buried on a hill. (*Josh. xxiv. 33.*) *Joab*, in his own house in the wilderness. (*1 Kings ii. 34.*) *Manasseh* and *Amon*, in the garden of *Uzza*; (*2 Kings xxi. 18. 26.*) and *Rehoboam*, *Aza*, *Jeholaphat*, *Joram*, *Amaziah*, *Azariah*, *Jotham* and *Ahaz*, in the city of *David*, with their fathers. "*Joash*, too, was buried in the city of *David*," but not in the sepulchres of the kings. (*2 Chron. xxiv. 25.*)

From the profane writers of antiquity we learn the practice among other nations: and not only from their authority, but from daily observation, we find the high raised *Tumulus* continued a mark of respect amongst the living, and a signal honour amongst the dead in every age of which we have any record. *Barrows* are the most ancient sepulchral monuments in the world: and their contents are as various as the different people that occupied the globe, or the different circumstances by which they were distinguished. The pyramids of Egypt are but barrows of a more solid material; and the church-yard hillock of the present day is but a relic of their universal prevalence. *Homer* is very particular in describing the barrow of *Patroclus*. It was first marked out with a circle; the foundations were then laid round the very spot where the funeral pile was still uncooled, and the earth thrown up over them.

Τορνωσαντο δε σπμα. Σεμελιε τε προβαλοισιο
Αμφι πυρην εβαρ δε χυνην επι γαιαν εχεναν.

Χειαντες δε το σπμα, παλιν κιον.

Il. φ. 255—257.

The remains of the body were collected in a golden urn, but (which is singular) were not lodged beneath the barrow.

Among the distinguished barrows of Greece may be ranked that of Egyptus in Arcadia, which *Pausanias* describes as not very large, and surrounded by a margin of stone: Της χωμα ε μεγα, λιθς κρητιδι εν κυκλω περιεχομενον: (*Arcad. c. 16.*), and which *Homer* admired (*Il. B. 603.*), as not having seen a finer. That of *Icarus* was a small one, on a headland where he was cast away: (*Pausan. Boeot. c. 11.*) and that of *Achilles* in a similar situation. (*Odyss. Ω. 36.*) See *BARROW*.

With the Egyptians, and the ancient Greeks, (see *Plato, Minos prope fin.*), persons were occasionally buried, as we have already mentioned in the case of *Joab*, in their own houses: while in other instances hills and rocks were not only receptacles for the ancient inhabitants of Greece, Sicily and Asia, but of the Persians, and, to this day, of the Chinese. The general practice of burial, however, among the ancient Persians, is thus related by *Herodotus*, (*Clio. cxi.*)

"I will

BURIAL.

"I will not affirm it to be true, that these never are interred till some bird or dog has discovered a propensity to prey on them. This, however, is unquestionably certain of the Magi, who publicly observe this custom. The Persians first enclose the dead body in wax, and afterwards place it in the ground." The custom to which Herodotus here particularly alludes as the exclusive privilege of the Magi, was afterwards universally adopted: and, in part, still continues. The place of burial of the Guebres, at the distance of half a league from Ispahan, is a round tower made of free stone: it is 35 feet high, and 90 in diameter, without gate, or any kind of entrance; they ascend it by a ladder. In the midst of the tower is a kind of trench, into which the bones are thrown. The bodies are ranged along the wall in their proper cloaths, upon a small couch, with bottles of wine and victuals. The ravens which fill the cemetery, devour them (Chardin's Travels.) An exact model of this curious tower is preserved in the British Museum.

Among the Egyptians, the body having been embalmed by persons legally appointed to the exercise of the profession, was returned to the relations, who enclosed it in a case of wood made to resemble an human figure, and placed it against the wall in the repository of their dead. (Herod. Euterpe, lxxxvi.)

The custom of *burning* the dead, to which we have already alluded, is, however, of higher antiquity than we may at first suppose. Saul was burnt at Jabesh, and his bones afterwards buried; and Aza was burnt in the bed which he had made for himself, filled with sweet odours, and divers kinds of spices; but the practice existed, we are assured, neither in Persia nor Egypt: the Persians thought it profane to feed a divinity with human carcases; and the Egyptians abhorred it on another account, being fully persuaded that fire was a voracious animal, which devoured whatever it could seize; and when saturated, finally expired with what it had consumed. The Egyptians also held it unlawful to expose the bodies of the dead to animals; for which reason they embalmed them, fearing lest after interment, they might become the prey of worms. (Herod. Thalia, xvi.) In Persia, too, at the time Herodotus wrote, the custom of *burying alive* was common: and he was told that Amestris, the wife of Xerxes, when she was of an advanced age, commanded fourteen Persian children of illustrious birth to be interred alive in honour of the deity whom they supposed to exist under the earth. (Poimonia, cxiv.)

Of the ancient *Ethiopian* practice we have a more minute description, related on the tradition of Cambyse's spies. "After all the moisture is extracted from the body, by the Egyptian, or some other process, they cover it totally with a kind of plaster, which they decorate with various colours, and make it convey as near a resemblance as may be of the person of the deceased. They then inclose it in a hollow pillar of crystal, which is dug up in great abundance, and of a kind that is easily worked. The deceased is very conspicuous through the crystal, has no disagreeable smell, nor any thing else that is offensive. This coffin the nearest relations keep for a twelvemonth in their houses, offering before it different kinds of victims, and the first-fruits of their lands. These are afterwards removed, and set up round the city.

The funeral ceremonies attending the *Scythian* kings were still more singular. They were embalmed, and afterwards transported through the different provinces of their kingdom, till they were at last brought to the Gershi, in the remotest parts of Scythia. Here the corpse was placed upon a couch, (round which, at different distances, were fixed daggers; and upon the whole, pieces of wood covered with

branches of willow) in a trench, nigh the spot where the Borysthenes begins to be navigable. In some other parts of this trench one of the concubines of the deceased, who had been previously strangled, together with his baker, cook, groom, most confidential servants, horses, and choicest effects, were buried; and a mound as high as possible raised above the whole. (Herod. Melpomene, lxxii.) With regard, however, to the Scythians in general, the practice was more simple. When any one died, the neighbours placed the body on a carriage, and carried it about to the different acquaintance of the deceased; these prepared some entertainment for those who accompanied the corpse; placing before the body the same as before the rest. Private persons, after being thus carried about for the space of forty days, were buried. But the Scythians did not all of them observe the same customs with respect to their funerals: there were some who suspended the dead bodies from a tree, and in that state left them to putrefy. "Of what consequence," says Plutarch, "is it to Theodorus, whether he rots in the earth, or upon it? Such with the Scythians is the most honourable funeral." The custom is also mentioned by Silius Italicus:

"At gente in Scythicâ suffixa cadavera truncis,
Lenta dies sepelit, patri liquentia tubo."

The African Nomades observed the same ceremonies with the Greeks, but the *Nasamones* buried their deceased in a *sitting attitude*; and were particularly careful as any one approached his end, to prevent his expiring in a reclined posture. (Herod. Melpomene, cxc.)

From the anecdotes of burial which have already been detailed, it should seem, that both among the Jews and Heathens, the place of interment was usually without the city. Such, also, was the case with the Athenians, the Smyrnæans, the Sicyonians, the Corinthians, and the Syracusans. The examples of Numa and Servius Tullus prove, that the Romans deposited their dead without the city, before the introduction of the twelve tables: and it was a special privilege granted by the senate to particular persons, that they should be buried within the walls; (Cic. de Leg. ii. 23.) and the Jews, at least in the latter days of their existence as a nation, as we learn from the instances of Lazarus, (John xi. 38.) the widow's son at Nain, (Luke vii. 13) and the dead that were raised at the crucifixion, (Matt. xxvii. 53.) observed the same place of burial. The *Lacedæmonians*, however, buried within it. It had been a notion universally prevalent, that the touch of a dead body conveyed pollution; and Lycurgus, the legislator of Sparta, was ambitious to remove the prejudice. He not only introduced the custom of burial within the city, but erected monuments near the temples, that the youth might be trained from their infancy to the view of such objects, nor shudder at the spectacle of death.

The ancient Greeks and Romans were strongly persuaded that their souls could not be admitted into the Elysian fields, till their bodies were committed to the earth: and if it happened that they never obtained the rites of burial, they were supposed to remain in a wandering state, excluded from the happy mansions, for the term of 100 years. For this reason it was considered as a duty incumbent upon all travellers who should meet with a dead body in their way, to cast dust or mould upon it three times; and of these three handfuls, one, at least, was cast upon the head.

Of those who were allowed the rites of burial, some were distinguished by particular circumstances of disgrace attending their interment: persons killed by lightning were buried apart by themselves, being thought odious to the gods; (see Plin. ii. 54.) those who wasted their patrimony, forfeited the

BURIAL.

right of being buried in the sepulchres of their fathers: and those who were guilty of self-murder, were privately deposited in the ground, without the accustomed solemnities.

The *Athenian* law mentioned by *Ælian*, (vii. 19.) obliged them to place the body to the west. This was the original position of the Athenians, as *Solon* shewed in defence of his countrymen's claims to *Salamis*; for on opening the graves in that island, he proved that the Athenians in it were so buried in a regular manner, but the *Megarensian* invaders at random, and just as it happened. *Laetius* (*Solone*) says, the Athenians, and the scholiast on *Thucydides*, all the Greeks lay buried toward the east; that is, as *Kuhnius* on *Ælian*, (loc. cit.) properly explains it, with their faces looking to the east, and their heads to the west. This practice among Christians has been supposed to have a reference to the general resurrection. The motive for it among the Heathens has not been assigned.

The *Athenian* practice, however, with regard to those who died in the defence of their country, was at once so patriotic and affectionate, that it cannot but deserve particular attention. It affords an elevated idea of that polished people. About three days before the funeral, the bones of the slain were placed in a tent raised on purpose, so that every person might have an opportunity to frequent them, and pay the last tribute of a tear. All sorts of odoriferous herbs and flowers were strewed around the tent; and each man brought some in his hand, that he might consecrate them to the manes of his favourite friend. On the fourth day a coffin of cypress was sent from every tribe, to carry off the bones of their own members. After which went an empty covered hearse, in memory of those who could not be found. The procession was carried on with a peculiar decency of sorrow, whilst great numbers of inhabitants, both strangers and citizens, assisted in the train of mourners. The parents of the deceased attended at the sepulchre to weep. No eye could refrain from tears; and the melancholy distress which appeared in the faces of all alike, seemed but a true copy of the sentiments of all. The bones were accompanied in this manner to the public place of burial, situated in a pleasant spot without the city, called *Ceramicus*, and committed to the ground. The monument erected to the valour of these citizens was adorned with pillars, trophies, and inscriptions, such as were usual about the tombs of the most honourable persons, and the ceremony concluded with one speech in praise of them all; the main scope of which was, to animate the living with resolution, by commending the courage of the dead; to infuse a spirit of patriotism into the minds of their fellow citizens, by celebrating the principle of action which incites the valiant to battle. (*Thucyd.*)

The *ceramicus* was the place where the slain in battle were always buried, except those who fell at *Marathon*, whose distinguished merit entitled them to a monument upon the spot.

Among the *Romans*, inhumation, we find, was preferred by *Numa*, the *Cornelian* family, and *Caius Marius*; but both *Virgil* and *Ovid* speak of burning as the practice before the foundation of *Rome*; the former (*Æn.* xi. 208.) in the instance of *Pallas*; the latter (*Fast.* iv. 853.) in that of *Remus*. *Plutarch* says, *Numa* forbade it in his own case; and the law of the *Twelve Tables* forbade burning as well as burial within the city. *Tacitus* (*Ann.* xvi. 6.) says, *Poppæa's* corpse was not burned according to the *Roman* fashion. It is a misapprehension of *Capitolinus's* words to suppose *Antoninus* prohibited it. *Macrobius* (vii. 7.) who lived under *Theodosius the younger*, speaks of it as left

off in his time. (See *Mr. Gough's Sepulchral Mon. of Great Britain.*)

The drapery of the dead among the *Romans* was the *toga*, which was white in all cases except in that of the poor, who had it black. The magistrates and military men were wrapt in their purple robes of honour, or *toga pretestata*, or other precious garments of various colours. Persons of rank and fortune were buried in their official habits. *Mark Anthony* gave his own robe to cover the body of *Brutus*. By the laws of the *Twelve Tables* crowns were allowed to be worn on these occasions by those who had merited them, and garlands and flowers were cast on the body as it passed. The funerals of great men were conducted at the public expense. But the bodies of the *Roman* slaves were thrown to rot in holes dug perpendicularly, called *puticuli*. (*Phil. Transf.* N° 265.)

Having thus traced the conformity and occasional variation of practice among the more ancient nations in the article of sepulture, it may be worth while to deduce its history in *England*.

Both cremation and simple interment were druidical and ancient *British* fashions. The latter rite, however, was observed with the wild addition of whatever was of use in this life, under the notion that it would be wanted by the deceased in the world below; and in confirmation of this, arms and many singular things, of unknown use, are to this day discovered beneath the places of ancient sepulture. (*Pennant's Tour in Wales*, p. 381.) Barrows were their oldest tombs. Beneath some we find urns; beneath others skeletons; and in many instances, both. (*Gough's Sep. Mon.* I. iv.) The kilt-vaen or coffin, composed of rough stones set edgewise, at the sides and ends, was another receptacle of the dead anciently used in *Britain*; (*Ibid.* p. xvi.) these are frequent in *Wales*; but seldom found to contain skeletons, or remains of bodies in them. See *Dr. Stukeley's Abury* (p. 13.) of one found in a barrow at *Rowldrich*; and another (p. 49.) similar, in *Monkton* field near *Abury*. Two that were found in *Purbeck*, on making a turnpike road to *Corfe*, had skeletons in them. Of this earlier kind and date were the rude stone chests under barrows in *Orkney*, which contained entire bodies. The *Tartarian* barrows have absolute stone vaults under them. (*Archæol.* ii. 222.)

The next and last improvement of the stone coffin, was by forming it of a single stone with mallet and tool; and this *Dr. Pegge* ascribed to the *Romans*; for he apprehended that during the general prevalency of the customs of cremation and urn-burial among the *Romans*, they had not always recourse to the funeral pile, but that bodies were sometimes interred whole and in their natural state. (*Sep. Mon.* I. xx.) Instances of *Roman* coffins of several pieces of stone are cited by *Mr. Gough* in the *Sepulchral Monuments* (vol. I. p. xxi.); and others, (p. xxvi.) to prove that the *Romans* used brick coffins, or sarcophagi, in their earliest periods. In the celebrated family vault of the freedmen of *Augustus* and *Livia*, discovered by the side of the *Appian* way, about a mile out of *Rome*, 1725, among a few marble sarcophagi were two of baked-earth, made to contain the body whole. The *Romans* in *Britain* buried their warriors near the *via strata* or military ways: and hence we may derive the frequent inscription of *SISTE* or *ASPICE VIATOR*.

Woden enacted a law for burning the dead, which not only the *Saxons* and the *Danes*, but the remote *Sarmatæ*, and all the *Scandinavian* nations regularly observed; and tumulated the ashes, with or without urns, as circumstances required. The *Danes* distinguished by this, and the different

BURIAL.

funeral ceremonies three several epochs. (Worm. Mon. Dan. p. 40.) The first, which was the same with that in question, was called *Røjfeld* and *Brenteijde* or the age of burning. The second, was styled *Højgald*, and *Højføjde*, or the age of tumuli or hillocks. The corpse at this period was placed entire, with all the ornaments which graced it during life. The bracelets, or arms, and even the horse of the departed hero were placed behind the heap. Money, and all the rich property of the deceased, used to be buried with him, from the persuasion that the soul was immortal (Pomp. Melag. l. iii. c. 2.) and would stand in need of these things in the other life.

Among the northern nations, when piracy was esteemed honourable, these illustrious robbers directed that all their rich plunder should be deposited with their remains, (Bartholom. Antiq. Dan. 438.) in order to stimulate their offspring to support themselves, and the glory of their name by deeds of arms. Hence it is we hear of the vast riches discovered in sepulchres, and of the frequent violation of the remains of the dead, in expectation of treasures, even for centuries after this custom had ceased. The third age was called *Christendoms-ald*, when the introduction of Christianity put a stop to the former customs.

From the remarks of the writers who have been already cited, we learn that the custom of burning, among the several nations ceased with paganism. It therefore fell first into disuse with the Britons; for it was for some time retained by the Saxons after their conquest of this kingdom; but was left off on their receiving the light of the gospel. The Danes retained the custom of urn-burial the last of any: for of all the northern nations who had any footing in these kingdoms, they were the latest who embraced the doctrines of Christianity.

With regard to the barrows or tumuli, so frequent through the country, we have no good criterion by which a correct judgment may be made of the people to whom the different species belong: whether they are British, Roman, Saxon, or Danish. Some of them consist of heaps of naked stones, such as those in the isle of Arran; in many parts of Scotland; and in some parts of Cornwall. Others are composed with stones and earth, nicely covered with earth and sod. And they were sometimes of earth only. The size of the tumulus usually marked the quality of the person: and the earth and sods, which were skimmed and paired from the surface round it, were lightly heaped up, and conferred on the deceased the last good wish, *Sit tibi terra levis*. The generality of these were round: but others were conical; and some, as on the plains of Wiltshire and at Rollwright, of an oblong form. Finally, other places of ancient sepulture consisted only of a flat area, encompassed like the druidical circles, with upright stones; and such were those of Ubbo, and of king Harald in Sweden. (Suecia Antiqua and Hodierna, tab. 315.)

The urns are also found placed in different manners, with the mouth resting downwards upon a flat stone, secured by another above; or with the mouth upwards, guarded in a like way.

Very frequently the urns are discovered lodged in a square cell composed of flags; and sometimes more than one of these cells are found beneath a *corn* or *tumulus*. Mr. Pennant even met with no fewer than seventeen, near Dupplin in Perthshire, disposed in a regular form. The urns found in these cells are usually surrounded with the fragments of bones that had resisted the fire; for the friends of the deceased were particularly careful to collect every particle; which they placed, with the remains of the charcoal, about the

urns, thinking the neglect of it the utmost impiety. (Pennant's Tour in Wales, loc. cit.)

The introduction of Christianity made a great alteration in the mode of burying the dead. Cremation ceased. The believing Romans betook themselves to the use of sarcophagi. The Romanized and converted Britons would naturally do the same. The Saxons as the successors of the Britons inclined from the very first to adopt their practices. And after the arrival of St. Austin in 596, and the consequent conversion of the nation, coffins, as well as the mode of placing the body to the east, universally took place. The oldest instance of a coffin that we know of in the Saxon times, was that of Etheldreda in 695 (Sep. Mon. I. xxvii.); and from this time downward, stone coffins have been continually discovered in every part of England. They may be regularly traced among us from the ninth century to the reign of Henry III.: and in some cases to that of Henry VIII. (Gent. Mag. 1759. p. 66.)

In the Norman times it was the custom to bury monks in the bare ground. Warin, the twentieth abbot of St. Albans, in 1195, ordered that they should be buried in stone coffins as more decent. (Matt. Paris, vit. ab. Albani p. 95.)

Among the primitive Christians burying in cities was not allowed for the first 300 years, nor in churches for many ages after; the dead bodies being first deposited in the atrium or church-yard, and porches, and porticoes of the church. On the introduction of Christianity into this country, a regular form of disposing of the dead bodies took place. The altar in the first Christian basilic was placed in the east of it, under a window, to receive the first advantage of light, or in conformity with what is said of our Lord's ascension. The people for greater regularity in worship were taught to look towards the altar; and the dead for a similar reason, were buried with their faces the same way; except the priests who were ordered by the same authority to face the congregation. The reason alleged by Gregory the Great for burying in churches or in places adjoining to them, was that their relations and friends, remembering those whose sepulchres they beheld, might hereby be led to offer up prayers for them. Hence too that striking and solemn address which marked the epitaphs of the monkish ages: *Orate pro anima miserrimi peccatoris*. Gregory's reason was afterwards transferred into the body of the canon law. To this superstition, and the profit arising from it, we may ascribe the original of church-yards. In the eighth century, the people began to be admitted into them, and some princes, founders, and bishops, into the church. The practice, first introduced into the Romish church by Gregory the Great, was brought over here by Cuthbert, archbishop of Canterbury, about the year 750: and the practice of erecting vaults in chancels and under the altars was begun by Lanfranc, archbishop of Canterbury, when he had rebuilt the cathedral there, about 1075. From that time the matter seems to have been left to the discretion of the bishop.

It was remarked to the writer of the present article by a learned antiquary, who is now no more, that in ancient times in this, and perhaps in other countries, then Roman Catholic, interment was never practised on the north side of the church. An opinion prevails that it was left for malefactors, for the unbaptized, for suicides, and for such as had incurred the greater censure of the church: and common observation will confirm the fact, at the present moment, that many more graves occur on the south than on the north sides of our churches. An extract from a letter

of Mr. Samuel Denne (the gentleman above alluded to) affords a curious illustration of what has been asserted. "There is reason to believe that fifty years ago the north side of the church-yard of Wilmington (in Kent), might be unoccupied by corpses; and in 1733, on digging a grave to the north of John Chapman's head-stone, for the interment of Richard Harman of Stonehill, not a human bone was found, nor were there any marks of the ground's having been before moved. But in 1745 and 1746, when the hospital of the regiments of infantry encamped upon Dartford-beath, was in the mansion house formerly belonging to the Langworth family, 35 soldiers who died in the hospital were buried in this spot.

"On opening the ground for the interment of one of them, midway between the wall of the church, and the fence of the church-yard, and about ten feet to the west of Mr. Fowke's tomb, John Woodmansey, the parish clerk, discovered an earthen pot containing money, of silver. The quantity was not known, nor does any attention seem to have been shewn to the date of the pieces last coined. In consequence of this omission there is an ignorance of one circumstance that might nearly have ascertained in which national commotion this treasure was concealed. It is, however, an obvious remark that the owner of it thought this quarter of the church-yard a very secure place, which adds weight to the opinion, I have already hinted, that the parishioners of that age had an insuperable objection to the burying of their relations and friends behind the church."

In regard to the rites of burial as they are practised in the more distant quarters of the globe, our observations will be few. In *Japan*, *Peru*, *Pegu*, *Mexico*, *Tartary*, *Siam*, and the *Great Mogul's dominions*, the dead are burned: and for people of superior consideration the fires are made with aromatic woods, gums, balsams, and oils. In *China*, we are told it was formerly the custom to bury slaves with emperors and princes, and sometimes also their concubines alive; but this cruel practice has given way, in modern times, to the more harmless one of burning representations of their domestics in tin foil, cut into the shape of human beings, and of placing their statues in wood or stone upon their graves; this seems to be the remain of the Scythian custom which has been already quoted from Herodotus. The last remains of a relation are interred with all the honours that the family can afford. (Barrow's Travels in China, p. 483.)

Among the *Birmans* the deceased is burnt, unless he is a pauper, in which case he is either buried or cast into the river, as the ceremony of burning is very expensive. When the pile has been reduced to ashes, the bones are gathered and deposited in a grave. Symes's Ava, p. 314.

With every Ferent tribe among the *Hottentots*, we are assured, the funeral ceremonies are alike. The deceased is thrust either naked, or with his pelisse on, into a hole in the earth or subterraneous passage, where the body usually becomes the prey of some wild beast: though the relations generally thrust brush-wood or bushes into the aperture of the hole or passage. (Sparman's Voyage to the Cape of Good Hope, i. 358.) Another custom of a more horrid nature is likewise related on the same authority; Sparman says, that it is a common practice, in case of the mother's death, to inter children at the breast alive. In *New South Wales*, the dead are burned, afterwards deposited in the ground, and a funeral hillock raised upon the ashes. (Hunter's Voyage to New South Wales, p. 64.) Lastly, we shall mention, the custom of burial among the *South Sea Islands*. At Ota'eite the inhabitants bury none in the Morai, but those offered in sacrifice, or slain in battle, or

the children of chiefs which have been strangled at the birth: An act of atrocious inhumanity too common. When a person of eminence dies, even if a child of the superior class, he is preserved and not buried, unless he died of some contagious or offensive disease. They take out the viscera, and dry the body with cloth, anointing it within and without with the perfumed oil, and this is frequently repeated. The relations and friends, who are absent, perform their part of the funeral rites at their arrival, each female presenting a piece of cloth to the corpse; and they continue to dress and decorate the body as if alive, and to furnish it with provisions, supposing that the soul which hovers round receives satisfaction from such marks of attention; they therefore not only take care of it thus, but repeat before it some of the tender scenes which happened during its life time. While any offensive smell remains they anoint the corpse with sweet-scented-oil, and surround it with garlands of flowers. A dead chief is usually carried round the island to the different districts where he had property, or where his particular friends reside; and the funeral ceremony repeated: but after a tour of some months, he is brought to rest at the place of his usual residence. Some bodies are preserved like dried parchment; others, when the flesh is mouldered away, are burned. (See the First Missionaries Voyage, p. 363, 364.)

By our common law, the granting of burial within the church is the exclusive privilege of the incumbent: except in cases where a burying place is prescribed for as belonging to a manor-house. (Gibson, 453.) The church-wardens, by custom, have, however, a fee for every burial there, by reason the parish is at the expence of repairing the floor. (Watson's Clergyman's Law, cap. 39.)

By the statute, 30 Car. 2. ft. 1. c. 3. for the encouragement of the woollen manufactures, and prevention of the exportation of money for the importing of linen, it is enacted, that no corpse of any person shall be buried in any shirt, shift, sheet, or shroud, or any thing whatsoever made or mingled with flax, hemp, silk, hair, gold, or silver, or in any stuff or thing, other than what is made of sheep's wool only; on pain of 5l. And an affidavit shall be made for this purpose either to a magistrate or the officiating minister.

By the canons of the church (Can. 68.), no minister shall refuse or delay to bury any corpse that is brought to the church or church-yard (convenient warning thereof being given him before) except the party deceased were denounced excommunicated *major excommunicatione*, for some grievous and notorious crime, and no man able to testify of his repentance. There were anciently other causes of refusal, particularly of heretics, against whom there was an especial provision in the canon law, that if they continued in their heresy they should not have christian burial: though no instances of its enforcement occur subsequent to the period of the reformation. They who had not received the holy sacrament, at least at Easter, were excluded from Christian burial by a law of the Lateran council, which became afterwards a law of the English church. In like manner, persons killed in duels, tilts, and tournaments. But, at this day, these prohibitions are restrained to the excommunicate, the unbaptized and suicides.

BURIAL, *Christian*, is often used to denote that which is performed in holy ground, and with the usual service or ceremonies of the church.

BURIAL is also used to denote the dues paid for interment, especially to the minister. The burial fee paid to the priest on opening the grave, was called by our Saxon ancestors *soul-fee*. Phil. Trans. N° 189.

BURIAL of *an aſi*, *aſni ſepultura*, an ignominious kind of burial out of holy ground, under the gallows, or in a highway, where ſeveral roads meet, and performed by public hangmen, or the like. Such is that of ſuicides, excommunicated perſons, &c. ſometimes denominated canine burial, or burial of a dog.

In the middle age we alſo find mention of a peculiar kind of burials, called **IMBLOCATION**, praſtiſed on the bodies of perſons excommunicated. Du Cange.

BURIAL of the *crucifix*, *Sepultura crucifixi*, denoted a representation of the burial of Chriſt, anciently performed annually in churches on the day of the Paſſecue. Du Cange.

BURIALS, in computations of mortality, denote deaths, and ſtand oppoſed to births. In this ſenſe, we have eſtimates of the burials in Brandenburg, in Frankfort, Breſlaw, &c. Phil. Tranſ. N^o 261. 269. and 176.

By a ſtatute under king Charles II. a register is to be kept in every pariſh, of all perſons buried within the ſame, or at the common burial-places thereof. Stat. 33 Car. II. c. 3. See **MORTALITY**.

BURIAL is alſo uſed for the incloſing of vegetable or mineral bodies in the ground, for divers purpoſes. Lord Bacon gives divers experiments of burying fruits, &c. for preſervation and conſervation, and to give nourishment to their reſpective trees. Works, tom. iii. p. 80.

Some commend burials in the earth, others in wheat, to ſeſon timber when ſirit ſelled, and to make it of more durable uſe. Cæmets ſometimes bury their cements. The Chineſe are ſaid to bury their porcelain, to give it the greater beauty.

BURIANA, in *Geography*, a town of Italy, in the territory of Sienna, near the lake of Caſtiglione; 16 miles S. of Montieri.

BURIAS, or **BURIS**, one of the Manillas or Philippine Iſlands, ſouth of Luzon, about five miles in compaſs, inhabited by a few tributary Indians, who are comprized in the pariſh of Maſbate, which is another larger iſland ſouth of it, and not far diſtant from Ticao. N. lat. 12° 30'. E. long. 122° 0'.

BURICH. See **BUDERICH**.

BURICH, is alſo a town of Germany, in the circle of Scabia, and margraviate of Baden-Durlach: five miles from Philipſburg.

BURIDAN, **JOHN**, in *Biography*, a celebrated ſchoolman of the 14th century, was a native of Bethune, and became profeſſor in the univerſity of Paris, and, as ſome ſay, regent in 1320. Avenſtine relates, that he was a diſciple of Ockam, and being attached to the ſect of the Nominals, was obliged by the prevalence of that of the Realists to quit Paris, and to remove to Germany, where he founded the univerſity of Vienna. He wrote "Commentaries on Ariſtotle's Logic, Ethica, and Metaphyſics;" but he has been principally remarkable on account of the ſophiſm or argument, commonly called "**Buridan's Aſs**." This ſeems to have been introduced for the purpoſe of illuſtrating the doctrine of that neceſſity of yielding to impreſſions of the ſenſes under which beaſts are placed, and in which they are ſuppoſed to differ from man, who poſſeſſes free-will, or an internal ſelf-determining power. With this view, Buridan feigned an hungry aſs, placed between two meaſures of oats, in ſuch a manner, that each made exactly the ſame impreſſion on his ſenſes; in which caſe, for want of a power of chuſing one rather than another, he muſt die of hunger. The term "**Buridan's Aſs**," has been ſince proverbially uſed to denote difficulty and hesitation in determining between two objects. Gen. Dict.

BURIE, in *Geography*, a town of France, in the Lower Vol. V.

Charente, and chief place of a canton, in the diſtrict of Saintes; the place contains 1510, and the canton 10,283 inhabitants; the territory comprehends 127½ kilometres, and 11 communes.

BURIGNY, **N. LEVESQUE DE**, in *Biography*, an eſtimable man of letters, was born at Rheims in 1691, and devoting himſelf to literary purſuits, acquired univerſal reſpect for the mildneſs and ſimplicity of his character. He was a member of the Pariſian academy of belles lettres; and prolonged his life, with the exerciſe of his faculties, to his 94th year. His works are "A Treatiſe on the Authority of the Popes," 1720, 4 vols. 12mo. "History of Pagan Philoſophy," 1724, 12mo., and 1754; "General History of Sicily," 1745, 2 vols. 4to.; "A Tranſlation of Porphyry on Abſtinence from Fleſh," 1747, 12mo.; "History of the Revolutions of Conſtantinople," 1750, 3 vols. 12mo.; "The Life of Grotius," 1754, 2 vols. 12mo.; "of Eraſmus," 1757, 4 vols. 12mo.; "of Boſſuet," 1761, 12mo.; "of Cardinal du Perron," 1768, 12mo.; all in French. His works, which in their general character are correct, but diſuſe and languid, are eſteemed as valuable collections of authentic facts. Nouv. D. & Hist.

BURIS, in *Surgery*, a name given by Avicenna, and ſome other old authors, to a ſcirrhous hernia, cauſed by a hard abſceſs.

BURKA, in *Geography*, lies in the iſland of Angra, in the gulf of Baſſora, and has a ſpacious harbour, with plenty of water. See **ANGRA-Iſland**.

BURKE, **EDMUND**, in *Biography*, was born in Dublin, on the firſt of January, 1730. His father was an attorney of the Proteſtant perſuaſion. The ſon was placed, during the early part of his education, under the care of Abraham Shackleton, a Quaker ſchoolmaſter of conſiderable merit, for whom his illuſtrious pupil entertained ſo large a ſhare of affection through life, as never to omit paying him an annual viſit of gratitude and reſpect, during a period of forty-years. From Ballymore near Carlow, the reſidence of Shackleton, Mr. Burke was removed, at the age of ſixteen, to Trinity College, Dublin. It is underſtood that he was more attentive to the inſtructions of his country ſchoolmaſter, from whom he early derived much of his multifarious knowledge, than to the more regular diſcipline of tuition, inſtituted by the univerſity. He gained no prize; but he obtained his ſcholarſhip, during the ſecond year of his reſidence, which proves him at leaſt not to have been deficient in claſſical attainments; for of ſuch are that honour and emolument the reward. He was contemporary with Goldſmith; but it does not appear that any friendſhip commenced between theſe two great men, till after the poem of the "Traveller" had eſtabliſhed Goldſmith's reputation. There is no foundation whatever for the opinion, that Burke was bred a Catholic; and it ſeems now generally agreed, that he did not finiſh his ſtudies at St. Omer's. He was a candidate for the profeſſorſhip of logic at Glaſgow, but was too late in his application. On this diſappointment, he repaired to London in 1749, after having taken his bachelor's degree, and entered himſelf a member of the Temple, with a view of being called to the bar.

At this time, the narrowneſs of his finances reduced him to the neceſſity of writing for the periodical papers; to which, he contributed eſſays on literary and political topics: but though the ſphere in which he moved was not that of pleaſure and faſhion, he procured an introduction to the celebrated Mrs. Woffington, the aſtreſs, in whoſe ſociety he paſſed many of his leiſure hours. The ſeverity with which he applied himſelf both to compoſition and ſtudy, having conſiderably affected his health, Dr. Nugent was called in,

who removed him from the inadequate accommodations of the Temple to the comforts of his own house. The attention of the family, and the particular kindness of Miss Nugent, led to a matrimonial connection, in which Mr. Burke's expectations of domestic happiness were fully answered.

Mr. Burke's first acknowledged publication was, "A Vindication of natural Society; or a View of the Miseries and Evils arising to Mankind, from every Species of artificial Society;" written in imitation of lord Bolingbroke, for the purpose of attacking ironically that writer's philosophy, and exposing its injurious consequences. It did not meet with the reception which has since been thought to have been justly due to its merit as a composition.

He was not however discouraged by this failure from publishing his "Essay on the Sublime and Beautiful," which had been composed prior to the "Vindication," but reserved for the advantage of making a first appearance under cover of a well-known and admired character. Both these works came out in 1756.

Though there was no name to the "Inquiry," the first edition was sold within the year, and a second published in 1757, with an "Introductory Discourse concerning Taste." The applause which attended this performance was not temporary, nor the connections consequent on it without permanent advantage. It procured him relief from his pecuniary embarrassments, and an easy introduction to the circles of the first rank and abilities. Among the first who sought his acquaintance, were Dr. Johnson and sir Joshua Reynolds, to whom he has been supposed to have furnished the composition of the "Discourse to the Royal Academy." Much has been said on the subject; but there seems no reason for depriving the late illustrious president of the fame attached to an excellent writer, as well as an original and accomplished artist.

It was Mr. Burke's intention to have controverted the theories of Berkeley and Hume: he then thought of rivaling the historic labours of the latter in "Memoirs of his own Times;" for this purpose, he had made himself master of English history, especially since the revolution; and the project ended in the establishment of Doddsley's "Annual Register," a very valuable work, of which he had the principal direction from 1758 to 1789.

In 1761, he accompanied "Single-speech Hamilton" to Ireland. This latter gentleman made one very excellent speech in the English, and one more in the Irish house of commons; and Mr. Burke has been said to have been the composer of both these speeches, but probably with as little reason as in the case of sir Joshua's discourses. On Mr. Burke's return from Ireland, with a pension of 300l. per annum, it was no longer necessary to write for periodical publications. He, however, contributed occasionally to the "Public Advertiser," where the excellence of his writings introduced him to the notice of the marquis of Rockingham, while Mrs. Woffington recommended him to the duke of Newcastle. He accordingly became private secretary to the marquis, at the instance of Mr. Fitzherbert, and member for Wendover on lord Verney's interest, and thus commenced his political career.

In February 1764, was founded that club, which afterwards became distinguished by the title of the *Literary Club*. Sir Joshua Reynolds was the first proposer, and Johnson acceded to the plan, in the hope of enlarging his circle, and recovering the opportunities for conversation, which he had lost by the dissolution of the meeting in Ivy-Lane. The original members of the literary club were, besides the two founders, Mr. Burke, Dr. Nugent, Mr. Beauchamp, Mr. Langton, Mr. Chamier, sir John Hawkins, and Goldsmith.

They met at the Turk's Head, in Gerrard street, Soho, on every Monday evening through the year.

About the time of Mr. Burke's entrance on public life, men's minds were equally agitated by the measures of government respecting Mr. Wilkes, and the growing discontents in America. Of the two parties in opposition, that of Mr. Pitt having insisted on very peremptory conditions, respecting court favourites and secret advisers, the duke of Newcastle, of whose party, on account of his age and infirmities, the marquis of Rockingham was considered as the leader, closed with the terms on which a new administration was proposed. Mr. Burke now, with a facility to which he was too prone, seceded from his old friendship with Mr. Hamilton; but he is said, at the same time, to have resigned the pension procured through that gentleman's interest. From this time he became a professed party-man; a bondage to which he was in some measure compelled, by laying himself under pecuniary obligations to the marquis of Rockingham. The nature and extent of the favour he received have been variously represented; but it is certain, that a considerable part, if not the whole of the purchase-money for his villa at Beaconsfield, of which he now took possession, was promised either as a loan or a gift by the marquis.

On his entrance into parliament, he took infinite pains to qualify himself for the discharge of his new duty. Among other sources of improvement, he disdained neither the writings of the fathers, the subtleties of the school divines, the perusal of precedents and records, nor the oratorical contests of the Robin-Hood society. His principal opponent at the Robin-Hood was a baker, of whom Goldsmith said, that "Nature intended him to have presided in the court of chancery." He procured his seat in 1765, and his first speech was on the stamp act. It attracted the notice, and obtained the applause of Mr. Pitt: Mr. Burke was principally consulted by the Rockingham administration on the affairs of America, and the middle course was adopted in conformity with his advice. The weakness of the party, and the feebleness of their policy, soon brought the ministry to a close; and its dissolution was hastened by Mr. Burke's project of a Canadian constitution, which lord Northington condemned in the most angry and contemptuous language. Mr. Pitt then made his own terms, as he thought, with the court. Mr. Burke had scarcely time to defend the conduct of his friends in print, before their successors resigned, and the parliament was dissolved. Mr. Burke was re-elected for Wendover, the Grafton ministry came into power, and Mr. Burke was the principal orator of opposition. He was adverse to the expulsion of Wilkes, and made an able speech to prove his subsequent eligibility, though he disliked the general character of the man. About this time, the letters of Junius began to appear; and on this occasion, the public have not lost sight of their propensity to attribute all able composition to Mr. Burke. There seems to be not the least foundation for supposing him to have been their author. He, however, gave his opinions and principles at considerable length, in his "Thoughts on the Causes of the present Discontents." The leading features of this pamphlet were, a pointed invective against inner cabinets and secret influence, and a picture of what a house of commons ought to be. Those who seek in this work for proofs of political apostacy in later life, will not find the evidence so decisive as they expect. The remedies proposed were not those of democracy, but of a fellow-feeling to be established between the aristocracy and the people. As a proof that the views of the author did not even then rise up to the expectations of the whig-party in general, he was attacked by Mrs. Macaulay, as well as by the friends of the court.

While lord North was minister, the impetuosity of systematic opposition seems to have carried Mr. Burke's vindication of freedom further than was compatible with that fondness for ancient establishments, which always existed in his mind, and became so much stronger in the latter part of life. He took a distinguished part in the debates on the liberty of the press. During the whole of the American war, he uniformly opposed the minister with zeal and ability, and defended the people with warmth and energy. His habits during this period were those of sobriety and literary industry, as well as of parliamentary vigilance and exertion.

It is to the credit of both parties that political differences made no breach between Burke and Johnson. The latter, on taking leave of his host at Beaconsfield, wished him all the success on his canvas at Bristol, which "could possibly be wished him by an honest man."

The famous Bristol election took place in 1774, when Burke and Cruger, an American merchant, turned out lord Clare and Mr. Brickdale, the former representatives. So little assistance did Mr. Burke derive from Mr. Cruger's eloquence on the hustings, that the constant and only speech of the latter was, "I say ditto to Mr. Burke! I say ditto to Mr. Burke!"

It would exceed the limits of this article to detail Mr. Burke's controversy with Dean Tucker, on the part which he took on every great political question. It is necessary, however, to mention, that on the question of parliamentary reform, the Rockingham branch of opposition opposed the measure; and the duke of Richmond, lords Shelburne, Chatham, and Camden, Mr. Dunning, and Mr. Fox defended it.

The leading features of Mr. Burke's political conduct, while pay-master general in the Rockingham and Fox administration, was the adoption of the plan for economical reform, which had been rejected by the house of commons in 1780. It however underwent several modifications. The political convulsions which ensued on lord Rockingham's death are well remembered. The coalition, and the India bill were suggested and pushed forward with much ardour by Mr. Burke, and principally, if not entirely, produced that decline of popularity, which both himself and his friends experienced.

The event in which Mr. Burke stood most prominent before the public, in the interval between the formation of Mr. Pitt's ministry, and the French revolution, was the impeachment of Mr. Hastings. His speeches on this occasion were among the most splendid triumphs of his eloquence, though not among the most solid attestations of his judgment. They were marked by intemperance and exaggeration, apparently produced rather by the ambition of rivalling Tully in his eloquent and classical abuse, than arising from a sober examination of facts, or a serious conviction of guilt. The charges of avarice and malice have never been adequately supported, and can only be mentioned to be denied in grave and impartial biography.

Mr. Burke had never been remarkable for an even temper in the discussion of political questions: his irritability increased with his years, and his conduct became intemperate and violent. He injured the cause, and incurred the displeasure of his associates on the question of the regency, and burst asunder all the ties of friendship, as well as political connection, on the breaking out of the French revolution. That event, together with the conduct and opinions of Mr. Burke relating to it, is so recent, that it will be sufficient barely to enumerate his publications on the subject, with the single observation, that he seems from this time forward to have cherished his aristocratical principles into the most

inveterate bigotry, and to have negatived in turn every maxim of practical freedom, which he had formerly enforced. Still, however, it is to be hoped, that his measures, as a public man, may candidly be attributed to impetuosity of character, and ductility of imagination, rather than to any worse motives.

The celebrated "Reflections" were published in October 1790, which were first answered by Dr. Priestley, in vindication of his friend Dr. Price, and afterwards by Thomas Paine in his "Rights of Man."

The next publication of Mr. Burke was his "Second Letter to a Member of the National Assembly;" and the third, his "Appeal from the new to the old Whigs," in consequence of the publication from the whig club, declaring Mr. Fox to have maintained the pure doctrines of English whiggism.

In 1791, Mackintosh's "Vindiciæ Gallicæ" appeared, and Mr. Burke's principal publications afterwards were, his "Letter to Lord Fitzwilliam," and "Thoughts on a regicide Peace."

On the close of Mr. Hastings's trial, Mr. Burke retired from parliament; but his domestic comfort was irretrievably impaired, and his life probably shortened by the death of his son, in the year 1794. The father survived three years, which were principally employed in acts and schemes of benevolence to the French emigrants and their families. He retained his faculties in perfection to the last, and died without bodily struggle, or discomposure of mind, on the 8th of July, 1797.

The qualities of Mr. Burke's mind will be best exemplified by a few of his opinions on literary subjects. Virgil and Lucretius were his favourite Latin poets. He preferred the satires and epistles of Horace to the odes. He esteemed the Greek historians and orators more highly than the Latin. The delineation of ancient manners and characters in Homer delighted him; and he read the *Odyssæ* more frequently than the *Iliad*. Among the dramatic writers, he gave the preference to Euripides over Sophocles. The modern authors with whom he was most pleased, were Bacon, Shakspeare, Addison, Le Sage, and Fielding. He thought Richardson far inferior to the latter: he did not like Swift, and had a very poor opinion of Gay; particularly of his "Beggars' Opera."

He paid much attention to farming, and displayed taste in his improvements at Beaconsfield. He was one of the most successful gentlemen farmers, and constantly supplied his family in town from the produce of his own estate. He was particularly hospitable, and indulged in the pleasures of the table, but never to excess. He was liberal to common beggars; and ascribed the ordinary principle of encouraging them, rather to avarice than policy.

As a speaker, Mr. Burke was characterised by a superfluity of ideas and images, often too abundant to be applied with propriety, or selected and arranged with judgment. Early in life, he was remarkably careful of his language, and revised his speeches with attention. Latterly, he became blameably diffuse and extravagant, though his ingenuity never failed. He was particularly ambitious of excellence in the management of his voice and action; yet, after all, the former was but harsh, and the latter forcible, but strained.

His "Essay on the Sublime and Beautiful" has placed him in the highest class of writers on subjects of taste and criticism; nor can his whole character be summed up with so much strength, conciseness, and truth, as in the memorable words of Johnson: "Burke is one, with whom, if you were to take shelter from a shower under a gate-way, you

would say you had been in company with the most extraordinary man you had ever seen."

BURKE, in *Geography*, a county of America, in Morgan district, North Carolina, containing 9799 inhabitants, of whom 776 are slaves. It is about 80 miles long, and 40 wide. The lands between the mountains, and on the rivers, are very fertile. Its capital is Morgan-town.

BURKE is also a county in the lower district of Georgia, containing 9506 inhabitants, of whom 2967 are slaves. Its chief towns are Louisville and Waynesborough.

BURKE is also a township of Caledonia county, in the state of Vermont; about 15 miles west of Upper Ammonoosock river.

BURKEN, a town of Germany, in the circle of the Lower Rhine and electorate of Mentz; 27 miles E. of Heideberg.

BURKERSDORF, a royal town, with a citadel, of Austria, in the circle below the forest of Vienna, lying on the rivulet of Wien.

BURKHAUSEN, a well-built town of Germany, in the circle of Upper Bavaria, seated on the Salz, with a castle on a hill, the capital of a regency, and having four churches, and a Jesuits' college; 26 miles N. N. W. of Saltzburg.

BURKHEIM, or PURKHEIM, a town of Germany, in the circle of Bavaria, and duchy of Neuburg; 7 miles W. S. W. of Neuburg.

BURKI, a town of Poland, in the palatinate of Kiev. N. lat. 48° 50'. E. long. 32° 6'.

BURKITT, WILLIAM, in *Biography*, was born at Hitcham, in Northamptonshire, in 1650, and, after a previous grammatical education, was admitted, at the age of 14 years, into Pembroke-hall in the university of Cambridge. Upon taking his degree, he quitted the university, and became chaplain in a gentleman's family. His first settlement, after his ordination by bishop Reynolds, was at Milden in Suffolk, where he continued to officiate for 21 years, first as curate, and afterwards as rector, and where he was much esteemed as a plain, practical, affectionate preacher. In 1692 he exchanged this situation for the vicarage of Dedham in Essex, where he died in 1703. His character was distinguished for piety and charity. He was active in making collections for the relief of the French protestants in 1687, &c. and in procuring the settlement of a worthy minister in Carolina: and by his last will he provided for the accommodation of a lecturer at Dedham. He has been principally known as a writer by his "Commentary on the New Testament."

BURKUNSTADT, in *Geography*, a town of Germany, in the circle of Franconia, and bishopric of Bamberg, seated on the White-Main.

BURLAMAQUI, JOHN-JAMES, in *Biography*, an eminent civilian, was descended of a noble family, originally from Lucca, and born at Geneva in 1694; where he became honorary professor of jurisprudence in 1720. After traveling into France, Holland, and England, he commenced the exercise of his functions, and rendered his school famous and flourishing. One of his pupils was prince Frederic of Hesse-Cassel, who, in 1734, took him to his residence, and detained him there for some time. Upon his return to Geneva, he surrendered his professorship; and in 1740 entered into the grand council; and, as a member of this illustrious body, he continued to serve his fellow-citizens till his death, in 1750. As a writer, he was distinguished less by his originality than by his clear and accurate method of detailing and illustrating the principles of others; among whom are Grotius, Puffendorf, and Barbeyrac. His works are, "Principles of Natural Law," 4to. Geneva, 1747, often

reprinted, translated into various languages, and long used as a text-book in the university of Cambridge; and "Political Law," 4to. Gen. 1751; a posthumous work, compiled from the notes of his pupils. Burlamaqui was much esteemed in private life; and respected as a lover of the fine arts, and a patron of artists. He had a valuable collection of pictures and prints; and a medal of him was executed by Daffier in a style of superior excellency. Nouv. Dict. Hist.

BURLATS, in *Geography*, a town of France, in the department of the Tarn, and district of Castres, 4 miles east of it.

BURLAW, or BYRLAW, *burlawa*, in *Middle Age Writers*, denotes country laws, or the laws concerning country affairs. Du-Cange. See BYE-LAW.

BURLEIGH, in *Biography*. See CECIL.

BURLESQUE, a jocular kind of poetry, chiefly used in the way of drolery, either to excite laughter merely, or to provoke derision and ridicule. Of the former kind is "Virgil travestie," which degrades a grave subject, by a certain colouring, so as to be risible; and of the latter, the "Lutrin" of Boileau, which lays hold of a low and trifling incident to expose the luxury, indolence, and litigious temper of a set of monks. This kind of burlesque produces effect by elevating the style far above the subject, and yet affecting to consider it as of the utmost dignity and importance. In a burlesque poem, such as the Lutrin, the Dispensary, and Hudibras, machinery may be employed with greater advantage than in any other species of poetry; and the more extravagant the machinery in a ludicrous poem, the greater is the entertainment which it affords. "Burlesque," says Mr. Shenstone, (Works, vol. ii. p. 182. 3d edit.) "may, perhaps, be divided into such as turns chiefly upon the thought, and such as depends more upon the expression; or we may add a third kind, consisting in thoughts ridiculously dressed in language much above or below their dignity. The Splendid Shilling of Mr. Philips, and the Hudibras of Butler, are the most obvious instances. Butler, however, depended much upon the ludicrous effect of his double rhymes." Dr. Johnson, in his life of Butler (Lives of the Poets), after observing, that, "burlesque consists in a disproportion between the style and the sentiments, or between the adventitious sentiments and the fundamental subject," adds, that this, "like all bodies compounded of heterogeneous parts, contains in it a principle of corruption. All disproportion is unnatural: and from what is unnatural, we can derive only the pleasure which novelty produces. We admire it a-while as a strange thing; but, when it is no longer strange, we perceive its deformity. It is a kind of artifice, which by frequent repetition detects itself; and the reader, learning in time what he is to expect, lays down his book, as the spectator turns away from a second exhibition of those tricks, of which the only use is to shew that they can be played."

F. Vavassor maintains, in his book "De Ludicra Dictione," that burlesque was absolutely unknown to the ancients; against the opinion of some others, that one Raintovius, in the time of Ptolemy Lagus, turned the serious subjects of tragedy into ridicule; which, perhaps, is a better plea for the antiquity of farce than of burlesque.

The Italians seem to have the justest claim to the invention of burlesque. The first author in this kind was Bernia; he was followed by Lalli, Caporali, &c. From Italy it passed into France, and became there so much the mode, that in 1649 appeared a book under the title of "The Passion of our Saviour, in Burlesque Verse." Thence it came into England; but the good sense of the English never adopted nor owned it, notwithstanding one or two have excelled in it.

BURLETTA,

BURLETTA, Ital. from *burlare*, to jest, be jocular, deride, turn to ridicule, in *Musie*. It is extraordinary that the term burletta, so common in speaking of comic operas, appears in no musical dictionary. Comic operas began by an *intermezzo*, a single act or scene, as an act tune between any two acts of a drama. See **OPERA BUFFA**.

BURLING of *Cloth*. See **CLOTH**.

BURLING *Iron*, an instrument used by the manufacturers of cloth, and borne in the arms of the company of weavers at Exeter.

BURLINGS' Rocks, in *Geography*, lie on the coast of Portugal, 14 leagues about N. N. W. from cape Rocque, commonly called the rock of Lisbon, and 18 leagues S. W. from cape Montage. Behind the Burlings are a good road and anchorage, under the great island before the Hermitage, and 10 fathoms water. N. lat. $39^{\circ} 20'$. W. long. $9^{\circ} 37'$.

BURLINGTON. See **BRIDLINGTON**.

BURLINGTON, a county of America, in New Jersey, extending across from the Atlantic ocean on the S. E. to Delaware river, and part of Huntingdon county on the N. W., in length about 60 miles, in breadth about 80. A great part of it is barren; but about three-eighths of it are under cultivation, generally level, and well-watered. It has 21,521 inhabitants, including 188 slaves.—Also, a city, the capital of the above county, under the government of a mayor, aldermen, and common council. The extent of the township is 3 miles along the Delaware, and a mile back; being about 18 miles N. E. of Philadelphia, and 11 S. W. from Trenton. The island, which is the most populous part, is about a mile each way; and included in 1803 282 houses, and 2256 inhabitants. The streets are commodiously spacious, and mostly ornamented with rows of trees. The town is opposite to Bristol in Pennsylvania, where the river is about a mile wide. Under the shelter of Muttinick and Burlington islands is a safe harbour, conveniently adapted for trade, but too near to Philadelphia to allow of much foreign commerce. Burlington was first settled in 1677, and has an academy and a free-school. Muttinick island belongs to the latter, and yields a yearly profit of 180*l*. This town has places of worship for the Friends, the Episcopalians, the Methodists, and Baptists. It has a market-house, a work-house, a free-school, and a gaol. Here are likewise a nail manufactory, and a brewery. N. lat. $40^{\circ} 5'$. W. long. 74° .

BURLINGTON, a township of America, in Otsego county, New York, divided by an act of the legislature in 1797 into two towns.—Also, a pleasant township, the chief in Chittenden county, Vermont, situate on the south side of Onion river, on the east bank of lake Champlain, and containing 815 inhabitants. The governor and patrons of the college of Vermont have selected this healthy and agreeable situation for a seminary, constituted for the education of young persons of all denominations. Burlington is 22 miles distant northerly from Vergennes, 122 from Bennington, and 332 from the city of New York. N. lat. $44^{\circ} 36'$.—Also, a new township in Middlesex county, Massachusetts, incorporated in 1759; about 12 miles N. of Boston.

BURLINGTON, or *Quinsiea Bay*, lies on the east side of lake Champlain, about 34 miles N. by E. from Crown point, 69 S. E. from lake St. Francis in St. Lawrence river, and 70 southerly from St. John's. N. lat. $44^{\circ} 22'$.

BURLO, a town of Germany, in the circle of Westphalia, and bishopric of Munster; 4 miles N. N. W. of Bielefeld.

BURMAH. See **BIERMAN Empire**.

BURMANN, FRANCIS, in *Biography*, a famous theological professor, was born in 1628 at Leyden, where he re-

ceived his education; and after having for some time officiated as minister at Hanau, and as agent of the college at his native place, he was invited to the chair of theology at Utrecht. In this station he distinguished himself by his lectures and writings. He died in 1679. His publications are "Commentaries on the Pentateuch and Historical Books of the Old Testament," written in Dutch, and printed at different times: "An Abridgment of Theology," 2 vols. 4to. in Latin; "Exercitationes Academicæ," 2 vols. 4to., and some controversial pieces. Moreri. Gen. Biog.

BURMANN, PETER, an eminent philologist, was the son of the preceding, and born in 1668 at Utrecht, where he was educated, and where he attended the lectures of the learned Grævius. Devoting himself to the profession of the law, he studied for some time at Leyden, and in his 20th year took the degree of doctor of laws. Having gained reputation in the exercise of his profession, he was, in 1696, appointed professor of eloquence and history in his native city, and afterwards of Greek and politics. From this time he devoted himself wholly to literature, and became one of the most laborious commentators and editors of the age. He published, with his own notes and those of other critics, Velleius Paterculus, Quintilian, Valerius Flaccus, Virgil, Ovid, Suetonius, Lucan, Phædrus, and Petronius, and also a collection of the minor Latin poets, in 2 vols. 4to. He also wrote a treatise "On the Taxes of the Romans," edited several learned works, with prefaces and notes, and was the author of various dissertations, discourses, and pieces of Latin poetry. As a commentator, he was distinguished more by his industry and erudition than for his genius and taste; and though he is deficient in the elucidation of obscure and difficult passages, he has accumulated a mass of materials from which other grammarians and critics may derive great advantage. He was twice rector of the university, and thrice private secretary to the academical senate; and to his other honours was added the professorship of the history of the United States. He died in 1741. Moreri. Gen. Biog.

BURMANN, JOHN, M. D. of a noble and wealthy family, and of no mean literary acquirements, employed much labour and expense in editing various botanical works, particularly those giving accounts of plants procured from the Indies. In 1736 he published an edition of Weinman's Herbal, to which he added several plates with African plants. His next publication, in which he had the assistance of Lionæus, then a young man, was the "Thesaurus Zeylanicus, exhibens Plantas in Insula Zeylana nascentes, Iconibus illustratus," 4to. 1737, taken from various travellers, with new descriptions and plates. The following year he was appointed professor to the botanical garden at Amsterdam, and soon after published "Rariorum Africanarum Plantarum, Decades Decem," 4to. principally from Witsen and Vanderstell, to which, however, he made several additions. He translated Rumphius's great work into Latin, which he enriched with valuable notes, and published under the title of "Everhardi Rumphii Herbarium Amboinense, continens plantas in ea, et adjacentibus Insulis repertas." His last labour was procuring engravings to be executed, from the drawings of American plants left by Plumier, to which he added descriptions, with the modern, and former names. His son.

BURMANN, NICOLAS LAWRENCE, following the steps of his father, took his degree as doctor of medicine at Leyden, in 1759, and published, for his inaugural thesis, "Specimen Botanicum de Geraniis," 4to. In 1768, at Amsterdam, "Flora Judica, accedit series Zephytorum Judicorum, nec

non prodromus Floræ Cappenfis." Haller. Bib. Botan. Eloy. Dict. Hist. Gen. Biog.

BURMANNIA, in *Botany* (in honour of John Burmann M.D. professor of botany at Amsterdam, author of *Theaurus Zeylanicus*, &c.). Linn: 397. Schreb. 342. Willd. 606. Juss. 50. Clafs and order, *hexandria monogynia*. Nat. Ord. *Coronarie*, Linn. *Bromelia*, Juss.

Gen Ch. *Cal.* perianth long, one-leaved, prismatic, coloured, with three longitudinal, membranaceous angles; the mouth trifid, small. *Cor.* petals three, ovate, oblong, placed in the mouth of the calyx, very minute. *Stam.* filaments six, very short; anthers in the mouth of the calyx, placed two by two, separated by a reflexed joint. *Pist.* germ superior, cylindrical, half the length of the calyx; style thread-shaped, the length of the corolla; stigmas three, obtuse, concave. *Peric.* capsule covered by the calyx, cylindrical, three-cornered, three-celled, three-valved, opening at the angles. *Seeds* numerous, very small.

Ess. Ch. *Cal.* prismatic, coloured, trifid; angles membranaceous. *Petals* three. *Capsules* three-celled, straight. *Seeds* minute.

Obf. La Marck describes the calyx as having its border divided into six segments, the three inner ones small, with the shape of petals. Jussieu, in conformity with the principles of his system, with respect to all monocotyledinous plants, had before adopted the same idea. He styles it a very singular genus, allied to no other, except perhaps to *Hypoxis*.

Species, 1. *B. disticha* Linn. (La Marck. Illust. Pl. 225.) "Spike double." *Root* perennial, fibrous, small. *Stem* six or seven inches high, upright, straight, simple. *Root leaves* eight or nine, grass-like. *Stem leaves* short, acuminate, alternate, sheathing. *Spikes* divaricated. *Flowers* on short peduncles, in a single row on the upper side of each spike, erect, bluish, permanent; bractes awl-shaped. La Marck. Native of Ceylon in watery places. 2. *B. biflora*. "Flowers two." Linn. Smaller than the preceding. *Root* strong and fibrous. *Stem* naked, almost capillary. *Root leaves* very straight. *Flowers* one or two at the summit of the stem, purple. A native of marshes in Virginia. La Marck.

Both these species were cultivated by Mr. Miller, in 1768, but they are difficult to preserve in gardens, for as they will not thrive when planted in dry ground, they must be planted in pots plunged in troughs of water, so as to cover the surface of the mould about three inches. The troughs in which the first sort is planted must be constantly kept in a warm stove. The other should be placed in a green-house in winter, but in summer may be exposed to the open air. With this management they will sometimes bear flowers. Martyn's Miller.

BURMANNIANA, in *Entomology*, a species of *PHALÆNA* (Tortrix) of a large size. This inhabits Surinam. The wings are pale, with four black costal spots on the anterior pair. Gmel. &c.

BURN, in *Surgery*, is a lesion of the animal body, occasioned by the application of heat in a solid form. It differs from a SCALD, only inasmuch as the latter is produced by the application of heat in a fluid form.

The consequences of a burn are more or less serious, in proportion to the extent and depth to which the ignited substance produces its effects. An extensive burn in an irritable person will sometimes occasion death, although the subjacent parts be not deeply injured; and a deep burn, of small extent, may likewise prove fatal, according to the structure or importance of the part affected.

The first effects of a burn are to cause pain and inflam-

mation; presently afterwards, the exhalant arteries, being excited to action, will effuse a quantity of serum under the skin, and raise the cuticle like a blister: if the burning acts deeply, it will kill and decompose the subjacent flesh, so as at length to produce an eschar.

In treating burns, we must attend to the existing symptoms. If the skin remains whole, and the accident be recent, we should immediately have recourse to very cold applications, with the view of discussing inflammation and abating pain. For this purpose, ice-water, lime-water, a solution of acetated ceruse, or Goulard's extract of lead, properly diluted, may be used with great freedom. Spirituous applications, which produce cold on evaporating, have been recommended with the same intention. The common people, with good reason, advise mashed potatoes, or turnips, to be applied cold, as a poultice. But the above means are only proper in the beginning, and where the skin is not removed, so as to leave an excoriated or raw surface. In conjunction with these antiphlogistic remedies, we may abate pain and procure rest by the liberal exhibition of opium; at the same time interposing laxative medicines, and enjoining absolute repose to the injured part.

The plan, however, must be somewhat different in cases of deep and destructive burns, where suppuration, ulceration, or mortification, are likely to ensue.

In the second stage or degree of burns, where the mischief has penetrated rather deeply, but not below the common integuments, it is usual to apply to the part a dressing of soft ointment, which will not irritate or produce pain; such as the spermaceti ointment, saturnine cerate, elder ointment, or equal quantities of oil, and lime-water shaken together, and applied several times a day. The antiphlogistic regimen should also be observed, if the inflammatory symptoms run high.

But, when the nature of the case is very serious, and there is room to expect a gangrenous or sloughing ulceration, in consequence of the burn being very extensive, we must be cautious not to push the antiphlogistic treatment too far; nay, it may even be altogether inappropriate, and a stimulating or tonic course of remedies may be proper. Mr. Edward Kentish, of Newcastle, who has had much practice among the workmen in the coal mines, where explosions often occur, is of opinion that pure alcohol or oil of turpentine is the best local application at the beginning, and a cordial diet to support the patient's strength. Our own experience justifies that gentleman's plan, and especially in very deep burns, where sloughing proves inevitable. We sometimes, however, have found it necessary to mix equal parts of olive, or linseed oil with the turpentine, to prevent its giving unsufferable pain.

It is scarcely requisite to add, that in the event of gunpowder, or any other extraneous substance, being forced into the burned part, it should be gently washed away or removed with all possible care. If great tension arise in the part, we should occasionally employ warm emollient cataplasms and anodyne fomentations. When the vitality of a member has been totally destroyed, so that its use is irrecoverable, we may be compelled to amputate the limb. See MOXA, CAUSTIC, CAUTERY, HEAT, SCALD, and AMPUTATION.

BURN baking, or *Beating*, in *Agriculture*, the operation of cutting or paring off the surface of turf, and reducing it to ashes by means of fire. It is principally employed as a method of bringing into cultivation such waste and other lands as contain much coarse grass, or other vegetable productions on the surface. Where this is not the case, it can seldom probably be made use of to so much advantage. It

is in some districts termed *Burn-beating*; and also *Densfiring*, from Devonshire, a county in which it has been long practised. See *PARING* and *BURNING*.

BURN, heart. See *CARDIALGIA*.

BURNET, GILBERT, in *Biography*, an eminent English prelate and writer, was born at Edinburgh in 1643. His father was the descendant of an ancient family in the shire of Aberdeen, educated for the bar, esteemed for judgment and knowledge in his profession, and disinterested in the exercise of it. As to his religious principles he was a moderate episcopalian; and in the time of Cromwell lived in retirement, but after the restoration was appointed one of the lords of Session. His mother was exemplary for virtue and piety, and zealously attached to the Presbyterian discipline. Having received the first rudiments of education from his father, he prosecuted his studies in the college of Aberdeen, and made such proficiency, that when he was scarcely 14 years of age, he took his degree of Master of Arts, and became a student of civil law. But soon changing his purpose, he devoted himself to divinity; and at the age of 18, he was put upon his trial as a probationer, or expectant preacher. Declining, on account of his youth, to accept a good living which was offered him, he finished his education by means of the counsel and conversation of some eminent Scots divines, and, in 1663, visited the two English Universities, where he had an opportunity of intercourse with the most learned persons of that period. Having again refused ecclesiastical preferment in Scotland, he travelled into Holland in the following year, and after residing for some time at Amsterdam, he passed through the Netherlands into France, and made some stay at Paris. On his return to Scotland by way of London, he became a member of the Royal Society; and, in 1665, he received priest's orders, and was presented to the living of Saltown. Here he discharged the duties of his office with exemplary assiduity, and gained the esteem of the presbyterians, though he was the only clergyman in Scotland that used the liturgy of the church of England. At this time he incurred the resentment of the episcopal order, by drawing up a memorial of the abuses of the Scots bishops, copies of which he circulated among all the prelates of his acquaintance; but this conduct, on the part of a young man at the age of 23 years, gave such offence, that Sharp, archbishop of St. Andrew's, proposed to deprive and excommunicate him. Against this attack Burnet made a spirited defence, and Sharp proceeded no farther. In 1669 he accepted the office of theological professor in the University of Glasgow, and continued for four years and a half to perform the duties of it with singular diligence; exposing himself at the same time, by his moderation, to the ill-will of the zealots of both the episcopalian and presbyterian parties. His pamphlet, published this year, and entitled, "A modest and free Conference between a Conformist and Non-conformist," was well received by all candid persons, though it did not escape the censure of bigots. Notwithstanding the time and attention which he devoted to his public lectures, he was employed in arranging the papers of the Hamilton family, and compiling from them his "Memoirs of the Dukes of Hamilton;" and he was thus led to negotiate and conclude a reconciliation between the earl of Lauderdale and the duke of Hamilton. During his stay in London on this occasion, he was offered a Scots bishopric, which he refused. On his return to Glasgow, he married lady Margaret Kennedy, the daughter of the earl of Cassilis; who was distinguished by her piety and knowledge, and though inclined to the party of the presbyterians, was far from being a zealot, and had given evidence of her loyalty, even at the risk of her life,

during the usurpation of Cromwell. In 1672, Burnet published "A Vindication of the Authority, Constitution, and Laws of the Church and State of Scotland;" in which he defended the royal prerogatives of the crown of Scotland, and the establishment of episcopacy in that kingdom, against the principles of Buchanan and his followers. This publication drew upon him the censures of Dr. Hicke, whose calumnies he confuted, and occasioned some severe reflections of Dr. Swift, by whom he is charged with having altered his sentiments concerning the doctrines of passive obedience. Whereas the illegality of resistance, merely on account of religion, probably in opposition to the violent Scotch covenanters, is the point for which he contends. It seems, indeed, always to have been his opinion, that resistance could not be justified by single acts of oppression, and that it was not lawful till attempts were made to overturn the very basis of the constitution. In recompence for this acceptable service to the court, he was again offered a bishopric, with the promise of the first archbishopric that should become vacant; but he declined accepting this dignity. In the following year he visited London with the ostensible design of obtaining a licence for the publication of his "Memoirs of the Dukes of Hamilton," and, as it is said, with a secret purpose of withdrawing himself from state concerns, under a persuasion that popery was the prevailing interest at court. At this time, however, he was a favourite with his Majesty and the duke of York, and was nominated one of the king's chaplains in ordinary. In an interview with the king, to whom he was introduced by the duke of Lauderdale, he used all the freedom which, as he thought, became his profession. But suspecting the designs of the court party, he inclined to the opposition in the Scots parliament, and thus incurred the enmity of the duke of Lauderdale, who preferred accusations against him, which deprived him of the royal favour. As a measure of personal security, he resigned his professorship at Glasgow, and determined to settle in London; but upon his arrival there he was coldly received by the king, and struck out of the list of his chaplains. He was now considered as a sufferer for his principles, and, in 1675, having refused the living of St. Giles's, Cripplegate, which was offered him, he was appointed, by the recommendation of lord Holles, preacher at the Rolls, and he was soon after chosen lecturer of St. Clement's, where he acquired the reputation of a very popular preacher. In the course of this year he was repeatedly examined at the bar of the House of Commons with respect to the designs of Lauderdale, and obliged to communicate some particulars that had passed between himself and the duke in private conversation. The alarm that agitated the country at this time, occasioned by the progress of popery, induced Dr. Burnet to write "The History of the Reformation of the church of England;" the first volume of which appeared, in folio, in 1679, when the popish plot occupied the public attention: the publication of this work was highly acceptable, and the author received the thanks of both houses of parliament, which was an honour that had no precedent, and he was requested to complete it. Accordingly, in 1681, he published the second volume. The third volume, being a "Supplement" to the two former, appeared in 1714. This work, though it was attacked by many censorious critics, has been generally esteemed the most valuable of the author's performances, and contains a correct and ample account of the transactions to which it relates. It was well received abroad as well as at home, and very much contributed to advance the reputation of the author. Dr. Birch, in his *Life of Archbishop Tillotson* (p. 59.) observes, that this is

one of the most valuable historians in our own or any other language, and that the publication of it was of most seasonable service to the nation, amidst the alarms of popery. Dr. Apthorpe also says (see *Letters on the Prevalence of Christianity*), that Bishop Burnet, in his immortal history of the Reformation, has fixed the protestant religion in this country, as long as any religion remains amongst us; and the same learned writer calls him the English Eusebius. An incident occurred about this time which led to an interview between Dr. Burnet and the earl of Rochester, whose character as a person of wit and profligacy is well known. Having been requested to visit the unhappy female with whom the earl had had a criminal connection, in a dangerous illness, he treated her in a manner which rendered this lord desirous of forming an acquaintance with him. Accordingly alarmed by his situation and prospects in the closing scene of life, he invited and encouraged the visits of Dr. Burnet, and the result of many conferences that passed between them on religious subjects was the earl's conversion to the Christian faith, and his sincere repentance. Of their mutual intercourse, and the effects produced by it, we have an interesting relation in an "Account of the Life and Death of the earl of Rochester," published by Dr. Burnet in 1680; a very popular work, which was perused with great satisfaction by all the friends of religion. Of this book, Dr. Johnson says (Preface, &c. to the Works of the Poets, vol. iv.) that it ought to be read by the "critic for its eloquence, the philosopher for its arguments, and the saint for its piety." During the alarm of the popish plot, Dr. Burnet was frequently consulted by king Charles concerning the state of the nation, and allured to support the court interest by the offer of the bishopric of Chichester, which he refused; but he availed himself of an inducement which attendance at the death-bed of Mrs. Roberts, one of the king's mistresses, suggested, for writing a letter to his Majesty, in which he used great freedom in reprehending the vices and errors both of his private life and public administration. When the king had perused it twice he threw it into the fire, and spoke of the writer with displeasure. Dr. Burnet at this time recommended moderate measures; and instead of the exclusion of the Duke of York, he proposed the scheme of a prince regent; and yet he maintained a steady adherence to his friends, nor did any prospect of preferment induce him to abandon them. The speech delivered by lord Russell on the scaffold, is said to have been penned by Dr. Burnet. In 1682 he published his "Life of Sir Matthew Hale," and his "History of the Rights of Princes in disposing of Ecclesiastical Benefices and Church Lands," together with an "Answer" to the animadversions of an anonymous writer on the latter performance. In the following year, perceiving the storm that was gathering, he retired to Paris, where he was well received; and at this time appeared his "Translation and Examination of a Letter, written by the last General Assembly of the Clergy of France to the Protestants inviting them to return to their Communion, &c.," and also his "Translation of Sir Thos. More's Utopia," with a preface concerning the nature of translations. In 1684, he was so much the object of court-resentment, that he was discharged from the office of lecturer at St. Clement's by the king's mandate to the rector; and, by an order transmitted from the lord-keeper North to Sir Harbottle Grimston, Master of the Rolls, forbidden to preach any more at the Rolls chapel. In the following year he published his "Life of Dr. William Bedell, bishop of Kilmore, in Ireland." Upon the accession of king James, he left the kingdom, and lived in a very retired manner at Paris, that he might incur no suspicion of being

concerned in any conspiracies in favour of the duke of Monmouth; and from Paris he travelled into Italy, and was agreeably received both at Rome and Geneva. At the latter place he remonstrated against the subscriptions to the formulary, commonly called "Consensus," a consent of doctrine, that was imposed upon those who were admitted into orders; and succeeded in releasing the clergy of Geneva from such subscriptions. After a tour through the southern parts of France, Italy, Switzerland, and many parts of Germany, of which he has given an account in his "Travels," published in 1687, (in which year also, appeared his "Translation of Lactantius, concerning the death of the persecutors,") he was invited to the Hague by the prince and princess of Orange, and had a great share in the councils relating to England. However, to gratify king James, and in compliance with an earnest request communicated by his ambassador at the Hague, he was dismissed from the court, though he still retained his influence. This expression of royal displeasure was followed by a prosecution for high treason, instituted against him both in Scotland and England; and as the States refused to deliver him up at the demand of the English court, designs were formed for seizing his person, and even for destroying him. About this time Dr. Burnet married Mrs. Mary Scott, a Dutch lady of large fortune, noble extraction, from a branch of the family of Buccleugh in Scotland, and very distinguishing accomplishments.

In the whole conduct of the revolution in 1688, Dr. Burnet took a very active part; and having notified the project at an early period to the house of Hanover, he accompanied the prince of Orange in his expedition to England, as his chaplain: upon his landing near Exeter, he drew up the association for pursuing the ends of the prince's declaration; and as soon as king William was advanced to the throne, his attachment and services were recompensed by promotion to the see of Salisbury, to which he was consecrated in 1689. Having taken his seat in the house of lords, he recommended moderate measures with regard to the clergy who scrupled to take the oaths, and a toleration of the Protestant dissenters; and upon occasion of settling the succession of the crown, he was appointed by the king to propose in parliament the duchess (afterwards electress) of Brunswick, as next in succession after the princess of Denmark and her issue. He was thus engaged in an epistolary correspondence with princess Sophia, which lasted till her death. In this year, he addressed to the clergy of his diocese a "Pastoral Letter," concerning the oaths of allegiance and supremacy to king William and queen Mary, in which he grounded the title of their majesties to the crown upon the right of "conquest;" and in so doing, he gave such offence to several members of parliament, that they procured an order for burning the book by the hands of the common executioner. A similar offence was committed by Charles Blount, esq. (see *Blount*), and it incurred the same censure and ignominy. As soon as the bishop was released from his parliamentary duty, he withdrew to his diocese, and applied with exemplary diligence to his episcopal functions, which he performed in a manner that engaged universal respect and esteem. Besides being indefatigable in preaching, lecturing, catechising, confirming and examining for holy orders, he instituted at Salisbury a small nursery of ten students in divinity, to each of whom he allowed a salary of 30*l.* a year. But when he found that this institution gave offence, and was considered as a kind of tacit censure upon the method of education at the universities, he laid it aside. In 1692 he published his treatise, entitled "The Pastoral Care," illustrating and enforcing the duties of

of the clergy: and in the following year, "Four Discourses to the Clergy of his Diocese," on the "Truth of the Christian Religion," the "Divinity and Death of Christ," the "Infallibility and Authority of the Church," and the "Obligation to continue in the Communion of the Church." In 1694, he preached the funeral sermon of archbishop Tillotson, and vindicated his memory from the attacks of his enemies; and, in the following year, he wrote in the highest strain of eulogy, an "Essay on the Character of Queen Mary, on occasion of her death." Having lost his wife in 1698, he soon supplied the loss by a marriage with Mrs. Berkley, whom he entrusted with the care of his children, and who seems to have been well qualified for undertaking this charge, as she was a lady of distinguished benevolence and piety. Her treatise, entitled, "A Method of Devotion, or Rules for holy and devout Living, &c." was published in 8vo. and well received. In the same year, bishop Burnet was appointed preceptor to his highness the duke of Gloucester, and he took great pains in the conduct of his education till his death. In 1699, he published his "Exposition of the 39 Articles of the Church of England," which, notwithstanding the censure passed upon it by the lower house of convocation, and several private attacks, has been reckoned a learned and judicious performance. It was undertaken at the request of queen Mary, revised and corrected by archbishop Tillotson, and perused and approved before publication, by the archbishops Tenison and Sharp, and the bishops Stillingfleet, Patrick, Lloyd, Williams, and More. Bishop Burnet had the honour of first projecting the scheme for the augmentation of poor livings, which was sanctioned in 1704 by act of parliament. See AUGMENTATION. During the remaining years of his life, he was employed in the composition and publication of several treatises appropriate to his profession, among which, we may reckon a collection of "Sermons," and "Pamphlets," 3 vols. 4to. 1706; an "Exposition of the Church Catechism," 1710; and "Sermons on several Occasions," with an "Essay towards a new Book of Homilies," and a "Preface," containing a judicious and elaborate defence of the revolution. He was also the author of a great variety of pieces, some of which were published during his life, and others after his death. A catalogue of his works, drawn up by Dr. Flexman, is annexed to the later editions of his "History of his own Time." To this catalogue, some few publications have been added in the last edition of the "Biographia Britannica;" and particularly "Thoughts on Education," printed at London in 1761, from an original MS., drawn up when the author was not quite 25 years of age, and containing a variety of observations which indicate much knowledge and reflection. The close of his life, which was terminated by a pleuritic fever on the 17th of March 1715, was suitable to the character which he had uniformly maintained, and manifested that tranquillity and firmness, which his religious principles were adapted to produce and justify. His remains were deposited in the parish church of St. James's, Clerkenwell. By his last will he left orders, that the "History of his own Time" should not be printed till six years after his death, and then faithfully, without adding, suppressing, or altering it in any particular. Accordingly, the first volume was printed at London in 1723, and the second in 1724, with an "Account of the Author's Life" annexed to it, in folio, by his son, Thomas Burnet, esq. This work has given rise to a great number of strictures, and various sentiments have been entertained concerning it. At its first appearance, a general clamour was excited against it among the Tories and high church-men; and many other persons

were offended by the freedom with which particular characters were drawn, and particular facts represented. The wits too combined to expose it to ridicule. The real merit of this history seems to be very candidly and impartially appreciated in the last edition of the "Biographia Britannica." Allowing for the errors and inaccuracies common to the historians of that period, for some instances of party prejudice and credulity, and for that disposition to look on the dark side of a character, and to exaggerate the failings and faults of public men, which in some cases may have given a bias to the author's judgment; admitting his integrity, and his desire to state the truth of facts according to the best of his knowledge; and recollecting that when he appeals to the testimony of others, he honestly refers us to his authorities, and that several of the facts which occur in his history, and which were at first discredited or considered as dubious, have, since his time, been proved to be true; this history may be regarded as containing, upon the whole, a faithful and interesting representation of times and manners. "In short, it is written with a spirit of integrity and liberty that cannot fail of recommending it to a judicious reader; and there are few histories in our language which will be found to convey more solid and useful information. Accordingly, notwithstanding the various attacks to which it hath been exposed, it seems to be rising in reputation; and, in our opinion, (Biog. Brit.) it clearly deserves the encomium which hath lately been bestowed upon it by a very elegant poet."

"Yet Burnet's page may lasting glory hope,
Howe'er insulted by the spleen of POPE.
Tho' his rough language haste and warmth denote,
With ardent honesty of soul he wrote:
Tho' critic censures on his work may shower,
Like faith, his freedom has a saving power."

Hayley Ess. on Hist. p. 51.

This testimony deserves the more to be regarded, as the bishop has spoken of poets in terms somewhat disparaging, and thus incurred the obloquy of persons of taste. Virgil for his fancy, says Burnet, in his "Thoughts on Education," deserves not the name of a poet, but of an eloquent versifier. Dryden he represents, probably referring to his plays, and not to his personal character, as a monster of immodesty, and of impurity of all sorts: and Prior he styles, *one* Prior, though he had long before distinguished himself by his elegant poetical productions.

As a writer, though the bishop ought not to be ranked in the first class of authors, he deserves the praise of perspicuity, vigour, and variety of knowledge; and we ought therefore to allow for party-prejudice, when we advert to the asperity with which Dr. Swift has reproached his style. What were his sentiments as a theologian, we may infer from the publications already enumerated, and particularly from the testimony borne to his vindication of the 39 articles by the principal dignitaries of the church. With his attachment to the church, he blended a considerable degree of moderation and liberality towards Protestant dissenters, and others who differed from him: and with respect to political matters, although he has been reproached as a party-man, he was candid in his judgment of persons of different connections, and he even exercised great kindness towards some who had engaged in designs against the government. In his general character, he was pious and devout, condescending and communicative, benevolent and charitable; exemplary in the diligence with which he performed all his clerical and episcopal functions, disinterested as a patriot, and eminently ardent and active in his prosecution of every

BURNET.

measure, which, in his judgment, tended to the public good. His failings were vanity, credulity, self-importance, over-officiousness, and a kind of gossiping garrulity. It is natural to imagine, that, considering the times in which he lived, and the oftensible part which he took in public and political concerns, he would not be likely to escape reproach; but notwithstanding the freedom and severity with which his principles and character have been scrutinized and censured, his name has descended to posterity with honour, and his public services at an interesting period in the history of this country, as well as his private character, will be recognized with veneration by all persons, who are attached to the interests of constitutional liberty and the Protestant religion.

Bishop Burnet, by his second wife, Mrs. Mary Scott, had seven children, three sons and four daughters. His three sons survived him, as well as two of his daughters. William, his eldest son, was educated as a gentleman-commoner in the university of Cambridge, and made choice of the profession of the law. Having been a great sufferer in the South Sea scheme of 1720, he became governor, first of New York, and the Jerseys, and afterwards of the Massachusetts and New Hampshire. He died at Boston in 1729; and was the author of a tract, entitled, "A View of Scripture Prophecy."

Gilbert, the bishop's second son, was educated at Leyden, and as a commoner of Merton college, in the university of Oxford, with a view to the church. Having entered into holy orders, he was king's chaplain in 1718, when he could not be 30 years of age, and he is said to have contributed to a periodical paper at Dublin, entitled "Hibernicus's Letters," and also to another valuable paper, entitled "The Free-thinker," afterwards published in 3 vols. 12mo. and now become scarce. He was also a distinguished writer on the side of Hoadly in the Bangorian controversy, and was considered by this eminent prelate as one of his best defenders. His "Full and Free Examination of several important Points relating to Church Authority, &c. &c." was printed in 1718, 8vo. and has been reckoned a masterly performance, displaying great liberality of mind, strong powers of reasoning, and an accurate acquaintance with scripture. In 1719, he published an Abridgment of the third volume of his father's History of the Reformation. He died in early life. The Gilbert Burnet who abridged the Boylean lectures was a different person. See BOYLE'S Lectures.

Thomas, the bishop's third son, enjoyed the same advantages of education with his two elder brothers. He was admitted a commoner of Merton college in the university of Oxford, and having studied two years at Leyden, made a tour from France, through Germany, Switzerland, and Italy. Upon his return to England, he devoted himself to the profession of the law, and in early life pursued a course of dissipation, which occasioned great uneasiness to his father. At this time, however, viz. in 1712 and 1713, he wrote several political pamphlets in favour of the Whigs against the administration of the four last years of queen Anne. One of these pamphlets caused his being taken into custody in January 1713: and in another, entitled "Some new Proofs, by which it appears, that the Pretender is truly James the Third," he gives the same account, in substance, of the Pretender's birth, that was afterwards published in the bishop's History of his own Time. Notwithstanding these literary engagements, he still pursued his wild courses; but one day, being unusually grave, his father asked him what was the subject of his meditation: "A greater work," replied the son, "than your lordship's History of the

Reformation;" "what is that, Tom?" "My own reformation my lord." "I shall be heartily glad to see it," said the bishop, "but almost despair of it." This, however, was happily accomplished after the bishop's decease; and Mr. Burnet became, not only one of the best lawyers of his time, but a very respectable character. After the accession of George I. he wrote a letter to the earl of Halifax on the "Necessity of impeaching the late Ministry," which was followed by "A second Tale of a Tub, &c." being a satire on the earl of Oxford and his ministry. Soon after his father's death, he published "A Character of the right reverend Father in God, Gilbert Lord Bishop of Sarum; with a true Copy of his last Will and Testament." Mr. Burnet was also concerned with others in writing a travestie of the first book of the Iliad, under the title of "Homerides," which gave occasion to Mr. Pope for introducing him into the Dunciad, and in a weekly paper called the "Grumbler." About this time he was appointed his Majesty's consul at Lisbon, where he remained for several years. Upon his return, he resumed the profession of the law, and rose through several gradations of preferment, in 1741, to the rank of one of the justices of the court of common pleas. He also received the honour of knighthood, and became a member of the royal society. In the court of common pleas he continued, with great reputation to his death, which happened on the 5th of January 1753. His character was that of an able, upright judge, a sincere friend, a sensible and agreeable companion, and a munificent benefactor to the poor. A remarkable clause in his will, in which he expresses the sentiments of a judicious and candid person, who understood the true nature of Christianity, and, who, whilst he gave the preference to the church of England, was persuaded that no religious establishment was entirely free from defects, furnished occasion for some strictures in a serious and sensible pamphlet, entitled "The true Church of Christ, which, and where to be found, &c." Some poetical productions of his youth were published in 1777, 4to.; the characteristic excellence of which is an easy negligence and elegant simplicity.

Besides sir Thomas Burnet, there lived in the last century another Thomas Burnet, who was an eminent divine, and author of several valuable publications. He was educated in New College, Oxford; became rector of West Kingston, Wilts, and prebendary of Sarum; and died in May 1750. His four principal works are, "An Answer to Tindal's Christianity as old as the Creation;" a "Treatise on Scripture Politics;" a "Course of Sermons preached at Mr. Boyle's Lecture;" and an "Essay on the Trinity," in which last performance he endeavours, with great ingenuity and plausibility, to unite the rationality claimed by the Unitarians, with the orthodox language of those who admit the Athanasian doctrine of the Trinity. Gen. Dict. Biog. Brit.

BURNET, THOMAS, a learned and ingenious divine, erroneously supposed to be a native of Scotland, was born at Croft, in Yorkshire, in 1635, entered, in 1651, at Clare-hall, in the University of Cambridge, under the mastership of Mr. John Tillotson (afterwards archbishop of Canterbury), and upon the removal of Dr. Ralph Cudworth from the mastership of that college to that of Christ-college, admitted of that house, and chosen fellow in 1653, and in 1661, senior proctor of the University. After his travels, as tutor to the earl of Wiltshire, and as governor to the duke of Bolton, and the earl of Ossory, afterwards duke of Ormond, he settled at home; and became distinguished as an elegant writer and an acute philosopher. Of his celebrated work, entitled "Telluris Theoria Sacra," &c. the first two books were published in 1680, and the two remaining books in 1689, in 4to. This performance

formance was so much admired on its first appearance in Latin, that the author published an English edition of it, in substance the same with the Latin, but newly composed with a variety of additions, in two volumes; the first of which was dedicated to king Charles II. and the second to queen Mary. To the sixth edition, in 1726, is added, the "Author's Defence of the Work from the Exceptions of Mr. Warren, and the examination of Mr. Keil." Of this theory a particular account will be given in a future article. See EARTH. We shall here observe, that though the principles of it have been demonstrated to be erroneous, and it can be regarded only as a beautiful philosophical romance, it was much applauded on its first appearance, and many persons were seduced by the invention and ingenuity displayed in it, and by the elegance of its composition. Among its admirers we may reckon Bayle, who entertained a very high opinion of it, and particularly Mr. Addison, who addressed to the author an elegant Latin poem, into which he has transfused the fancy and sublimity of the original. The mathematicians, however, were not so easily seduced. Mr. Keil attacked it with severity; and Mr. Flamsteed observed concerning it, that "there went more to the making the world than a fine turned period; and that he was able to overthrow it in one sheet of paper." In 1685 Dr. Burnet was elected, by the interest of the duke of Ormond, into the mastership of the Charter-house; and soon after he entered into holy orders. In his situation at the Charter-house he resisted the illegal attempt of king James II. to introduce one Popham, a papist, as a pensioner into that house; and his opposition to him was supported by the other governors, the lord chancellor Jefferies excepted, so that the king desisted from pursuing the contest. After the revolution, Burnet was appointed chaplain to king William, and through the interest of Archbishop Tillotson, clerk of the closet to that prince. In 1692 he published his "*Archeologiæ Philosophicæ*," in which he not only questioned the literal history of the fall, but imprudently introduced an imaginary dialogue between Eve and the Serpent, which gave great offence. So sensible was he of the imprudence of this dialogue, that when a new edition of the "*Archeologiæ*" was printing in Holland, he desired that it might be suppressed, and it was likewise omitted in the second edition of the year 1733. To this work was prefixed a dedication to king William, in which the character of that prince is drawn with great strength and elegance. The clergy were so offended by the publication of this work, that it is said to have occasioned his removal from the office of clerk of the closet; and though he was favoured by king William, and patronized by archbishop Tillotson, the scepticism and heterodoxy charged on his writings, prevented his preferment in the church, and particularly his advancement to the episcopal bench, and even to the see of Canterbury, which is said to have been in contemplation. He died September the 27th 1715, and was buried in the chapel of the Charter-house. After his death were published two posthumous treatises; one entitled "*De Fide et Officiis Christianorum*," being part of a larger design, and a valuable compend of Christian doctrine and duty, written with a liberal spirit, but not deemed altogether unexceptionable; and the other, entitled "*De Statu Mortuorum et Refurgentium*;" to which is added an appendix, "*De Futura Judæorum Restauratione*." In this work the author has given greater scope to his fancy; attacked the doctrine of the eternity of hell-torments; and contended for the final salvation of the whole human race. But so apprehensive was the author lest his notions concerning the temporary duration of future punishments should be made an ill use of by the bulk of mankind, that in a note to

this work, he earnestly protested against its being translated. Dennis, however, in defiance of the author's protestation, not only published a translation of the treatise, but with a fidelity which can hardly be thought a sufficient excuse for the effrontery of it, inserted the note in English at the bottom of the page. Dr. Burnet was also the author of three small tracts in opposition to Mr. Locke, to which was published a reply by Mrs. Cockburne, contained in Dr. Birch's edition of that lady's works. Whatever opinion may be entertained of Dr. Burnet's speculations, philosophical and theological, his style, both in Latin and English, has been universally admired for its elegance and perspicuity. Biog. Brit. Brucker's Hist. Philos. by Enfield, vol. ii. p. 484.

BURNET, THOMAS, a Scotch physician, educated at Edinburgh, where he arrived at the honour of being fellow of the Royal College, and physician to the king, was author of "*Thesaurus Medicinæ et Practicæ ex prestantissimorum Medicorum Observationibus collectus*," 4to. London, 1672. It has been frequently reprinted, and contains many curious and useful observations. Also, "*Hippocratis Contractus*, in quo Hippocratis Opera omnia in brevem Epitomen reducta debentur," 8vo. Edinb. 1685. A convenient compendium, with perpetual references to the Opera Omnia. Haller. Bib. Med.

BURNET, in *Agriculture*, the name of a plant that may be cultivated in some cases with advantage, as a green winter food for different sorts of animals. As the providing of a large supply of green food for live stock, especially fattening sheep, ewes, and lambs, and for milch cows, during the winter and early spring months, is an object of the greatest importance to the farmer, he should not neglect the culture of such plants as promise to be beneficial in this way; for as turnips, though well adapted to the purpose, cannot be preserved in severe winters, and clover, rye, and other grasses are not ready sufficiently early; burnet, in such cases, should be attended to in this view. It is not, probably, however, so agreeable a food for animals as that of some other plants, but from its standing several winters without injury, and being an early plant, it may frequently be found highly useful.

It succeeds on almost any sorts of soil but those of a strong clayey nature, and may be sown, like other seeds, with corn, and covered by means of a slight harrowing. The produce is in proportion to the goodness of the land. The quantity of seed sown is commonly about a bushel to an acre. The author of the New Farmer's Calendar thinks it advantageous to mix burnet with ray-grass and white clover, or with the latter alone, not only with the view of securing a good bottom, but to render the herbage more palatable to cattle in general, which he has been convinced, by ocular proof, have no great relish for burnet: they, however, become accustomed, he says, to its cucumber-flavour in time, and contented with it; no small inducement to which is, that they are commonly fed with it when no other grass is to be obtained. And Mr. Young observes, that it does well mixed with ray-grass, or cock's-foot, in the proportion of about three pecks of burnet to one of either of the other two. April is recommended as the proper season for sowing burnet with crops of barley or oats, covering it in by two harrowings. It may likewise be sown with buck-wheat in May, with great propriety.

In the raising of crops of this sort much depends upon having good well ripened seed of the true kind, which is always the best provided by collecting it from the best plants by the farmer himself.

When designed for sheep pasture, the best method of sowing this crop is probably that of broadcast over the surface; but in other cases the drill mode may be employed.

Of the salubrity of this plant there is, the first of these writers thinks, "no question; and even its medicinal virtues are confidently spoken of, particularly for sheep suspected of unsoundness. It is excellent winter-food for deer and rabbits. Several reasons are to be assigned for the ill success which has attended various attempts to cultivate this grass, as will appear in the following directions. Its chief use is as an early grass, and whilst young; and it must never be given to cattle when old and stalky, nor kept to that state when intended for hay. In fact, burnet should always be reckoned out of season when other grasses can be had. It never ought to be fed but from January to the end of April; and upon lands proper for it, with judicious management, it will afford pasture even in January. It receives less injury from frost than any other herbage, and will even grow in the winter months, provided the weather be not too severe. If shut up in April, it will mow at Midsummer; after which it must be reserved for seed until January or February, when, if the weather be favourable, it may be cut and carried to the stock, as in summer, and afterwards fed, but not too close, with sheep, until the time of shutting up again. It will produce upwards of a ton of hay per acre, and may be mowed again for seed; but if driven too hard, of course it will not produce so large a quantity of spring-feed as when mowed but once. The value of the seed upon an acre will be from five to ten pounds." But, "granting the truth of this account of burnet," continues the same author, "it would be altogether superfluous to enlarge upon its value to a live-stock farmer; but such advantages will ever be looked for in vain upon a cold barren clay, or without the seeds being fresh and good, or without culture and manure, even on a proper soil. One of the first objects is, to be sure the seed be good, which is seldom the case, burnet being a grass very little cultivated, and in which he has been more than once foiled in his endeavours to raise a crop, from that circumstance. It may be further advantageously cultivated in drills, and treated precisely like lucerne, a method which he has lately adopted. It may be sown indifferently either in spring, summer, or autumn. It frequently happens that the crop is thin until the third year, but afterwards very luxuriant, fully covering the soil. It is further observed, that burnet is a native of this country, growing spontaneously in many parts, particularly, as he has observed, upon Salisbury Plain, whence he is of opinion, an indication may be drawn of its proper soil; like lucerne, it defies drought in summer, which makes it valuable in another point of view. The seed has been warranted as good food for horses as corn; a consideration for those who may have the convenience of bruising it."

In the twenty-first volume of the *Annals of Agriculture* we have the following statement of the advantage derived from five roods of wet land, a strong tenacious loam, on a dry and clay-mixt bottom, eaten off by ewes and lambs in the beginning of April, besides the straw, which was carefully laid up for winter provision for sheep, in wet weather, and the chaff for horses with their corn, which are reckoned together with a week's keep of fifty sheep, just taken out, as tantamount to the expence of mowing, dressing, and carting.

	£.	s.	d.
Keep of 30 couples for three weeks at 6d. per week	-	2	5 0
19 ditto, 10 days, at 4d. per week	-	0	9 6
Value of seed at 10s. per bushel	-	13	0 0
	£.15	14	6

Brought forward	£.15	14	6
Rent, at 15s. per acre	-	0	18 9
Tythes and town charges	-	0	7 6
		1	6 3
	£.14	8	3

The land on which burnet is sown should always be made perfectly fine before the seed is put in.

The true management of this sort of crop, according to Mr. Young, is not to cut it down much in the autumn or winter seasons, as the great peculiarity of the plant is to afford a full bite in March; and when you have it six or eight inches high in October, more food will be found at that period, for it retains its leaves, as the winter frosts have but little effect upon it. "Some," says he, "who have found fault with it, and asserted that it is unprofitable, have fed off the after-grass bare in the autumn, and let their sheep and cattle get into it in winter. It is then no wonder the burnet does not answer the character given of it by others, who have managed in a different manner."

The crops of this sort which are designed for seed, should be cut about the beginning of July, when care should be taken that it does not shed. It is the best practice to thresh it out in the field in the same manner as many other sorts of small seeds, the straw being made into hay. The produce in both feed and hay is very considerable. When intended for hay, it should be cut rather early in order to prevent its becoming too coarse.

Besides the modes of application for which it has been already recommended, it is of vast utility as an early spring feed for sheep. The intelligent author of the *Farmer's Calendar* has observed that, "an acre of it, managed properly, will at this season yield much more food than an acre of clover and rye-grass."

The importance of the seed and chaff of this plant, as provender for horses, has been highly spoken of by some, but its advantages in this way have not been yet ascertained by any satisfactory set of experiments.

BURNET, in *Botany*. See POTERIUM and SANGUISORBA.

BURNET *Saxifrage*. See PIMPINELLA.

BURNET, *Burneta*, or *Burnetus*, in *Middle Age Writers*, denotes brown cloth made of dyed wool.

In which sense the word stands contradistinguished from brunus, which was applied to the wool undyed.

BURNEY'S ISLAND, in *Geography* an island on the north-east coast of Siberia, in the Frozen Sea; about 3 leagues from the main.

BURNHAM-MARKET, a town of Norfolk, in England, has the latter part of its name to distinguish it from other Burnhams in the same county. It is situated near the coast, on the northern extremity of Norfolk. Here was formerly a small monastery of White Friars, or Carmelites, of which Robert Bale was prior. At Burnham-Deepdale are some salt marshes, which are found to be very conducive to the fattening and preservation of sheep. On the high grounds along this coast are several tumuli, which some of our topographers attribute to the Saxons and Danes, who were slain here during the piracies of the latter. Here is a small weekly market on Mondays, and the parish contains 169 houses, and 743 inhabitants. Burnham-market is 118 miles N.E. of London.

BURNING, the action of fire on some pabulum, or fuel, whereby the minute parts thereof are torn from each other, and put into a violent motion; and some of them assuming the nature of fire themselves, fly off *in orbem*, while the

BURNING.

the rest are dissipated in form of vapour, or reduced to ashes. See COMBUSTION.

BURNING is also applied to the action of divers things which are cold to the touch, or do not contain fire.

In this sense *aqua fortis* is said to burn cloth. There are certain fogs which burn or scorch the corn. Virgil observes that severe cold itself will burn, that is, have much the same effects on the parts of the body as fire itself, in causing gargreets.

BURNING, extraordinary cases of.—We have instances of persons burnt by fire kindled within their own bodies. A woman at Paris, who used to drink brandy in excess, was one night reduced to ashes by a fire from within, all but her head and the ends of her fingers. *Novum Lumen Phosphor. accens. Amst. 1717.*

Signora Corn. Zangari, or, as others call her, Corn. Bandi, a lady aged 62, of an unblemished life, near Cesena in Romagna, underwent the same fate in March, 1731. She had retired in the evening into her chamber, somewhat indisposed, and in the morning was found in the middle of the room, reduced to ashes, all except her face, skull, three fingers, and legs, which remained entire, with the shoes and stockings on. The ashes were light, and, on pressing between the fingers, vanished, leaving a gross stinking moisture behind, with which the floor was smeared; the walls, and furniture of the room, being covered with a moist cineritious soot, which had not only stained the linen in the chests, but had penetrated into the closet, as well as into the room over-head, the walls of which were moistened with the same viscous humour. *Mem. de Trev. an. 1731. p. 1293.*

Sig. Mondini, Bianchini, and Maffei, have written discourses express, to account for the cause of so extraordinary an event: common fire it could not be, since this would likewise have burnt the bed and the room; besides that it would have required many hours, and a large quantity of fuel, to reduce a human body to ashes; and, after all, a considerable part of the bones would have been left entire, as they were anciently found after the fiercest funeral fires. Sig. Mondini attributes this effect to lightning. A philosopher of Verona maintains, that such a conflagration might have arisen from the inflammable matters wherewith the human body naturally abounds. Sig. Bianchini accounts for it from an internal fire, occasioned by spirit of wine camphorated, which the lady used by way of bath or lotion, when she found herself out of order. Maffei's system is a combination of the three last: he supposes it owing to lightning, but lightning generated in her own body; agreeable to his doctrine, which is, that lightning does not come from the clouds; but is always produced in the place where it is seen, and its effects perceived. The humours of her body, naturally inflammable enough, were become preternaturally so, by her putrid indisposition; and these, by perspiration, had enveloped her body with an atmosphere of the same kind, replete likewise with mineral matters, whereby its activity was heightened. She had probably risen in the night to use her lotion, and, by the friction of her hand, had helped to kindle the flame.

We have various relations of several other persons being burnt to death in this unaccountable manner; as Grace Pet, of Ipswich, aged 60, in 1744; who had previously drank a large quantity of spirituous liquor, and the trunk of whose body was found incinerated, resembling a heap of coals covered with white ashes, and emitting an extremely fetid odour and smoke; and Mary Clues, of Coventry, 52 years of age, in 1772, who had been much addicted to intoxication, so that scarcely a day passed in which she did not drink at least a pint of rum or anniseed water. In her case no-

thing remained of the skin, the muscles, and the viscera; the bones of the cranium, the breast, the spine, and the upper extremities, were entirely calcined, and covered with a whitish efflorescence; and the room was filled with a disagreeable vapour. A similar instance is mentioned by Vicq. d'Azyr, in the "Encyclopedie Methodique." A woman about the same age, who indulged to excess in spirituous liquors, and went to bed every night in a state of intoxication, was found entirely burnt, and reduced to ashes. Le Cat, in a memoir on spontaneous burning, mentions several other instances of combustion of the human body; and two other facts of a similar kind are published in the "Journal de Medicine," (vol. lix. p. 440.) An attempt has been made to establish the opinion, that these destroying internal fires are caused in the entrails of the body by enflamed effluvia of the blood, by juices and fermentations in the stomach, by the many combustible matters which abound in living bodies, for the uses of life, and, finally, by the fiery evaporations which exhale from the settlings of spirit of wine, brandies, and other hot liquors in the *tunica villosa* of the stomach, and other adipose or fat membranes; within which those spirits engender a kind of camphor, which in the night-time, in sleep, by a full respiration, are put in a stronger motion, and are more apt to be set on fire. See *Phil. Transf. N° 476. p. 453, seq. Ibid. vol. lxiv. part ii. p. 340.*

Others ascribe the cause of such persons being set on fire, to lightning; and their burning so entirely, to the greater quantity of phosphorus, and other combustible matter they contained.

M. Pierre Aime Lair communicated to the "Philomathic Society" at Paris, a memoir on the subject of the apparently spontaneous combustion of living individuals of the human species; and in addition to the instances already mentioned, and some others which he recites, he informs us, that Dr. Swediaur related the cases of some persons at Warsaw, who, having drank abundantly of malt spirits, fell down in the street, with the smoke issuing out of their mouths; and the people, who came to their assistance, said they would take fire; for preventing which, they made them drink a great quantity of milk, or used a more singular expedient, by causing them to swallow urine immediately on its evacuation. The circumstances collected from the several instances recited by M. Lair, are reduced by him to the nine following facts: 1. The persons who have experienced these effects of combustion, were generally much addicted to the drinking of extremely strong spirituous liquors; and accordingly it has been remarked, that the inhabitants of the north are most subject to these accidents. 2. They were usually very fat. 3. This combustion has happened more frequently in the case of women. 4. These women were old. 5. Their bodies did not appear to have been burned by a combustion perfectly spontaneous; but it appears that the fire had taken place in consequence of some very slight external cause, such as the fire of a taper, candle, or pipe of tobacco. 6. The extremities of their bodies, such as the legs, the hands, or the cranium, escaped the fire. 7. Water, instead of extinguishing the fire of the burning parts of the body, gave it a greater velocity; a circumstance which also occurs in fat that is burnt. 8. The fire very slightly damaged, and, in many instances, did not injure the combustible objects which were in contact with the body at the moment it was burning. 9. The combustion of these bodies left a residue of oily and staid ashes, with a greasy soot of a very penetrating and disagreeable smell. After reciting these several circumstances, the author endeavours to ascertain the cause of so surprising a

BURNING.

phenomenon, and with this view he advances several hypotheses, which it is needless to detail, as the facts are not sufficiently numerous nor well known to admit of establishing a satisfactory theory concerning the spontaneous combustion of human bodies. The author, however, appears to attribute it to a particular state of the fat produced by spirituous liquors; and he founds his opinion principally on the peculiar corpulence of the persons who have fallen victims to these accidents, and on the observation that has been made, that the parts which were not so fat, such as the extremities of the head, have escaped. And, lastly, he supports his theory by the well-known fact of the spontaneous combustion of a mixture of animal foot and linseed oil, which is a mixture similar to that of a fat body containing charcoal in a very minute state of division.

BURNING is also a denomination given by physicians to divers disorders, on account of a sensation of heat that attends them. In which sense we say a *burning fever*. See CAUSUS.

Among the divers species of madness incident to dogs, one is called the *burning* madness. If a mare which has been covered, and the colt knit within her, be covered by another horse, he is said to *burn* her.

BURNING is more particularly used for the herpes, or *ignis sacer*, called ERYSIPELAS and *arjura*.

BURNING, among Surgeons, denotes the application of an actual cautery, that is, a red-hot iron instrument, to the part affected; otherwise denominated cauterization. See CAUTERY.

BURNING, in Antiquity, was a practice much used by the Greeks, Romans, and northern nations; and still retained by many people in both Indies, with respect to their dead. See BURIAL.

In this sense, *burning* stands opposite to burying; though, after burning, the bones remaining, and ashes, have been usually collected into urns, and deposited in the earth.

Burning is not so ancient among the Greeks as interring; though we find it obtained in the time of the Trojan war: and it is reported by the scholiast on Homer (*Iliad. α.*) to have been first introduced by Hercules. At and after the Trojan war, burning was generally practised by the Grecians; inasmuch that when Lucian (*De Luctu*) enumerates the various methods used by different nations in the disposal of their dead, he expressly assigns burning to the Greeks, and interment to the Persians. Socrates in Plato's *Phædon*, mentions both customs: and it appears, that some of them considered the custom of burning as cruel and inhuman; whence a poet, cited by Eustathius (*Il. α.*) introduces a person, exclaiming against, and calling out upon Prometheus to haste to his assistance, and steal, if possible, from mortals the fire he had given them. Others ascribe the origin of this practice, which prevailed very anciently, not only in Asia, but in the western parts of the world, to respect and friendship for the deceased; whose ashes they deposited in urns, and preserved with great care, and interred with funeral honours. Potter. *Arch. lib. iv. cap. 6. tom. ii.*

Kings were burnt in cloth made of the asbestos-stone, that their ashes might be preserved pure from any mixture with the fuel, and other matters thrown on the funeral pile. And the like usage is still retained for the princes in Tartary.

Among the Greeks, the body was placed upon the top of the pile, on which were also thrown divers animals, and even slaves and captives, besides unguents and perfumes. In the funeral of Patroclus, we find a number of sheep and oxen thrown in, then four horses, followed by two dogs, and lastly, by twelve Trojan prisoners. Hom. *Il. xxiii.*

To this custom of slaughtering animals, and of condemning slaves or captives to the flames, on occasion of burning the dead, Virgil alludes (*Æn. x. 518. xi. 82. xi. 197.*); and also Cicero (*Flacc. 38.*). Afterwards gladiators, denominated *Buſtuarii*, (which see,) were made to fight, as a substitute to human sacrifices. Thus also among the Gauls, slaves and clients were burnt on the piles of their masters (see *Cæſ. Bell. Gall. vi. 17.*); and among the Indians and Thracians wives were burnt on the piles of their husbands; and if one man had several wives, there was sometimes a contest among them, which should be preferred, and the preference was decided by lot. *Ælian. vii. 18. Serv. in Æn. v. 95.* A similar practice has long existed among the Brachmans of India. See BRAHMS. Thus among the Romans, friends testified their affection; as Plotinus to his patron (*Plin. vii. 36.*), Plautius to his wife Orestilla, (*Val. Max. iv. 6. 3.*) Soldiers to Otho (*Tacit. Hist. ii. 49.*), and Mæſter, a freedman, to Agrippina, (*Tacit. Annal. xiv. 9.*) The body of the deceased was covered with the fat of beasts, that it might the sooner be consumed, it being regarded as a singular blessing to be quickly reduced to ashes. For the same reason, when a number of bodies was arranged to be burnt on the same pile, they blended those of moist temperament, and which were easily inflamed, with others: and to this purpose Plutarch (*Sympoſ. l. iii. Quæſt. 4.*) and Macrobius (*Saturn. l. vii. c. 7.*) observe, that to ten men it was customary to add one woman.

Soldiers usually had their arms burnt with them. The garments worn by the living were also thrown on the pile with other ornaments and presents; a piece of extravagance, which the Athenians carried to so great a length, that some of their law-givers were forced to restrain them, by severe penalties, from defrauding the living by their liberality to the dead.

The pile was set on fire by some of the nearest relations, who prayed and offered vows to the winds to assist the flames, that the body might be quickly consumed. While the body was burning, in the case of celebrated commanders, the soldiers and attendants expressed their respect for the dead by making a solemn procession three times round the pile, accompanying their motions with shouts and sound of trumpet: and the friends of the deceased stood by the pile, pouring forth libations of wine, and calling upon the deceased. When the flames ceased, the remains of the fire were extinguished with wine, and the bones and ashes were collected, sometimes washed with wine and anointed with oil, and sometimes inclosed with fat; and then deposited in urns of gold, silver, wood, stone, or earth, according to the condition of the deceased; those of persons of rank were adorned with flowers and garlands, and sometimes they were covered with cloth till they were lodged in the earth. Homer. *Il. xxiii. xxiv.* Virgil. *Æn. vi.* Potter. *ubi supra.*

The Romans, at first, usually interred their dead. See BURIAL. But they adopted, at an early period, the custom of burning from the Greeks (see Plut. in Numa); and this custom is mentioned in the laws of Numa, and of the twelve tables (*Cic. de. Leg. ii. 22.*), but it did not become general, till about the end of the republic. Sylla was the first of the patrician band of the "Gens Cornelia," that was burnt: and he is supposed to have ordered it, lest any one should dig up his body, and dissipate his remains, as he did those of Marius. Pliny (*H. N. l. viii. c. 54.*).

Eustathius assigns two reasons for the prevalence of burning in Greece; the first, that bodies being thought to be unclean after the soul's departure, were to be purified by fire: and that the soul, or purer part, being separated by the flames, from the gross inactive matter, might take its flight

flight to the heavenly mansions with more freedom. This latter opinion obtained so much, that the Indian philosophers had not patience to wait for burning till after death; they had recourse to it in their life-time; erected themselves piles for the purpose, to loosen their souls from confinement. Calanus, who followed Alexander out of India, finding himself indisposed, obtained that prince's leave to prevent the growth of his distemper, by committing himself to the flames; and Hercules, before his reception into heaven, was purified from the dregs of earth by the same means. Quintil. Declam. x. Potter. ubi supra.

Pliny assures us, that burning was brought into use among the Romans, on occasion of the cruel usage which the bodies of the dead Romans underwent in enemies' countries. But this must only be understood in regard of the common usage; since we find mention of burning as practised by some even in the earliest ages of Rome; Numa forbade his own body to be burned, commanding it to be laid entire in a stone coffin, which shews that the practice of burning was not then unknown at Rome. Under the emperors, as we learn from Tacitus (Annal. xvi. 9.) it became almost universal.

In some cases burning was expressly forbid, and looked upon as the highest impiety. Thus infants who died before the breeding of teeth, were entombed unburnt, in the ground, in a particular place set apart for this use, called *suggrundarium*. The like was practised with regard to those who had been struck dead with lightning, who were never to be burnt again, but buried in the spot where they fell, called *bidental*, which see.

Some say, that burning was denied to suicides as a punishment.

The manner of burning among the Romans was not unlike that of the Greeks; the corpse being brought without the city, if they designed to burn it, was carried directly to the place appointed for that purpose; which, by the law of the twelve tables, was without the city: (Cic. de Leg. ii. 23.) according to the custom of other nations, as the Jews, (Matt. xxvii. 53. John, xix. 20. and 41.), the Athenians, (Cic. Fam. iv. 12. Liv. xxxi. 24.), and others, (Cic. Flacc. xxxi. Tusc. v. 23. Plut. in Arat. Strabo, l. x.) If this place joined to the sepulchre, it was called *bystrin*, if separate from it, *ustrina*: the body, when brought thither, was laid on the *rogus*, a pile of wood prepared to burn it on, built in shape of an altar, but of different height, according to the quality of the deceased; and at the distance of 60 feet from any house. The wood used was commonly from such trees as contained most pitch or resin; and if any other were used they split it for the more easy catching fire; round the pile they set cypress trees, probably to hinder the noisom smell of the corpse. The body was not placed on the bare pile, but on the couch or bed on which it lay. The eyes of the deceased were opened, (Plin. ii. 37.) to which Virgil is thought to allude, *Æn.* iv. 214. This done, the next of blood performed the ceremony of lighting the pile, which they did with a torch, turning the face all the while the other way, as if it were done with reluctance. During the ceremony, more especially at the funeral of an illustrious commander or emperor, decursions round the pile were performed, with ensigns inverted, and games were celebrated; after which, when the fire was extinguished, and the embers soaked with wine, came the *offlegium*, or gathering the bones and ashes; also washing and anointing them, and repositing them in urns; which were common to both the Greeks and Romans. Tibull. lib. i. Elég. i. Virg. *Æn.* lib. vi. Kennet and Potter, lib. cit. It is commonly supposed the practice of burning ceased at Rome under the empire of the Antonines.

The practice, prevalent among the Hindoos, and of which some rare instances still occur, of widows burning themselves on the funeral piles of their deceased husbands, has been already mentioned; (see also the article BRACHMANS). Mr. Colebrooke, in a paper "on the duties of a faithful Hindoo widow," published in the 4th volume of the Asiatic Researches, has collected from the ancient Sanscrit books all the particulars that may serve to elucidate this extraordinary ritual. "Having first bathed, the widow, dressed in two clean garments, and holding some *cusa* grass, slips water from the palm of her hand. Bearing *cusa* and *tila*, or sesamum, on her hand, she looks towards the east or north, while the Brâhmana utters the mystic word *Om*. Bowing to Nerayana, she next declares: "On this month, so named in such a *pacsha*, on such a *tithi*, I (naming herself and her-family), that I may meet *Arundhati*, and reside in *Svarga*; that the years of my stay may be numerous as the hairs on the human body; that I may enjoy with my husband the felicity of heaven, and sanctify my paternal and maternal progenitors, and the ancestry of my husband's father, that lauded by the *Asparas*, I may be happy with my lord, through the reigns of 14 *Indras*; that expiation be made for my husband's offences, whether he has killed a Brâhmana, broken the ties of gratitude, or murdered his friend: thus I ascend my husband's burning pile. I call on you, ye guardians of the eight regions of the world! Sun and moon! Air, fire, æther, earth, and water! My own soul! Yama! Day, night, and twilight! And thou, conscience, bear witness: I follow my husband's corpse on the funeral pile!" Having repeated the above declaration, called the *Santhalpa*, she walks thrice round the pile; and the Brâhmana utters the following *Mantras*: "Om! Let these women, not to be widowed good wives, adorned with collyrium, holding clarified butter, consign themselves to the fire. Immortal, not childless, nor husbandless, excellent, let them pass into fire, whose original element is water." From the *Rigveda*: "Om! Let these wives, pure, beautiful, commit themselves to the fire with their husband's corpse," A *paurânica muntra*.

With this benediction, and uttering the mystic *Namo Namah*, she ascends the flaming pile. While the prescribed ceremonies are performed by the widow, the son, or other near kinsman, of the deceased, applies the first torch with the forms directed for the funeral rites in the *Grihya* (extracts or compilations from the sacred books); by which his tribe is governed. The last rites in this tragic scene, as we may call it, but not so deemed by those who practise them, are as follow: "Adorned with all jewels, decked with *minium* and other customary ornaments, with the box of *minium* in her hand, having made *pijâ* or adoration to the *Dêvâtâs*, thus reflecting that *this life is nought; my lord and master to me was all*:—she walks round the burning pile; she bestows jewels on the *Brâhmanas*, comforts her relations, and shews her friends the attentions of civility; while calling the sun and elements to witness, she distributes *minium* at pleasure; and having repeated the *santhalpa*, proceeds into the flames; there embracing the corpse, she abandons herself to the fire, calling *Satya! Satya! Satya!* The by-standers throw butter and wood on the pile, which is reckoned an act transcendently meritorious, and even those who join in the procession are rewarded in heaven for every step of their march. Such liberal immunities are a proof, says Mr. Colebrooke, that burning could never be a frequent practice in the east.

The sacrifice above described is not absolutely enjoined; but it is recommended by all the allurements which enthusiasm can invent. There are, however, some cases of exemption. If the widow has an infant child; or if she is pregnant; and, among certain casts, if the husband dies in a distant

distant country, the ceremony is interdicted. But if the woman declines burning, for she is allowed the alternative, she must thenceforth live a life of the most rigid austerity, and devote herself wholly to acts of piety and mortification. But though the alternative be allowed, the Hindoo legislators have shewn themselves disposed to encourage widows to burn themselves with their husband's corpse.

Mr. Campbell, during his stay at Tanjore, was a spectator of this horrid ceremony; performed by a young widow, not more than 16 years of age. He has minutely described all the circumstances attending it; for an account of which we refer the reader to his "Journey over Land to India," 4to. 1795.

BURNING *alive*, among the Romans, a punishment inflicted on deserters, betrayers of the public councils, incendiaries, coiners, and even Christians: it was called *crematio*.

The Jews had two ways of burning; one called burning of the body, performed with wood and faggots; the other, burning of the soul, *combustio animæ*, performed by pouring scalding-hot lead down their throats. The priest's daughter who committed whoredom, he that lay with his own daughter, or grand-daughter, or his mother-in-law, were burnt alive. Phil. Trans. N^o. 230. Godw. Moses & Aaron, lib. v. cap. 7.

BURNING, *Ussio*, in *Chemistry*, is distinguished from CALCINING; as the former is performed in close vessels, and terminates in charring, or reducing the body to a blackness; whereas the latter turns them white, being performed in the open air. It also differs from roasting, *toſtio*, as, in burning the fire is applied in contact with the body; in roasting, at a distance from it.

BURNING, or BRENNING, in our *Ancient Customs*, denotes an infectious local disease, obtained by intercourse with the lewd women who were kept in the public stews. See STEWS.

Mr. William Beckett, a surgeon of great learning in this branch of history, has left us a curious account of the *brenning*, which was published in a letter to Dr. James Douglass, A. D. 1718. Mr. Beckett has certainly failed in proving the antiquity of lues venerea or syphilis; but the information contained in his letter is too much to our present purpose to be wholly omitted. We shall, however, resume this investigation when we describe the origin of the venereal disease; intending, in the article before us, to give only an extract from Mr. Beckett's interesting letter; viz.

"I shall begin with the first degree of this disease, and prove, from authentic evidences, it was anciently called the *brenning* or *burning*; and that this word has been successively continued for many hundreds of years, to signify the same disease we now call a *clap*; and that it was not discontinued till that appellation first began to have its rise. The most likely method to accomplish my design, will be first to examine those records that relate to the stews which were by authority allowed to be kept on the Bank-Side in Southwark, under the jurisdiction of the bishop of Winchester, and which were suppressed the 37th of Hen. VIII. For it is impossible but, if there were any such distemper in being at that time, it must be pretty common among those lewd women who had a licence for entertaining their paramours, notwithstanding any rules or orders which might be established to prevent its increase: but if we shall find that there were orders established to prevent the spreading of such a disease, that persons might be secure from any contagious malady after their entertainment at those houses, (which were anciently 18 in number, but in the reign of Henry VII. reduced to 12), we may then securely depend upon it, that it was the frequency of the disease that put those who had the authority under a

necessity of making such rules and orders. For the same powers, who granted a liberty for keeping open such lewd houses, must find it their interest to secure, as much as possible, all persons from receiving any injury there; lest the frequency of such misfortunes should deter others from frequenting them, and so the original design of their institution cease; from the entire sinking of the revenues. Now I find that as early as the year 1162, divers constitutions relating to the lordship of Winchester, (being also confirmed by the king), were to be kept for ever, according to the old customs that had been time out of mind. Among which these were some, viz. 1. No stew-holder to take more for a woman's chamber in the week than 14d. 2. Not to keep open his doors upon holy days. 3. No single woman to be kept against her will, that would leave her sin. 4. No single woman to take money to lie with any man, except she lie with him all night till the morning. 5. No stew-holder to keep any woman that hath the perilous infirmity of burning. These, and many more orders were to be strictly observed, or the offenders to be severely punished. Now we are assured, there is no other disease that can be communicated by carnal conversation with women, but that which is venereal, by reason that only is contagious; and it is evident the burning was certainly so: for, had it been nothing else but some simple ulceration, heat, or inflammation, there would have been no contagion; and that affecting only the woman, could not be communicated by any venereal congress, and so not infer a necessity of her being comprehended under the restraining article. These orders likewise prove the disease was much more ancient than the date above mentioned; because they were only a renewal of such as had been before established time out of mind.

"But to confirm this farther, I find that in the custody of the bishop of Winchester, whose palace was situated on the Bank-side, near the stews, was a book written upon vellum, the title of which runs thus: "Here begynne the ordinances, rules, and customs, as well for the salvation of mannes life, as for to aschew many mischiefs and inconvenients that daily be lik there for to fall out, to be rightfully kept, and due execution of them to be done unto any person within the same." One of the articles begins thus: "De his qui custodiunt mulieres habentes nephandam infirmitatem." It goes on, item, "That no stew-holder keep noo woman wythin his house, that hath any sickness of brenning, but that she be put out upon the peyne of makeit a fine unto the lord of a hundred shillings." This is taken from the original manuscript, which was preserved in the bishop's court, supposed to be written about the year 1430. From these orders we may observe the frequency of the distemper at that time, which, with other inconveniences, was daily like there for to fall out: and the greatness of the penalty, as the value of money then was, that is laid on it, proves it was no trifling or insignificant thing.

"But the bare proof of there having been anciently such a disease as was called the burning, may be thought to be insufficient, unless we were perfectly assured that it was, and how it was in those times described; I shall therefore do it from an unquestionable authority, which is that of John Arden, esq.; who was one of the surgeons to king Richard II. and likewise to king Henry IV. In a curious manuscript of his upon vellum, he defines it to be, a certain inward heat and excoriation of the urethra; which description gives us a perfect idea of what we now call a *clap*; for frequent dissections of those who laboured under that disease have made it evident, that their urethra is excoriated by the virulency of the matter they receive from the infected woman; and this excoriation or ulceration is not confined to the

of months of the gland, as has been lately thought, but may equally alike attack any part of the urethra not beyond the reach of the impelled malignant matter. The heat before described, which these persons are sensible of, as well now as formerly, is a consequent of the excoriated urethra; for the salts contained in the urine must necessarily prick and irritate the nervous fibrillæ, and excite a heat in those parts of the urethra which are divested of its natural membrane; which heat will always be observed to be more or less, as the salts are diluted with a greater or less quantity of urine; a thing I have often observed in persons who have laboured under this infirmity in hot weather, when the perspirable matter being thrown off in greater quantities, the salts bear a greater proportion to the quantity of urine, and thereby make its discharge at that time so much the more painful and troublesome.

"Thus we see this very early and plain description of this disease among us to be entirely conformable to the latest and most exact anatomical discoveries. Here is no tone of the testicles depraved, according to Trajanus Petronius; no excoriation of the *parastata*, according to Rondeletius; no ulceration of the seminal vessels, according to Platerus; no seat of the disease in the *vesicula seminales*, or *prostate*, according to Bartholin; nor in those parts and the testicles at the same time, according to our countryman Wharton, and others, who have falsely fixed the seat of this disease, and whose notions, in this respect, are now justly exploded; but a single and true description of it, and its situation, about 150 years before any of those gentlemen obliged the world with their learned labours.

"Having, I hope, sufficiently made it appear, the burning was a disease very early among us, and given the description of it, I shall proceed to say something of the ancient method that was made use of to cure it. We are not to expect the measures our predecessors in those early times made use of should be calculated for there moving any malignity in the mass of blood, or other juices, according to the practice in venereal cases at this time; because they looked upon the disease to be entirely local, and the whole of the cure to depend upon the removal of the symptoms. Hence it was they recommended such remedies as were accommodated to the taking off the inward heat of the part, and cure the excoriations or ulcerations of the urethra. The process for the accomplishing of this, I shall set down from the before-mentioned John Arden, who wrote about the year 1380. His words are as follow: "*Contra incendium. Item contra incendium virgæ virilis interioris ex calore & excoriatione, fiat talis syringa (i. e. injectio) lenitiva. Accipe lac mulieris masculinum nutritis, & parum zucarum, oleum violæ & pitanzæ, quibus commixtis per syringam infundatur, & si prædictis admiscueris lac amigdalorum melior erit medicina.*" There is no doubt but this remedy, being used to our patients at this time, would infallibly take off the inward heat of the part, and cure the excoriations or ulcerations of the urethra, by which means what issued from thence would be entirely stopt: and this was all they expected from their medicines, for as much as they were entirely unacquainted with the nature of the distemper; and did not in the least imagine, but if the symptoms that first attacked the part were removed, the patient was entirely cured.

"I shall now, as a farther confirmation of what I have advanced, proceed to prove, that by this *burning* or *turning* is meant the venereal disease, by demonstrating that succeeding historians, physical and surgical writers, and others, have all along with us in England used the very same word to signify the venereal malady. In an old manuscript I have written about the year 1390, is a receipt for "burn-

ning of the pyntyl, yat men clepe ye apegalle;" galle being an old English word for a running sore. They who know the etymology of the word *apron*, cannot be ignorant of this. And in another manuscript, written about 50 years after, is a receipt for burning in that part by a woman. Simon Fifi, a zealous promoter of the reformation, in the reign of Hen. VIII. in his supplication of beggars, presented to the king, in 1530, says as follows: "These be they," speaking of the Romish priests, "that corrupt the whole generation of mankind in your realm; that catch the pockes of one woman and bear them to another; that be burnt with one woman and bear it to another; that catch the leproy of one woman and bear it unto another." But to make this matter still more evident, I am to observe, that Andrew Boord, M.D. and Romish priest, in the same reign, in a book he wrote, entitled "The Breviary of Health," printed in 1546, speaks very particularly of this sort of burning; one of his chapters begins thus: "The 19th chapter doth shew of burning of an harlot;" where his notion of communicating the burning is very particular. He adds, that if a man be burnt with an harlot, and do meddle with another woman within a day, he shall burn her: and as an immediate remedy against the burning, he recommends the washing the pudenda two or three times with white wine, or else with sack and water; but if the matter have continued long, to go to an expert surgeon for help. In his 82d chapter, he speaks of two sorts of burning, the one by fire, and the other by a woman, through carnal copulation, and refers the person that is burnt of a harlot to another chapter of his for advice, "yf he get a dorser or two," so called from its protuberancy or bunching out: for I find about that time the word *bubo* was mostly made use of to signify that sort of swelling which usually happens in pestilential diseases.

"From hence it appears, the burning by its consequents, was venereal, since every day's experience makes it evident, that the ill treatment of the first symptoms of the disease, either by astrigent medicines, or the removing them by cooling and healing the excoriated parts, will generally be attended with such swellings in the groin, which we rarely observe to happen from any other cause whatsoever.

"I shall give a few more instances of this disease being called the *burning*, and conclude. In a manuscript I have of the vocation of John Bale to the bishopric of Ossory in Ireland, written by himself, he speaks of Dr. Hugh Weston, who was dean of Windsor in 1556, but deprived by cardinal Pole for adultery, as follows, "At this day is lecherous Weston, who is more practised in the art of breach-burning than all the whores of the stews." And again, speaking of the same person, he says, "He not long ago brent a beggar into St. Botolph's parish." The same author says of him elsewhere, "He had been sore bitten with a Winchester goose, and was not yet healed thereto;" which was a common phrase for the pox at that time, because the stews were under the jurisdiction of the bishop of Winchester. Mich. Wood, in his epistle before Stephen Gardiner's oration, "De vera Obedientia," printed at Rheon, 1553, gives another evidence of the burning. And Wm. Bullein, a physician in the reign of queen Elizabeth, in a book he published, called "The Bulwark of Defence, &c." printed in 1562, bringing in Sickness demanding of Health what he should do with a disease called the "French Pockes," Health answers, "He would not that any should lise for this disease, or to be bold when he is bitten, to thynke thereby to be helped, but rather to eschewe the cause of thys infirmity, and filthy rotten burning of harlots."

BURNING-GLASS.

In the Sloanian library, N^o 4037, is another letter, (bound up in folio, with a great many different MSS.) from Mr. William Beckett to Sir Han Sloane, dated Feb. 4th 1777; wherein the principal facts mentioned in the letter to Dr. Douglass are recited. But we found nothing besides which is worthy of notice, except the following remark: "This *breuning* or *burning*. (being, upon the disuse of these words, called gonorrhœa). is what we now call the *clap* : "which word I take to be of a modern usage; for, in all my enquiries, I cannot find it was ever designed to signify the same thing it does now, before the reign of Charles I."

BURNING, in Law. See ARSON, BRANDING, TREASON, &c.

BURNING of diamonds, is used among the jewellers for putting the DIAMONDS into a fierce fire, in order to divest them of a yellow or brown colour.

BURNING on the forehead, *Frontis inussio*, was anciently the penalty of a calumniator. In the middle age, we find frequent instances of *burning* in the cheek; a punishment allotted to bondmen, or villains guilty of theft.

BURNING-bush. See BUSH.

BURNING-glass, or *burning-mirror*, a machine whereby the sun's rays are collected into a point; and by that means their force and effect extremely heightened, so as to burn objects placed therein.

Burning-glasses are of two kinds: the first convex, called *lentes causticæ*; which transmit the rays of light, and in their passage refract, or incline them towards the axis; having the property of lenses, and acting according to the laws of refraction.

The second, which are the more usual, are concave; very improperly called burning-glasses, being usually made of metal: these reflect the rays of light, and, in that reflection, incline them to a point in their axis; having the properties of *specula* or mirrors; and acting according to the laws of reflection. See MIRROR and REFLECTION.

The first, or convex kind, authors suppose to have been unknown to the ancients; but the latter they are generally allowed to have been acquainted with. Their magnifying power is taken notice of both by Seneca and Pliny; and their burning power is mentioned in a treatise on Optics, ascribed to Euclid, theorem 31. It is probable that the Romans had a method of lighting their sacred fire by means of reflecting concave *specula*. But Porta, and many others, suppose, that the burning mirrors of the ancients were made of metal, in the form of a section of a parabola, having the vertex cut off; it being the well-known property of this curve to reflect all rays that fall upon it parallel to the axis into the focus. Historians tell us, that Archimedes, by means of reflecting mirrors, burnt a whole fleet; and though the effect related be very improbable, yet it sufficiently proves that such things were then known. The machines then used, nobody doubts, were metallic and concave, and had their focus by reflexion: it being agreed, that the ancients were unacquainted with the refracted *foci* of convex glasses. Yet M. de la Hire has discovered even these in the Clouds of Aristophanes; where Strepsiades tells Socrates of an expedient he had to pay his debts, by means of a round transparent stone or glass, used in lighting of fires, by which he intended to melt the bond; which in those days was written on wax. The glass here used to light the fire, and melt the wax, M. de la Hire observes, could not be concave; since a reflected *focus* coming from below upwards, would have been exceedingly improper for that purpose: and the old scholiast of Aristophanes confirms the sentiment. Pliny makes mention of globes of glass and crystal, which being

exposed to the sun, burnt the clothes and flesh on people's backs; and Lactantius adds, that a glass sphere, full of water, and held in the sun, lighted the fire even in the coldest weather; which incontestibly proves the effects of convex glasses.

Indeed, there is some difficulty in conceiving how they should know such glasses burnt, without knowing they magnified; which it is granted they did not, till towards the close of the thirteenth century, when spectacles were thought of. For as to those passages in Plautus, which seem to intimate the knowledge of spectacles, M. de la Hire observes, they do not prove any such thing; and he solves this, by observing, that their burning-glasses being spheres, either solid, or full of water, their *foci* would be one fourth of their diameter distant from them: if then their diameter were supposed half a foot, which is the most we can allow, an object must be at the distance of an inch and an half, in order to its being perceived magnified: those at greater distances do not appear greater, but only more confused, through the glass than out of it. It is no wonder therefore, the magnifying property of convex glasses was unknown, and their burning one known; it is more wonderful there should be 300 years between the invention of spectacles and telescopes.

Every concave mirror, or *speculum*, collects the rays dispersed through its whole concavity, after reflexion, into a point or focus; and is therefore a burning mirror.

Hence, as the focus is there where the rays are the most closely contracted, if it be a segment of a large sphere, its breadth must not subtend an arch above eighteen degrees: if it be a segment of a smaller sphere, its breadth may be thirty degrees; which is verified by experiment. As the surface of a mirror, which is a segment of a larger sphere, receives more rays than another of a less, if the latitude of each subtend an arch of eighteen degrees; or even more or less, provided it be equal; the effects of the greater mirror will be greater than those of the less.

And as the *focus* is contained between the fourth and fifth parts of the diameter, mirrors that are segments of greater spheres burn at a greater distance than those which are segments of a smaller.

Since, lastly, the burning depends on the union of the rays, and the union of the rays on the concave spherical figure; it is no wonder, that even wooden mirrors, gilt, or those prepared of alabaster, &c. covered with gold; nay, even that those made of paper, and covered with straw, should be found to burn.

Among the ancients, the burning mirrors of Archimedes and Proclus are eminent; by one of which, the Roman ships besieging Syracuse, under the command of Marcellus, according to the relation of Zonaras, Tzetzes, Galen, Eustathius, Anthemius, &c. and by the other, the navy of Vitalian besieging Byzantium, according to the same Zonaras, were burnt to ashes.

Many have questioned the fact recorded by several historians concerning the surprising effects of Archimedes's burning mirrors; and they have principally urged the impossibility of producing such effects by means of concave *specula*, the focal distance of which must have been much too small for the purpose. Des Cartes, particularly discredited the story, as fabulous, on this account; but Kircher made many experiments with a view of vindicating its credibility. Apprehending that the concave *specula* of the ancients were sections of a parabola, he began with combining several of this figure; but, failing of success in this way, he tried the effect of a number of plane mirrors; and with five mirrors of the same size, placed in a frame, he contrived to throw the

rays

BURNING-GLASS.

rays reflected from them to the same place, at the distance of more than a hundred feet; and by their means he produced such a degree of heat, as led him to conclude, that, by increasing their number, he could have set fire to inflammable substances at a greater distance. He likewise made a voyage to Syracuse, in company with his pupil Schottus, in order to examine the place of the supposed transaction; and they were both of opinion that the galleys of Marcus could not have been more than thirty paces from Archimedes. M. Buffon, though ignorant of the particular testimonies of ancient writers, relative to the invention of Archimedes, and of the attempts of Kircher above mentioned, has more lately, by a similar contrivance, sufficiently evinced the practicability of the operation.

Dr. Wolfe, in the year 1768, after having given an account of some parabolic mirrors, constructed by M. Høfen of Dresden, offers a conjecture, that those of Archimedes might be of this kind, since it is not difficult to describe a parabola, whose parameter is 2000 feet; and that rays reflected from such a speculum might be received by a lens, after having been brought to a focus, and transmitted parallel to any distance: but he was not apprised, that Kepler and Dechales had shewn, that no rays could be conveyed parallel to one another, except those which proceeded from the same points in the sun's disk. *Dutens du Miroir Ardent d'Archimede. Paris, 1755. Phil. Transf. vol. xlviii. p. 621, &c. Ibid. vol. lix. p. S.*

Among the moderns, the most remarkable burning mirrors are those of Maginæ, twenty inches in diameter; of Septala of Milan, which was near three feet and a half in diameter, and which burnt at the distance of fifteen or sixteen paces; of Violette, and Tschirnhausen, the new complex one of M. Buffon, that of Trudaine, and that of Parker.

Villette, a French artist at Lyons, made a large mirror, which was bought by Tavernier, and presented to the king of Persia; a second, bought by the king of Denmark; a third, presented by the French king to the Royal Academy; a fourth has been in England, where it was publicly exposed.—The effects of this mirror, as found by Dr. Harris and Dr. Desaguliers, are, that a silver sixpence is melted in 7" and $\frac{1}{2}$ "; a halfpenny of king George I. in 16", and running with a hole in 34". Tin melts in 3", cast iron in 16"; slate in 3"; a fossil shell calcines in 7"; a piece of Pompey's Pillar in Alexandria vitrifies in the black part in 50", in the white in 54"; copper ore in 8"; bone calcines in 4", and vitrifies in 3". An emerald melts into a substance like a turquoise stone; a diamond weighing four grains, loses $\frac{2}{3}$ of its weight; the asbestos vitrifies; as all other bodies will do, if kept long enough in the focus; but when once vitrified, the mirror can produce no farther effect.—This mirror is forty-seven inches wide; and is ground to a sphere of seventy-six inches radius; so that its focus is about thirty-eight inches from the vertex. Its substance is a composition of tin, copper, and tin-glass. *Phil. Transf. vol. iv. p. 198.*

M. Tschirnhausen's reflecting mirror deserves next to be mentioned. The following things are noted of it in the *Acta Eruditorum*, for 1667, p. 52. 1. Green wood takes fire instantaneously, so that a strong wind cannot extinguish it. 2. Water boils immediately, and eggs in it are presently edible. 3. A mixture of tin and lead, three inches thick, drops presently, and iron or steel-plate becomes red hot presently, and a little after burns into holes. 4. Things not capable of melting, as stones, bricks, &c. become soon red hot, like iron. 5. Slate becomes first white, then a black glass. 6. Tiles are converted into a yellow glass, and shells into a blackish yellow one. 7. A pumice-stone emitted from a volcano, melts into white glass; and, 8. A piece of crucible

also vitrifies in eight minutes. 9. Bones are soon turned into an opaque glass, and earth into a black one. It is made of copper, and its substance is not above double the thickness of the back of a knife: this was about $4\frac{1}{2}$ French feet in diameter, and it burnt at the distance of twelve feet.

Every lens, whether convex, plano-convex, or convexo-convex, collects the sun's rays, dispersed over its convexity, into a point by refraction; and is therefore a burning glass. The most considerable of this kind known, is that made by M. de Tschirnhausen: the diameters of his lenses are three and four feet; the focus at the distance of twelve feet, and its diameter an inch and a half. To make the focus more vivid, the rays are collected a second time by a second lens parallel to the first; and situated in that place where the diameter of the cone of rays formed by the first lens is equal to the diameter of the second: so that it receives them all: and the focus from an inch and a half, is contracted into the space of eight lines, and its force increased proportionably. It was purchased by the duke of Orleans, who presented it to the French Academy. Its weight was 160 pounds.

Its effects, among others, as related in the *Acta Erudit. Lipsæ*, are, that it lights hard woods, even moistened with water, into a flame, instantly; that water, in a little vessel, begins to boil presently; all metals are melted; brick, pumice-stone, delft-ware, and the asbestos stone, are turned into glass; sulphur, pitch, &c. melted under water: the ashes of vegetables, woods, and other matters, transmuted into glass; in a word, every thing applied to its focus, is either melted, turned into calx, or into smoke; and the colours of jewels, and all other bodies, metals alone excepted, are changed by it. He observes, that it succeeds best, when the matter applied is laid on a hard charcoal, well burnt.

Though the force of the solar rays be here found so stupendous, yet the rays of the full moon, collected by the same burning glass, do not exhibit the least increase of heat.

Wolffius tells us, that an artist of Dresden made burning mirrors of wood, bigger than those of M. Tschirnhausen or Villette, which had effects at least equal to any of them.—Traberus teaches how to make burning mirrors of leaf gold, viz. by turning a concave, laying its inside equally with pitch, and covering that with square pieces of the gold, two or three fingers broad, fastening them on, if need be, by fire. He adds, that very large mirrors may be made, of thirty, forty, or more concave pieces, artfully joined in a turned wooden dish or scuttle; the effects of which will not be much less than if the surface was continuous.—Zahnus adds farther, that Newman, an engineer at Vienna, in 1699, made a mirror of paste-board, covered within with straw glued to it; by which all kinds of metals, &c. were readily melted.

Sir Isaac Newton's burning mirror consisted of seven concave glasses, each of which was eleven inches and a half in diameter, and so disposed as to have one common focus: six of them were placed round the seventh and contiguous to it, in such a manner as to form the segment of a sphere, whose substance is about thirty-four inches and a half; the focus is about twenty-two inches and a half distant, and about an inch in diameter. This speculum vitrified brick or tile in one second, and in about half a minute melted gold. M. Zeiher, not long since, made some improvement of this instrument; and formed panes of plain glass into the necessary degree of curvature, by heating them so hot on a dish made of metal, that they could all assume the same form. M. Buffon has constructed furnaces for converting plain into concave mirrors; the mirrors are exposed to a degree of heat sufficient to soften the glass, in consequence of which it conforms itself to the spherical figure of the mould on which it is placed. This method is subject to many difficulties and

BURNING-GLASS.

accidents; however, out of twenty-four mirrors treated thus, M. Buffon preserved three; two of which are thirty-seven inches in diameter, and the other forty-six inches. The last was tin-foiled, and presented to the French king; and is represented by the maker, as the most powerful burning mirror in Europe, and yet the moon's light reflected from this concave speculum, on a thermometer placed in the focus, produced no sensible dilatation of the included fluid. M. Buffon has also made attempts for constructing convex lenses of great power, by fixing two of the above mentioned concave glasses together, and filling the cavity between them with water: one of the glasses broke in the trial; but others have since undertaken to construct these water lenses. He has likewise suggested another improvement in the construction of burning-glasses, consisting in a contrivance for diminishing the thickness of the middle or central part of the lens from three inches to one inch; whereby he proposes to prevent the diminution of light occasioned by its passing through the middle part of a lens of large diameter, and short focus, which must be proportionably thick in that part. This new kind of lens is composed of three parts ground to the same radius, or of two circular zones, or bands, surrounding a central or middle part. He computes that the heat in the focus of a lens of this kind, three feet in diameter, will be about four times greater than that produced by any burning glass yet known.

But the most considerable improvement which M. Buffon has introduced into the optical apparatus is his machine, consisting of a number of mirrors; whereby he seems to have revived the secret of Archimedes, and to have vindicated the credit of history in this point. In the year 1747 he constructed a machine, with a hundred and forty plane mirrors each about four inches long, and three broad; these are fixed at about a quarter of an inch distance from each other, upon a large wooden frame of about six feet square. Each of them has three moveable screws, which are so contrived, that the mirror can be inclined to any angle, and in any direction that meets the sun; and by this means, the solar image of each mirror is made to coincide with all the rest. The experiment was first tried with twenty-four mirrors, which readily set on fire a combustible matter, prepared of pitch and tow, and laid on a deal board, at the distance of sixty-six French feet.

He then farther pursued the attempt, and put together a kind of polyhedron, consisting of 168 pieces of plane looking glass, each being fix inches square; and by means of this some boards of beech-wood were set on fire, at the distance of a hundred and fifty feet, in the month of March, and a silver plate was melted at the distance of sixty feet. This machine, beside other advantages, may be easily moved, so as to burn downwards or horizontally; and it burns either in its distant focus, or in any nearer interval, which our common burning-glasses cannot do, because their focus is wholly fixed and determined. This machine, in the next stage of its improvement, contained three hundred and sixty plane mirrors, each eight inches long, and six broad, mounted on a frame eight feet high, and seven feet broad. With twelve of these mirrors, light combustible matters were kindled at the distance of twenty feet; at the same distance, a large tin vessel was melted with forty-five of them, and a thin piece of silver with a hundred and seventeen. When the whole machine was employed, all the metals and metallic minerals were melted at the distance of twenty-five, and even of forty feet. Wood was kindled in a clear sky, at the distance of two hundred and ten feet. The focus, at the distance of fifty feet, is about seven inches broad; and at the distance of two

hundred and forty feet, it becomes two feet in diameter. Mr. Buffon afterwards constructed a machine, which contained four hundred mirrors, each half a foot square, with which he could melt lead and tin at the distance of a hundred and forty feet. *Phil. Trans. abr. vol. x. p. 194. &c. M. de Buffon Histoire Naturelle, &c. Supplem. vol. i. Montucla, Histoire des Mathematiques, vol. i. p. 232.*

There is no solid substance that resists the efficacy of modern burning-glasses. Messrs. Macquer and Baumé have succeeded in melting small portions of PLATINA, by means of a concave glass, twenty-two inches in diameter, and of twenty-eight inches focus; though this metal is not fusible by the strongest fires that can be excited in furnaces, or sustained by any chemical apparatus. Yet it was long ago observed by the Academicians del Cimento, that spirit of wine could not be fired by any burning glass which they used; and notwithstanding the great improvement which these optical instruments have since received, M. Nollet has not been able, by the most powerful burning mirrors, to set fire to any inflammable liquors whatever.

The principle upon which M. Trudaine constructed his burning lens was that of combining two circular segments of glass spheres, and applying them with their concave sides towards each other, so as to form a lenticular cavity of four feet in diameter. The cavity was filled with spirits of wine; of which it contained 140 French pints. The focus of parallel rays in this instrument was 10 feet 10 inches and one line distant from the centre of the glass; and originally contracted to a circle of about eight lines in diameter, by the interpolation of a second and smaller lens of solid glass. The maker presented it to the Royal Academy of Sciences, but it was soon afterwards accidentally broken. The expence of its construction is said to have amounted to 1000*l.* sterling; and yet its powers were not very great; for, according to Mr. Magellan, it required 20 minutes for coagulating the particles of platina, which Mr. Parker's lens could do in less than a tenth part of the time. This seems indeed to be the most powerful burning lens that has yet been constructed. Mr. Parker, of Fleet-street, London, was induced, at an expence of upwards of 700*l.*, to contrive and at length to complete a large transparent lens, that would serve the purpose of fusing and vitrifying such substances as resist the fires of ordinary furnaces, and more especially of applying heat in vacuo, and in other circumstances in which it cannot be applied by any other means. After directing his attention for several years to this object, and performing a great variety of experiments in the prosecution of it, he at last succeeded in the construction of a lens, of flint glass, three feet in diameter, which, when fixed in its frame, exposes a surface two feet 8½ inches in the clear; without any other material imperfection besides a disfigurement of one of the edges by a piece of the scoria of the mould, which unfortunately found its way into its substance. This lens was double convex, both sides of which were a portion of a sphere of 18 feet radius. From the papers and drawings, with which the ingenious inventor has obligingly furnished us, we are able to give the following accurate account of this lens, illustrated by appropriate engravings. The elevation of this lens is exhibited in *Plate II. Optics, fig. 1.* The large lens is A, whose diameter in the frame is 3 feet, and in the clear 2 feet 8½ inches; its thickness at the centre is 3¾ inches; its focal distance 6 feet 8 inches; and the diameter of the burning focus 1 inch; its weight was 212 pounds. B is a second lens, whose diameter in the frame is 16 inches, and which shews in the clear 13 inches; the thickness in the centre is 1½ inch; length of the focus 29 inches, and its diameter ⅔ of an inch; its

BURNING-GLASS.

its weight 21 pounds. When the two above lenses are compounded together, the length of the focus is 5 feet 3 inches, and its diameter half an inch. C is a truncated cone, composed of 12 ribs of wood, at the larger end of which is fixed the great lens A, and at the smaller extremity the lesser lens B; near the smaller end is also fixed a rack, D, passing through the pillar L, moveable by a pinion turning in the said pillar, by means of the handle E, and thus giving a vertical motion to the machine. F is a bar of wood, fixed between the two lower ribs of the cone at G; having, within a chased mortise in which it moves, an apparatus, H, with the iron plate, I, fixed to it; and as this part turns on a socket, K, a method is thus obtained of placing the matter under experiment so as that it may be acted upon by the focal rays in the most direct and powerful manner. L L is a strong mahogany frame, moving on casters, M M, and immediately under the table, N, are three friction wheels, by which the machine moves horizontally. O is a strong iron bow, in which the lens and the cone hang.

In fig. 2. a section of the large lens is seen: *a*, the large lens, marked A in the former figure; *bb* is the frame which contains the lens; *c* the small lens, marked B in the preceding figure; *d d* is the frame which contains this lens; *e e* is the truncated cone, marked C in the other figure; *f* is the bar, on which the apparatus, marked F in the former figure, moves; *g* is the iron plate, denoted by I in the said figure; *h* the cone of rays, formed by the refraction of the great lens *a*, and falling on the lens *c*; and *i* is the cone of rays formed by the refraction of the lens *c*. In fig. 3. *k* exhibits the front view of the great lens; *l* the frame containing the large lens; and *m* the strong iron bow in which the lens hangs.

It is difficult to form an accurate estimate of the burning power of this lens; inasmuch as it is next to impossible to discover what should be deducted for the loss of power, in consequence of the impediments that the glass of which it was made must occasion, as well as the four reflections (i. e. two reflections on the immersion and two more on the emission of the rays of heat), by way of diminution; but we will endeavour to appreciate it after making a full allowance for these deductions, which must necessarily result from every means of concentrating the solar rays, and which must be considered to be as the friction of an engine, of which nature they really partake.

The solar rays received on a circular surface of 2 feet 8½ inches, when concentrated within the diameter of one inch, will be 1056.25 times its intensity, or this number of times greater than the heat of the sun as felt on the surface of the earth. We will suppose that as the heat of the air, in ordinary summer weather, is 65°, and in sultry weather is 75°, the average of which is 70°, and that we take this degree as the average effect, the accumulated power of the lens, on the supposition of an equal effect over the whole surface of the focus, will be equal to 73938°.

It must be recollected by those who have had an opportunity of examining the effects of this lens, that the external part of the focal light was less intense than that part which was near the centre of it; or, rather, that the effect was very much accumulated in the centre: but as it is possible that the refraction of the light and of the caloric fluid may not take place in the same angle, we think it safest to consider it as of an uniform effect, and after deducting one-fourth part thereof as a compensation, there remains 55454°, as the expression of its power.

As the application of the second lens reduced the diameter of the focus to half an inch, the effect, without allowing

for the reduction of its power, would be equal to 221816°, but deducting one-fourth for the second transmission, there remains 166362° as the expression of its power.

Supposing that the rays of the sun emanated from a point, the focus of the lens would also be a point; for the rays transmitted through one edge of the lens would meet those transmitted through the other edge, so that the focus would be without parts, or a mathematical point; but as the sun is known to measure 31' 32" during the apogee, and 32' 38" during the perigee, the focus must necessarily be 0.7105 parts of an inch diameter at Midsummer, and 0.7594 at Christmas. The length of the luminous axis at Midsummer must, from the same cause, be 3.428 inches, and, at the opposite period, 3.557; because the dimension of the focus is actually dependent on the apparent diameter of the sun, the semi-diameter being to be added to increase the measure of the converging rays on each of the opposite sides, the tangent of which is the semi-diameter of the focus: and by the same means the length of the axis is discovered, adding to and subtracting from the converging angle, by which means the points at which they meet on the axis are discovered. These two points disclose the commencement of the luminous appearance thereon.

The variation between the above calculated diameter of the focus and what it really was, points out the errors in the instrument, which must arise from one of two causes, or from both, viz. that the axis of the two sides are not coincident, or that they are not opposite to each other; should the difference have been occasioned by either, the focus would have been elliptical; but as this was not ascertained, it can only be said that a very small deviation in each would have occasioned this enlargement of the focus; and possibly they might have acted in contrary ways, which would have made it nearly circular.

But as this lens was exported many years ago, we are not able to determine whether the focus stated to have been one inch diameter was ascertained by its burning effect, or by the diameter of the focal rays: if by the diameter of the rays, the enlargement thereof must have resulted from the above causes; but if from its burning power, it tends rather to establish the theory of Dr. Herschell, that the rays of caloric are less refrangible than those of light, and that the true burning focus lies rather beyond the apparent focus.

We are far from thinking the above statement an extravagant supposition, when it is recollected, that all the experiments on which we ground our opinion were made with a total exposure of the substances to the action of the circumambient air; and had the property of this fluid, as to its conducting power of heat, been then well understood, so as to have prevented the diminution of the effect, we are well satisfied the result would have justified our conclusion.

The ingenious experiments of Mr. Wedgwood, and the extensive use of his pyrometer, for the admeasurement of heat required to melt metals, are now too well understood to require any eulogium in this place; it is sufficient to state that he estimates the heat required to melt the following substances to be as follows:

	Fahr. or by Wedg.
Red heat visible in day light	1077° 0
Fine gold	5237 32
Welding heat of iron greatest	13427 95
Cast iron melts	17977 130
Greatest heat of his small furnace	21877 160
Extremity of the scale of his pyrometer	32277 240

The power of the lens estimated by this pyrometer will be found to be 1095°, and supposing the hottest furnace to be 240°, the focal heat thereof is 5.2975 times greater.

BURNING-GLASS.

In justification of the opinion we have given, we now proceed to submit a selected enumeration of the experiments which were made with this justly celebrated instrument, under the inspection of major Gardner, brother to the admiral lord Gardner, together with some gentlemen of the Royal Society.

Substances fused, with their Weight and Time of Fusion.	Weight in Grains.	Time in Seconds.
Gold, pure, - - - - -	20	4
Silver, do. - - - - -	20	3
Copper, do. - - - - -	33	20
Platina, do. - - - - -	10	3
Nickell, - - - - -	16	3
Bar Iron, a Cube, - - - - -	10	12
Cast Iron, a Cube, - - - - -	10	3
Steel, a Cube, - - - - -	10	12
Scoria of Wrought Iron, - - - - -	12	2
Kearsh, - - - - -	10	3
Cauk, or Terra Ponderosa, - - - - -	10	7
A Topaz, or Chrysolite, - - - - -	3	45
An Oriental Emerald, - - - - -	2	25
Crystal Pebble, - - - - -	7	6
Topaz, - - - - -	10	30
Flint Oriental, - - - - -	10	30
Rough Cornelian, - - - - -	10	75
Jasper, - - - - -	10	25
Onyx, - - - - -	10	20
Garnet, - - - - -	10	17
White Rhomboidal Spar, - - - - -	10	60
Zeolites, - - - - -	10	23
Rotten Stone, - - - - -	10	80
Common Slate, - - - - -	10	2
Asbestos, - - - - -	10	10
Common Lime Stone, - - - - -	10	55
Pumice Stone, - - - - -	10	24
Lava, - - - - -	10	7
Volcanic Clay, - - - - -	10	60
Cornish Moor Stone, - - - - -	10	60

Mr. Parker farther informs us, that a diamond, weighing 10 grains, exposed to this lens for 30 minutes, was reduced to 6 grains; during which operation it opened, and foliated like the leaves of a flower, and emitted whitish fumes, and when closed again it bore a polish, and retained its form. The editor has been favoured by Mr. Parker, jun. with the following additional observations on the powers of this lens.

Gold remained in its metallic state, without apparent diminution, notwithstanding an exposure at intervals of many hours: but what is remarkable, the rest, or cupel, which was composed of bone ash, was tintured with a beautiful pink colour.

Platina. The experiments evince that the specimens were in different states of approach to a complete metallic form: several of them threw off their parts in sparks, which in most instances were metallic.

Copper, after three minutes exposure, was not found to have lost in weight.

Iron, steel-shear. What is remarkable in this experiment is, that the lower part, i.e. that part in contact with the charcoal, was first melted, when that part which was exposed to the focus remained unfused: an evidence of the effect of flux on this metal.

Iron scoria, and the turnings of iron. The scoria appears to have been melted in much less time than the turnings, a result that might have been expected to have been directly the reverse; but some allowance must be made for the probable difference in the effects or intensities of the solar rays at the periods at which the experiments were made.

Calx of iron from vitriolic acid, precipitated by mild fixed alkali, weighing 5 grains before exposure, weighed afterwards $5\frac{1}{4}$ grains; which indicates an increase of weight by an absorption of phlogiston.

Regulus of zinc began almost instantly to flow, and was nearly evaporated; the remains were magnetic.

Regulus of cobalt was completely evaporated in 57".

Regulus of bismuth was nearly evaporated when exposed on a charcoal rest; but on black lead it began to fuse in 2", and very soon after passed into a state of complete fusion; it lost only half a grain in weight from an exposure of 180"; on a bone-ash rest it fused in 3", and in 180" it was reduced to $7\frac{1}{2}$ grains.

Regulus of antimony: 33 grains were fused in 3" on charcoal, and after 195" there remained only 11 grains; but when exposed on a charcoal rest for the same time, there remained afterwards 28 grains, which shewed a magnetic affection.

Fine kearsh from the cannon foundry evaporated very fast during 120", and in 30" more the remainder began to flow into globules, which, on being cold, were attracted by the magnet. This experiment of itself supports the claim of this instrument to a vast superiority over the heat of any furnace hitherto known.

Crystal pebble of North America: 5 grains exposed contracted in 15", perfectly glazed in 135", ebulliscent in 150", and when taken out appeared semi-diaphanous, of a slate colour.

Several of the semi-crystalline substances, exposed to the focal heat, exhibited symptoms of fusion: such as the agate, oriental flint, cornelian, and jasper; but as the probability is that these substances were not capable of complete vitrification, it is enough that they were rendered externally of a glassy form.

Garnet completely fused on black lead in 120", lost $\frac{1}{4}$ of a grain, became darker in colour, and was attracted by the magnet.

Ten cut garnets taken from a bracelet, began to run the one into the other, in a few seconds, and at last formed into one globular garnet.

The clay used by Mr. Wedgwood to make his pyrometric test, run in a few seconds into a white enamel. Seven other kinds of clay sent by Mr. Wedgwood were all vitrified.

Several experiments were made on limestone, some of which were vitrified, but all of which were agglutinated; it is, however, suspected that some extraneous substance must have been intermixed. A globule produced from one of the specimens, on being put into the mouth, flew into a thousand pieces, occasioned, it is presumed, by the moisture.

Stalactites Zeolithus spatosus: 9 grains took a globular form in 60"; in 148" the globule began to get clear; in 155" was perfectly transparent, and as it grew cold diminished in transparency, and at last resolved itself into a beautiful red; on being cut by a lapidary, it was found to be so hard as to serve as a diamond to write on glass.

Several specimens of lavas, and other volcanic productions, were exposed to the focus of the lens, all of which yielded to its power. This furnace of nature, the volcano, is supposed to be hotter than any furnace constructed by the

BURNING-GLASS.

art of man, and as none of these substances have been found perfectly vitrified, the conclusion is, that the volcano must exceed them in its power.

The following observation made by major Gardner, he applies to all the experiments made by him during a period of many months; we will use his own words:

"That no substance can remain any length of time in its focus unfused or unvitrified, unless it be externally white or diaphanous; but in a number of instances even these properties do not prevent their being fused or vitrified: when they do it appears, in the first case, that the rays were in part reflected (perhaps before they came in contact with the intensely white substance); and from this circumstance the sun's rays are prevented from exerting their full power upon them."

Some experiments were made in the year 1802, with Mr. Parker's lens, with the view of ascertaining whether the moon communicated any heat to the earth, in common with the reflected light from which we derive so much advantage.

This experiment was attended by sir Joseph Banks, with several members of the Royal Society, together with Dr. Crawford, who provided the most sensible thermometers; but after applying them to the luminous focus, so far from a perceptible increase of heat, it was thought there was perceived rather a diminution thereof; but this suspicion did not lead them to a fair investigation of the fact.

Since this period some experiments have been made that evince the power of communicating cold by reflection; but as this fact has not yet been explained consistently with the present received theory, we shall content ourselves with taking notice of the experiment made by M. Piccet. Two concave mirrors being placed at the distance of $10\frac{1}{2}$ feet from each other, a very delicate air thermometer was put into one of the foci, and a glass matras full of snow in the other. The thermometer sunk several degrees, and rose again when the matras was removed. When nitric acid was poured upon the snow (which increased the cold) the thermometer sunk 5° or 6° lower. Here cold seems to have been emitted by the snow, and reflected by the mirrors to the thermometer, which it is thought could not happen unless cold were a substance.

It has been found that upon an admixture of equal quantities of snow, which is always at 32° , and of water heated to 172° , the result is that the compound only retains the lowest heat of 32° , so that 140° of heat or caloric disappears.

Much has been said respecting the point or degree at which the thermometer should indicate the presence of heat. The experiments of Dr. Crawford seem to place it at 1268° below the present 0. Mr. Kirwan places it at 1048° . Messrs. Lavoisier and Laplace at 2736° ; and by a mixture of four parts of sulphuric acid with three pints of water, it seems that it should be placed at 5803° below 0.

Experiments of this kind may be made *ad infinitum*, and in time it may possibly be ascertained that cold is a real substance; but for the purpose of getting an answer to the present question, we will accommodate the scale of Fahrenheit, by adding 108° thereto, so as to make the 0 correspond with the caloric imbibed by snow or ice before it can melt. The average temperature of the air, mentioned under the article *BURNING GLASS*, of 70° will be now considered as 178 of the new scale.

The superficies of spherical bodies are to each other as the squares of their respective diameters. The diameter of the moon is considered to be 2180 miles, and its mean distance from the earth 240,000; from which it follows, on the supposition that all the solar rays received by the moon

were reflected back, and that the earth was absolutely without heat, that the effect of this reflection would be found to be .00367 of a degree (for $240,000 \times 2^2 : 178^{\circ} :: 2180^2 : .00367$); which multiplied into 1056.25, and this sum increased four times for the increased power of the second lens, would give $15,51234^{\circ}$ as the heat of the focus; $92,28766^{\circ}$ below the present 0, or $124,28766^{\circ}$ below the freezing point.

This dissertation is interesting in another point of view, for this calculation ascertains that the light afforded by the moon, when compared with that by the sun, abstracting all impediments in both cases, is only as 1 to 48480.

A subscription was proposed for raising the sum of 700 guineas, towards indemnifying the charges of the inventor, and retaining the very curious and useful machine above described in our own country; but from the failure of the subscription, and some other concurring circumstances, Mr. Parker was induced to dispose of it to capt. Mackintosh, who accompanied lord Macartney in the embassy to that country; and it was left, much to the regret of philosophers in Europe; at Peking; where it remains in the hands of persons who, most probably, know neither its value nor use.

BURNING of Heath, in Agriculture, a practice employed in some districts for clearing ground covered with this substance, in order to procure grass and herbage for cattle. The most proper time for this business is towards the latter end of the summer, when the plants are withered: care should be taken that the fire extends no farther than is intended, by clearing away all the grass, and other dry vegetable matters, on the side which is to be preserved from the flames, to a distance sufficient to prevent all communication; the grass and other substances which are cut down, being spread upon the part intended to be burnt, may serve for kindling the fire after they are become dry, and in a state fit for combustion.

For this operation a fair calm day should likewise be chosen; when, by kindling the fire on the side the wind blows from, the danger of its spreading too extensively is more fully guarded against. If, however, notwithstanding these precautions, it should spread to places intended to be preserved, and where there is no water, the most effectual way of stopping the progress of it is to dig a trench; as, by throwing up the earth on the side where the fire is, the grass is covered and the flames thereby hindered from extending farther.

BURNING of Lime, the process of converting hard or strong calcareous substances into lime by means of fire. See *LIME burning*.

BURNING of Straw, a wasteful dissipating practice employed in some districts for the purpose of converting it into ashes for manuring land. It is observed by Mr. Young, in the Report of Lincolnshire, that "the most singular practice he ever met with in manuring subsists on the Wolds; it is that of spreading dry straw on the land and burning it. At lord Yarborough's, he says, he first heard of this custom. His lordship's tenant, Mr. Richardson, a very good and intelligent farmer, gave him the account, having long practised it with success. The quantity is about five tons an acre. At Great Lumber he *straw-burnt* a piece in the middle of a field preparing for turnips, and on each side of it manured with ten loads an acre of yard-dung, and the burned part was visibly superior in the crop. In another piece the same comparative trial was made, in 1796, for turnips: and now, in 1797, the barley is equally superior. On another farm he had at Wold-Newton he did it for turnips, then barley, and laid

laid with sainfoin; and the burnt straw was better in all those crops than yard dung. Burning gerle in this manner returns great crops; but the expence is too high. He is clearly of opinion, that it is the warmth from the fire that has the effect, and not the ashes; for the quantity is nothing, and would blow away at one blast. It is proper to observe, says he, that they do not value straw used in feeding cattle at more than 4s. or 5s. a ton. Mr. Mallis of Lumber is of the same opinion, and thinks four tons are enough; and never knew that fail for turnips. This straw burning husbandry the reporter found again at Beleslay. Mr. Lloyd, who, he should observe, is an excellent farmer, thinks that it takes six tons per acre, which will last longer in its effect, and beat the dung which that straw would make, and in general last longer than common dunging. Keeping much cattle, he cannot practise it, but highly approves it. In discourse at Horn-castle ordinary on burning straw, the practice, he says, was much reprobated; yet an instance was produced that seemed to make in favour of it. Mr. Elmhurst, of Hazlethorp, burnt twelve acres of cele seed straw on eight acres of the twelve, and the effect was very great, and seen even for twenty years. He sowed wheat on it, four bushels an acre, and had five quarters: the four acres upon which nothing was burnt, much the better land, yet the crops on the burnt part were by that mode equal to the rest. But in another similar experiment for turnips, Mr. Raneliff observed, the result and the effect lasted only for one crop. Mr. Kirkham, who was in company, gave it as his opinion, that, as cattle would not eat stubble, it might be beneficial to collect and stack that, and, before turnip sowing, burn it. The reverend Mr. Allington of Swinap has burnt on the land for turnips, the long-straw dung from the surface of the farm yard, and has had better turnips there than where the dung was laid. This has been the case in two experiments he has made." On stiff adhesive soils it is probable some advantage may be produced by the action of the fire in this mode, but in other cases it must be a wasteful practice. The nature of the land on which these trials were made is not, however, mentioned.

"About Tathwell," the reporter adds, "there is no burning straw upon land; Mr. Clough, Mr. Hyde, and Mr. Pearson, scouted the idea of such a thing being common. It has, however, been tried there, for Mr. Oldham of Elkington did it, after ploughing for turnips, with long straw from the yard, and he succeeded well for the most part."

BURNING of Land. See **PARING** and **BURNING**.

BURNING of metals, ustio metallorum, is either performed by fire, or by corrosive salts; which latter is also denominated **CÆMENTATION**.

The first preparation of most ores is by ustion, or burning, whereby to dispose them for fusion. This is usually performed by exposing them, without addition, to a naked fire; sometimes fixed alkalies and absorbents are added, to hinder the avolation of the metalline particles. Some hold burning in the stone or glee most advantageous; others burning in the meal. Phil. Transf. N° 109. The baser metals, tin and lead, may be burnt like plants to ashes. For gold and silver, the case is otherwise.

BURNING mountains. See **VOLCANO**, **EARTHQUAKE**, **MOUNTAIN**, &c. See also **ÆTNA**, **HECLA**, **VESUVIUS**, &c.

The ancients describe a meteor under the denomination of *burning buckler, clypeus ardens*. Plin. Hist. Nat. lib. ii. cap. 34. Mem. Acad. Infer. tom. vi. p. 95.

Travellers into Italy describe a burning spot of ground at Firenzuola, in the Apennines, out of which a crackling flame continually arises, yet without any cleft for it to issue

out at. Maffei supposes the steams which the place yields, to be a kind of native *phosphorus ardens*, which take fire on their coming in contact with the air.

BURNING, among Painters.—Several of the painters' colours require burning, to fit them for use, as lamp-black, umber, ivory, &c.

The burning, or rather drying, of lamp-black, is performed by setting it over the fire in an iron ladle, or crucible, till no smoke arises from it. To burn umber, they put it in large lumps into a naked fire, where it is left till thoroughly red-hot. Ivory must be burnt, to make a black, in two crucibles, luted, covered with coals.

BURNING, in Enamel Painting. See **ENAMELLING**.

BURNING is also an operation in *Pharmacy*. Simples are frequently burnt in earthen-vessels, either to reduce them to ashes, as in the preparation of vegetable salts, or in order to dry them, that they may be more commodiously pulverized, as is practised in regard of hartshorn, &c.

BURNING phosphorus. See **PHOSPHORUS**.

BURNING plant. See **EUPHORBIA**.

BURNING spring, in Natural History. See **SPRING**.

BURNING zone, in Geography. See **TORRID zone**.

BURNISHED gold or silver, denotes those metals laid on any work or leaves, and afterwards passed over with a burnisher to heighten their lustre.

BURNISHER. See **BURNISHING**.

BURNISHING, the operation of giving an uniform and brilliant surface to a variety of substances by friction, with a polished hard instrument usually called a burnisher.

The modes of politure in use among artificans may, perhaps, be all reduced to four:—the asperities of a rough surface may be removed by cutting off the protuberances, as in *planing*; by abrading them, as in *filig* and *polishing*; by obtunding them with the hammer, as in *planishing*; and by accomplishing the same purpose in the manner now under our consideration.

It will be readily perceived, that the two latter operations can only be performed on such substances as possess a certain degree of malleability or ductility; those which are brittle, as glass or hardened steel, will necessarily be incapable of being burnished.

To speak of all the descriptions of artificans who use this process would be to enumerate almost the whole of those who work on metals. The instruments with which it is performed are also as various as the surfaces to be subjected to their action; we shall therefore only speak of such as are used for plane surfaces. The burnisher in this case is generally a piece of very hard steel three or four inches long, and about one eighth of an inch thick, with a somewhat convex edge, not much unlike that of the steel which is commonly used for striking fire, all the angles of it being smoothly rounded off, so that the longitudinal section of the part to be applied to the subject is a semi-ellipse of great eccentricity, the edge of which is nearly semi-cylindrical. It is applied in different ways according to the nature and extent of its use in the workshop. The manufacturers of ornaments for stoves, who use a great number of burnished plates of soft steel, frequently insert it into the lower extremity of a wooden pole, which is suspended over the work-bench, from one end of a strong wooden spring fixed horizontally in a frame attached to the ceiling, and pressing downwards; so that the workman has only to pass it backwards and forwards horizontally at right angles to its own plane, over the surface of the plate, its pressure being produced, or, at least, assisted by the action of the spring. Some workers in metal apply the burnisher by attaching it to the underside of a lever, which has a handle at one end, and is hooked at the other

other into a fixed staple; others fix it obliquely into one end of a staff, the other end of which is curved like a scythe, and passes over the right shoulder of the workman, who is by this means enabled to exert a considerable degree of pressure; and others again merely insert it into a handle, or a short bar with a handle at each end, and apply it in the same manner as a common rasp or file, or in some instances as if shading with a black lead-pencil. In whichever of these modes the burnisher is applied, the direction of its motion should be always rectilinear, parallel to itself, and at right angles with the edge of the instrument.

There is also another method of applying the burnisher, which is by keeping the instrument itself at rest, whilst the surface, subjected to its action, is turned in a lathe. The process is thus conducted by the brazier, ironmonger's founder, pewterer, and indeed all the artisans who employ that engine.

There are two precautions necessary to be observed in this operation: the one is to keep the semi-cylindrical edge of the instrument as highly polished as possible by frequently touching it on a piece of buff leather, rubbed with finely prepared *crocus martis*, and the other to keep the surface to be burnished constantly lubricated during the friction, with some liquid of a smooth consistence, such as milk, oil, or a solution of soap, the latter of which seems to be the fittest, and most generally approved of for this purpose. If this be neglected the surface is apt to ripple up before the instrument, and the ridges thus produced being laminated, by the continuance of the friction, into very thin flakes or scales, the work becomes defaced by dark coloured spots and streaks, which are frequently iridescent like those on the wings of a butterfly, and the process consequently fails.

Bookbinders burnish the edges of their books by rubbing them with a dog's tooth. Gold and silver are burnished with a wolf's tooth, a dog's tooth, or the blood stone, or by *tripoli*, a piece of white wood, emery, and the like.

Deer are said to *burnish their heads*, when rubbing off a white downy skin from their horns against a tree, they thrust them, as it is said, into a reddish earth, to give them a new colour and lustre.

BURNLEY, in *Geography*, a market town of Lancashire, in England, is seated on a peninsula of land between the rivers Calder and Brown, which unite their streams a little north of the town. Its advantageous situation on these streams has occasioned several manufactories to be established here. Amongst these are some cotton machines, fulling mills, corn mills, and a mill for grinding dyers' wood. The church of this place, a large handsome structure, is under Whalley, and though only a curacy, is considered a very valuable living. Some lead mines have been discovered in the vicinity of the town, and various Roman coins have been found. Burnley is a great thoroughfare. The country around it abounds with pit-coal, and great quantities of free-stone, flag-stone and slate, are obtained from quarries in this neighbourhood. Here are a grammar school, and two dissenting meeting houses; a market on Mondays, and five annual fairs. In the vicinity of the town is a very fine seat, lately belonging to Charles Townley, esq. who had amassed the finest and most valuable collection of ancient sculpture in this country. Burnley is 211 miles N. of London; and it contains 687 houses, and 3305 inhabitants. Whitaker's *History of Whalley*, &c. 4to.

BURNOOSE, an article of dress among the Arab Bedouens and Kabyles, in Barbary; corresponding to our cloak and worn by them over their *hykes*. This forms a considerable branch of their woollen manufactory. It is woven in one piece, and resembles in its shape the garment of

the little god Telephorus, being straight about the neck, with a crape, or Hippocrates' sleeve (for a cover to the head,) and wide below like a cloak. Some of them are likewise fringed round the bottom, like Parthenaspa's and Trajan's garment upon the basso relievos of Constantine's arch. The burnoose, without the cape, seems to answer to the Roman *pallium*; and with it to the *bardocucullus*, referred to by Martial, l. xiv. 178.

"Gallia Santonico vestit te *bardocucullo*."

BURNS, ROBERT, in *Biography*, was the son of a farmer near the town of Ayr, the capital of Ayrshire, in Scotland, where he was born on the 29th of January, 1759. The family had all of them been farmers in the north of Scotland, but the misfortunes of the poet's father, had occasioned him to accept the situation of gardener to a gentleman of small fortune in the neighbourhood of Ayr, in which employment he continued for the first six or seven years of the poet's life. The father was a man of observation and experience, as well as of strict integrity, and wished to keep his children more under his own eye, than was consistent with the service in which he was engaged. For this purpose, he ventured on a small farm on his master's estate, and joined with some others of his neighbours to provide a schoolmaster for their children. Robert Burns was principally distinguished at these early years, by a retentive memory, a stubbornness of disposition, frequently attendant on genius, and an enthusiastic piety. At the age of ten or eleven, he was not only well grounded in English grammar, but somewhat more than usual of a critical scholar. He was principally indebted to a credulous and ignorant old woman in the family, for furnishing him with those legendary and supernatural tales, which feed a poetical imagination with its richest repast. The first regular compositions in which he took pleasure were, *The Vision of Mirza*, and a hymn of Addison, which came within the compass of his school studies. *The Life of Hannibal*, and the *History of Sir William Wallace* were the first books he read as a volunteer, and they gave him more pleasure than any he read afterwards. Nor was polemical divinity without its attractions, but he soon raised the cry of heresy against himself, and it pursued him through life. He gained at this time a slight knowledge of French, and received afterwards some lessons in practical mathematics; but his studies were rendered irregular by the necessity of hard labour owing to the advanced age of his father, and the ill success of his farm. Robert was the eldest of seven children, and a very dexterous ploughman. But his father's master died, and they fell into the hands of a factor, against whose insolence and rapacity they had to contend, till the sixteenth year of the poet, who now began first to exercise his functions as such, in consequence of his first amorous attachment to his *harvest partner* of fourteen. Soon afterwards his father removed to a larger farm, on which the family subsisted comfortably for four years; when they became embarrassed by litigation with their landlord, and William Burns was only saved from a prison by the intervention of a mortal disease. During these four years, his reading was confined to Salmon's and Guthrie's *Geographical Grammars*, the *Spectator*, Pope's Works, some of Shakespeare's Plays, Tull and Dickson on Agriculture, the *Pantheon*, Locke's *Essay on the Human Understanding*, Stackhouse's *History of the Bible*, Justice's *British Gardener's Directory*, Boyle's *Lectures*, Allan Ramsay's Works, Taylor's *Scripture Doctrine of Original Sin*, A select Collection of English Songs, which he carried with him when he drove his cart, and Hervey's *Meditations*. He was very awkward in his person and manner, a disadvantage which

he sought to remedy by attending a country dancing-master, in opposition to his father's direct negative. This produced an unfortunate disagreement between them, to which he attributed in a great measure the subsequent dissipation of his habits.

Thus did his life pass till his twenty-third year; bodily labour was his employment, and a succession of love adventures his amusement. The bias of his mind was strengthened by the addition of *Tristram Shandy* and *The Man of Feeling* to his library. He now engaged with a flax-dresser in a neighbouring town; but the shop took fire, while the partners were carousing, and the poet was left without a sixpence. After his father's death, he joined his second brother in a farm, but without success. During this period, he formed a connection with a young woman, the consequence of which induced him to give her an acknowledgment of private marriage. Her parents, however, finding his situation so desperate, prevailed with her to relinquish it. He was driven to the verge of ruin, and threatened with a gaol, when he engaged to go to Jamaica. But as his compositions had become popular in the neighbourhood, he resolved to publish his poems before he quitted his native country. The first edition, in 1786, produced him nearly 20*l.* for the expences of his voyage; he had taken the last farewell of his friends, when a letter from Dr. Blacklock, advising a second edition, carried him to Edinburgh, and opened at once new prospects to his poetical ambition, and new temptations to those sensual propensities, which depraved his genius, and shed a pernicious influence over his future life.

His genius and talents introduced him into the circles both of rank and literature; and his powers of conversation are said to have increased the applause bestowed on his writings. Professor Dugald Stewart observes, in a letter to Dr. Currie, "that all the faculties of his mind were equally vigorous; and his predilection for poetry was rather the result of his own enthusiastic and impassioned temper, than of a genius exclusively adapted to that species of composition. From his conversation I should have pronounced him fitted to excel in whatever walk of ambition he had chosen."

He had gained five hundred pounds by the sale of his poems, with part of which he entered on the farm of Ellisland, on the banks of the river Nith, six miles above Dumfries, in the year 1788. He had previously been placed on the list of candidates for the office of exciseman; and unfortunately for his health and morals, he afterwards obtained the appointment. Before he hired the farm, he had become the husband of the young woman mentioned above, who had been turned out of doors by her father. He was now become a parent in his turn; in the success of his undertaking the happiness of his family was involved, and he determined, after pondering seriously on the past, to abandon the society and dissipation of which he had been enamoured. It is greatly to be regretted that he found it so much easier to form than to execute his project of reformation. At the end of the year 1791, he found it necessary to resign his farm into his landlord's hands, and remove to a small house at Dumfries. Here he was betrayed into an approbation of the French revolution, more ardent than was consistent with the opinions of his superiors. He was therefore subjected to the animadversion of the board, but retained his situation by promising more guarded behaviour, on the intervention of a friend. "Among the inhabitants of Dumfries," says Dr. Currie, "there were never wanting persons to share his social pleasures; to lead or accompany him to the tavern; to partake in the wildest sallies of his wit, to witness the strength and degradation of his genius." Thus

beset where he was most vulnerable, it is a subject of greater sorrow than surprise, than he should have fallen into those irregularities, which terminated his short career in July 1796, in the thirty-eighth year of his age. Yet, lowered as was his character, and pernicious as were his habits to his corporeal frame, he retained his vigour of mind and imagination to the last, and never, in his greatest distresses, lost sight of honour in his pecuniary transactions, or bartered his independence to supply his necessities.

With respect to his social character, it is exactly fixed by the lively remark of a Scotch lady, that no man's conversation ever carried her so completely off her feet as that of Burns.

The character of his poetical compositions is strongly marked with the impression of his birth and station. He took no pains either to elevate his imagery, or polish his dialect. He adopted the simplicity of nature for his guide, and refreshed himself at the stream of native sensibility, in his weary pilgrimage through an obscure and unhappy life. He is always interesting, but never splendid. His scenery is drawn on the spot, and his characters and incidents bear the stamp of biographical and historical truth, rather than of poetical fiction. His humour is rich, his pathos is natural, and he sometimes rises to the sublime: but his superiority is most decisively established in the descriptive. His poetical character cannot be better concluded than in the words of Dr. Currie.

"To determine the comparative merit of Burns would be no easy task. Many persons, afterwards distinguished in literature, have been born in as humble a situation of life; but it would be difficult to find any other who, while earning his subsistence by daily labour, has written verses which have attracted and retained universal attention, and which are likely to give the author a permanent and distinguished place among the followers of the muses. If he is deficient in grace, he is distinguished for ease, as well as energy; and these are indications of the higher order of genius. The father of epic poetry exhibits one of his heroes as excelling in strength, another in swiftness; to form his perfect warrior, these attributes are combined. Every species of intellectual superiority admits perhaps of a similar arrangement. One writer excels in force, another in ease; he is superior to both, in whom both these qualities are united. The force of Burns lay in the powers of his understanding, and in the sensibility of his heart; and these will be found to infuse the living principle into all the works of genius which seem destined to immortality. His sensibility had an uncommon range. He was alive to every species of emotion. He is one of the few poets that can be mentioned, who have at once excelled in humour, in tenderness, and in sublimity; a praise unknown to the ancients, and which in modern times is only due to Ariosto, to Shakspeare, and perhaps to Voltaire. To compare the writings of the Scottish peasant with the works of these giants in literature, might appear presumptuous; yet it may be asserted, that he has displayed the foot of Hercules. How near he might have approached them by proper culture, with lengthened years, and under happier auspices, it is not for us to calculate. But while we run over the melancholy story of his life, it is impossible not to heave a sigh at the asperity of his fortune; and as we survey the records of his mind, it is easy to see, that out of such materials have been reared the fairest and most honourable monuments of genius."

In his correspondence there are much good sense, and an admirable turn of expression. The late Dr. Robertson thought Burns's prose equal to his poetical compositions; and the public in general are nearly of the same opinion. His critical powers were more matured, and his taste more

correct than can at all be accounted for by his opportunities; and the circumstance must be ascribed to the happy temperament of a mind, which could by sympathy assimilate itself to that state of refinement and cultivation, usually the result of scholastic instruction, or the elegant pursuits of polite life. On the whole, the character of Burns is equally interesting, as a noble specimen of untutored nature, forcing itself to a level with the higher and more favoured classes of its species; and instructive as a warning, that the advantages of the conflict, however successful, are irretrievably lost, unless discretion is called in to secure and perpetuate the trophies won by genius. Persons of keen sensibility are exposed to peculiar dangers; and poets are perhaps of all others the description of men, who contribute most to the refined pleasures of society, and are least successful in appropriating to themselves their own individual share of personal happiness or public esteem. Their occupations are calculated to increase the peculiarities, rather than to strengthen the governing powers of their minds; their sensibility is indulged at the expense of their peace, and the pride of genius is soothed by contempt of the ordinary rules, which restrain the passions of common men. To causes like these must we attribute, and on such grounds of palliation must we excuse, the morbid melancholy, the sceptical propensities, and the intemperate habits of Burns. When these are forgotten, or only remembered through the favourable medium of candid biography, his poems, with all the disadvantages of an obscure dialect, will be recited by his rustic countrymen, as long as the simplicity of their feelings remains unsophisticated, and read with admiration by the critic, as long as the laws of poetry and criticism are suffered to accord with the dictates of nature.

BURNT, in speaking of medicines, imports as much as imperfectly calcined. See **CALCINATION**.

Burnt bodies are generally dry and astringent. The other medical qualities belonging to bodies are frequently destroyed, at least impaired, by the burning.

BURNT-Clay, in *Agriculture*, such clay as has undergone a process of calcination by means of fire. In this process, it is supposed by Dr. Darwin that oxygen is combined in large proportions either with the clay itself or the metallic particles which it may contain, and on this account probably becomes useful as a manure. This business may be accomplished by means of clamps or kilns, or simply by piling up heaps of clay loosely together, with a little dry brush-wood, or other similar combustible materials in the middle of them to which the fire may be applied. In this way much manure may be easily procured, where the materials abound. Calcined clay, as a manure, is probably most proper for close compact soils, as it opens and renders them more porous, and thereby disposes such lands to part with their vegetable nourishment more readily.

It is also supposed, by the author we have just mentioned, that calcined clay, as it exists in soft bricks, has a power of decomposing marine salt, as he once observed in a cellar, where beef had been long salted on one side of a nine-inch wall, the wooden salting-tub for which was attached to it; a great efflorescence having appeared on the other side of the wall, which he believed to be fossil alkali, or natron. If this idea be just, says he, the soft bricks from old buildings, or clays so far purposely burnt, may in this manner be serviceable to vegetation, by separating the fossil alkali from the sea-salt, washed from decomposing animal and vegetable substances, which, by converting carbon into an hepatic carbonis, as lime is supposed to do, might render it soluble in water, and capable of being absorbed by the lymphatic vessels of the roots of plants. And, continues he,

if clay, calcined to a certain degree, and thus united with oxygen, possessed the power of decomposing marine salt, there is reason to believe, when it is more slowly united with oxygen by its exposure to the atmosphere by the spade or plough, that it may possess the same property, and that this may have given rise to the very contradictory reports concerning the use of sea-salt in agriculture, as it may probably be of great advantage to clayey soils, but perhaps not so to other soils. See **CLAY**.

BURNT-grain, a vegetable disease frequently met with in the ears of grain, but which is probably not yet well understood; the characteristic marks of which, according to some, are, that the plants which produce burnt ears are strong and vigorous; that the infected ears are not at first distinguishable from those that are healthy; but, when they are past their bloom, they appear of a deep green colour, approaching to blue; they afterwards become whitish, and are then easily known. "As this change of colour is effected by the sun, when a number of white ears have been suddenly perceived in looking over a wheat field, the sun's heat has been often thought to cause this distemper, or a fog preceding that heat. And though all the ears produced from one grain are commonly infected, yet sound ears are met with on plants which have produced others which were infected. Some ears have even been observed, part of which only were vitiated; and, finally, some grains inclosing partly a white flour, the remainder black dust."

It has been farther remarked, that, in burnt ears, the chaff, or outward coat, is commonly found, with this single difference, that, when the ears are nearly ripe, it appears more withered and dry than in the healthy ears. The husk which immediately inclosed the grain is not destroyed, but has consistence enough for the grain to preserve nearly its natural form, with a whitish look; and the burnt grains are shorter, rounder, and lighter, than such as are uninfected; they are sometimes larger and sometimes smaller. The furrow which runs the length of a grain of wheat is sometimes totally effaced, at others visible: the pistils at the extremity of the grains are dried up, but the bud of a burnt grain is not visible. Till the blooming season, there is very little difference between the diseased grains and those which are healthy; they are only a little more swelled; but, in the blooming season, the infected ears assume a bluish colour; the chaff is more or less speckled with small white spots: the grains are of a deeper green, and larger than in the natural state, and, as long as they preserve that colour, they adhere strongly to the chaff. The distemper, it is said, has often attacked very young ears, while yet inclosed in the sheath. The stamina on the sides of the grain are then dried up and sickly; the embryo in part takes the deep green colour above mentioned; the infected ears have not the consistence of those that are healthy. In the same proportion as the distemper advances, the chaff becomes dry and whitish. The grains have some degree of firmness. On opening them, which may easily be done with the nail, there appears an unctuous, dark-brown, stinking substance. The dust of burnt grain has also some cohesion or tenacity. By others it is, however, supposed to originate from insects; in which view we have the following remedies proposed on the authority of experiment in the seventh volume of the Bath papers. The trials were made in the middle of a twenty-acre close, the residue of which was sown with the same kind of wheat, and treated in the same mode as Nos. I. and II. and was equally as clean, and the crops have been so ever since. The writer's mode of medicating his wheat was as in No. II.

"No. I. Sowed five drills with Mr. Cooke's machine,

with wheat treated agreeable to Mr. Middleton's receipt.

"No. II. Sowed five drills with wheat wetted with old urine, three quarts to a bushel, and turned about with a shovel till all the urine was imbibed, then plenty of quicklime sifted over it, and turned over and over with a shovel, and left in a heap till the next morning.

"No. III. Sowed five drills with wheat steeped two hours in a strong lye, made of wood-ashes and lime, and laid on the barn floor to dry.

"No. IV. Sowed with five drills of the same kind of wheat."

The result was as follows:

"Nos. II. and II. Scarce a burnt ear to be found in them.

"No. III. About a twentieth part burnt.

"No. IV. Near a fourth part.

"No. V. Picked ten good corns out of an ear, the remainder were burnt; planted them in the garden; six only vegetated, which produced seventy-two ears, one root of which only was burnt; consequently the opinion that the good corns in a burnt ear produce burnts again is fallacious, otherwise the whole must have been burnt."

The above experiments seem to prove, says the writer, that "wetting wheat with old urine, and drying it with lime, is a preventative;" and he conceives that an insect, by depositing its egg, eggs, or seed, on the corn, when growing, is the cause of *burnts*. Supposing this to be the case, "the wetting the corn with brine, urine, or strong lye, would of course destroy some of the eggs or seed, or even an animalcule, and the lime, by its corrosive quality, annihilate the remainder;" but "should any of the eggs, &c. remain on the corn animable, there may be here and there a burnt in the crop." But, "if on the other hand the insect should deposit its egg, eggs, or seed, in the earth, it is possible the brine, urine, and lime, wherewith the corn is as it were coated when sowed, may be unpleasing to the delicate taste of the little animal, and prevent its wounding the tubes of the plant." Farther and more accurate experiments are, however, still wanting to fully elucidate and ascertain the nature and best modes of preventing this vegetable malady. See SMUT.

BURNT island, in *Geography*, an island in Christmas Sound, at the southern extremity of South America.—Also, an island near the southern coast of Newfoundland; 15 miles E. S. E. from Cape Ray. N. lat. $47^{\circ} 30'$. W. long. $58^{\circ} 50'$.

BURNT islands, a cluster of islands in the Indian ocean, situate on the coast of Malabar, W. N. W. from Goa. N. lat. $15^{\circ} 15'$. E. long. $73^{\circ} 30'$.

BURNT planet. A planet is said to be burnt, *combustus*, when it is in conjunction, or nearly so, with the sun. Thus Saturn is said to be burnt when not above five degrees distant from the sun; Jupiter when six, &c. Planets in this situation are supposed by astrologers to be much weakened or enfeebled in their influences.

BURNT way, *combusta via*, amongst *Astrologers*, that part of the zodiac from the beginning of Libra to the middle of Scorpio; or, according to others, from the middle of Libra to the end of Scorpio, comprehending 45 degrees; a space supposed very unfortunate, and in which the planets are much enfeebled in their virtues, especially the moon. Vital. Lex. Math. p. 118.

BURNT-wine. See WINE.

BURNT-COAT island, in *Geography*. See PENOBSCOT bay.

BURNTISLAND, or BRUNT-ISLAND, is a parish, and royal burgh, and sea-port town in Fifeshire, Scot-

land. Mr. Pennant describes it as "the best harbour on the coast, formed by a rocky isle, eked out with piers." This harbour, though capacious, and of great depth, at high tides, is dry at low water. The town is situated on the banks of the Frith of Forth, upon a peninsula which is screened on the north, by an amphitheatrical range of hills. It is nearly opposite to Leith, from which it is distant six miles, and about nine miles N. W. from Edinburgh. From the remains of fortified walls, and entrenchments, it appears that this place has been garrisoned, and was probably first fortified by the French, when allied to the queen regent during the troubles of 1560. Cromwell besieged it during his usurpation, and forced the inhabitants to capitulate, though not without certain conditions which ultimately proved advantageous to the town; for, among other stipulations he agreed to repair the streets and harbour, and build the quay. In 1715, the town was surprised and taken by the rebels, who boldly opposed all resistance, and passed part of their troops from this place over to the opposite shore. Before the union, the trade of Bruntisland was very considerable, and consisted principally in the exportation of corn and malt to England, but this trade has declined for many years, and it is not till very lately that the town has felt the benefit of its revival. At present here are a sugar-house, a vitriol work, and a distillery, besides ship building, which is carried on to some extent. The town is governed by 21 persons who are denominated, and divided into 14 guild counsellors, 3 of whom are bailiffs, and 7 trade counsellors.

The parish and environs of Bruntisland are diversified with mountain and plain. To the westward of the town the shore is rocky, and on the east it is sandy. The rocks constitute a good defence to the harbour, and at the same time furnish sufficient sea-weed to make 12 or 15 tons of kelp annually. Within these are some productive oyster-beds, and other shell fish frequent the recesses. "The hills in the neighbourhood of the town exhibit many appearances of volcanic fire; one is extremely like an extinguished volcano, the crater being converted into a lake on the top of the hill, similar to those observed by the abbé Spallanzani." (See *his Travels in the Two Sicilies*). On the north side of this hill are several basaltic columns, and near the summit are the remains of an encampment, called *Agricola's Camp*. The population of this parish in 1801 was 1530. W. long. $3^{\circ} 5'$. N. lat. $56^{\circ} 8'$. Pennant's Tour in Scotland. Gazetteer of Scotland.

BURNTWOOD. See BRENTWOOD.

BURNTWOOD river, a river of North America, which flows from Burntwood lake through Split lake into port Nelson river, and there discharges itself into Hudson bay. The lake is in N. lat. $55^{\circ} 3'$. W. long. $98^{\circ} 40'$.

BURONZO, a town of Italy, in the country of Vercelli; 12 miles N. W. of Vercelli.

BUROW, a town of Germany, in the circle of Upper Saxony, and principality of Anhalt Zerbit; 2 miles W. of Cofwick.

BURR, the round knob of a horn next the deer's head.

BURR denotes a hollow triangular chissel, used to clear the corners of mortises.

BURR, in *Botany*. See BUD.

BURR, in *Geography*, a small rocky island, with some smaller rocks often covered by the water in its neighbourhood on the eastern coast of the county of Down, Ireland, a little to the north of which is tolerable anchorage. It is nine Irish miles south of Donaghadee, and as many north of the entrance into Strangford lough. N. lat. $54^{\circ} 28'$. W. long. $5^{\circ} 19'$.

BURR,

BURR, in *Heraldry*, means a broad ring of iron behind the place made for the hand on the tilting spear, which burr is brought to the rest when the tilter charges his spear to secure it.

BURR-pump. See **BIDGE** and **PUMP**.

BURR reed, in *Botany*. See **SPARGANIUM**.

BURR-stones. See **MILL-stones**.

BURRA, in *Geography*, a large and fertile mountain of Arabia, near Homran.

BURRA, one of the Shetland islands of Scotland, situated on the western coast of the main land. N. lat. $54^{\circ} 28'$. E. long $1^{\circ} 32'$.

BURRAMPOOTER, or as it is called by the people of Asam, *Burrampoot*, a large river of Asia, and the noblest tributary stream of the Ganges, derives its name from a Sanscrit word. *Brahma-pooter*, which signifies the "Son of Brahma," and became known to us, as a capital river, in consequence of the survey made of it by Major Rennell, in 1765. He found it to be rather larger than the Ganges, and that its course previous to its entering Bengal was from the east, although all former accounts represented it as proceeding from the north. This noble river has its source on the opposite side of the same mountains that give rise to the Ganges, and first takes its course eastward, or directly opposite to that of the Ganges, through the country of Thibet, where it is named "Sanpoo" or "Zanciu," which bears the same interpretation as the "Gonga" of Hindoostan, namely, "the river." After winding with a rapid current through Thibet, it washes the border of the territory of Lassa, and then deviating from an east to a south-east course, it approaches within 220 miles of Yunan, the westernmost province of China. Hence it turns suddenly to the west through Asam, where it probably changes its name, being there called Burrampoot, and enters Bengal on the north-east. After its entry into Bengal, it makes a circuit round the western point of the Garrow mountains; and then, altering its course to south, it meets the Ganges about 40 miles from the sea. After the river Megna has fallen into the Burrampooter, it communicates its name, though a much smaller river, to the other, during the rest of its course. A singular circumstance, lately discovered, attends the courses of the Ganges and Burrampooter, with respect to each other. Issuing from opposite sides of the same ridge of mountains, they direct their respective courses towards opposite quarters, till they are more than 1200 miles asunder; and afterwards meet in one point near the sea, after each has performed a winding course of more than 2000 miles. The Burrampooter, during a course of 400 miles through Bengal, bears so intimate a resemblance to the Ganges, except in one particular, that the same description may serve for both. The exception is, that during the last 60 miles, before its junction with the Ganges, it forms a stream, which is regularly from 4 to 5 miles wide; and which, the freshness of its water excepted, might pass for an arm of the sea. In attempting to convey an adequate idea of the grandeur of this magnificent object, major Rennell adopts the poetical language of Thompson, in his "Seasons;"

"——— Scarce the muse

Dares stretch her wing o'er this enormous mass

Of rushing water; to whose dread expanse,

Continuous depth, and wond'rous length of course,

Our floods are rills——"

The major, in accounting for the singular breadth of the Megna, is led to suppose, that the Ganges once joined it where the Islamuty now does near Fringy-bazar, and that their joint waters scooped out its present bed. The present junction of these two mighty rivers below Luckipour, produces a body of running fresh water, hardly to be equalled

in the old hemisphere; and, perhaps, not exceeded in the new. It now forms a gulf interspersed with islands, some of which rival, in size and fertility, our Isle of Wight. The water at ordinary times is hardly brackish at the extremities of these islands; and, in the rainy season, the sea (or at least the surface of it) is perfectly fresh to the distance of many leagues from the shore. For an account of the bore in the Megna, see **BORE**. Rennell's Memoir.

BURRAS-pipe, an instrument used by goldsmiths, consisting of a copper box with a spout, having teeth like a saw; sometimes also used by surgeons for the application of certain solid medicines by insersion.

BURREL-fly, in *Entomology*. See **WRINGLE TAIL**.

BURREN, in *Geography*, a barony in the northern part of the county of Clare, Ireland. It is very mountainous, and Cromwell's forces which were sent to harass the inhabitants for refusing to pay contributions, complained that it had neither wood, water, nor earth, sufficient to hang, drown, or bury a man. Such, however, is the luxuriance of the pasturage, interspersed among the rocks, that these seemingly barren hills support a great number of cattle, and very large flocks of sheep.

BURRISAKANE, a port town of the county of Tipperary, Ireland. 79 Irish miles S. W. from Dublin.

BURRISHOOLE, a village and parish of the county of Mayo, Ireland, situated near the mouth of a small river of the same name, which falls into Newport or Clew bay, about two miles north of the town of Newport. It was once of sufficient importance to give name to the barony it is in; and even to the bay also. There still remains some part of a monastery founded here by one of the family of Bourke or Burgho of the branch called M-William Oughter. The barony is very mountainous, and entirely destitute of wood, but the soil in the vallies, which is mostly moory loam, is pretty good for tillage, in which it is almost exclusively employed. The barony includes the large island of Achill, and a great number of other islands.

BURROCK, a small wear or dam, where wheels are laid in a river, for the taking of fish.

BURROS-IN-OSSORY, a post town, of the Queen's county, Ireland, near the confines of Tipperary; 53 Irish miles S.W. of Dublin.

BURROSILEAGH, a post town of the county of Tipperary, Ireland; 77 Irish miles S.W. from Dublin.

BURROUGH. See **BOROUGH**.

BURROUGH, EDWARD, in *Biography*, one of the earliest preachers among the Quakers, was born of parents belonging to the established church, at or near Kendal, in Westmorland, about the year 1634. In early life, he was distinguished by his piety and virtue, as well as by the manliness of his resolution, and the courteousness of his temper. Anxious for the purity of religious worship, he adopted, in his twelfth year, that of the presbyterians, because he conceived it to be most conformable to the scriptures. At the age of 17, he attended the preaching of George Fox; and though at first he confided in his own ability to refute the doctrines which were taught by this zealous propagator of the tenets and practices of the Quakers, he was proselyted by conferences with him, and became an ardent partisan of this sect. This second change of his religious opinions incensed his parents to such a degree, that they turned him out of doors; and to this hardship he submitted without repining. At the age of 20, he accompanied his intimate friend, Francis Howgill, to London, where he embraced every opportunity that offered itself, of addressing assemblies of people; and such were his natural eloquence and the fervour of his zeal, that he succeeded in gaining proselytes. His success, however, excited the interference of the magistrates,

trates,

trates, and, in the year 1654, he was committed to prison. But he was soon released, and visited Ireland, where he remained more than six months: and during his residence in that country he published a book, entitled "The Trumpet of the Lord sounded out of Zion, which sounds forth the controversy of the Lord of Hosts;" in which he exposes the vices of various ranks of society, and particularly accuses Cromwell for suffering oppression to be practised in his name. This work was followed in 1657 by several private letters addressed to the protector, containing admonitions against pride, and remonstrances against the persecutions of his brethren. Cromwell, it is said, disclaimed in reply any disposition to persecute. On the accession of Richard Cromwell, he renewed his remonstrances to him and his council, and in terms sufficiently explicit, predicted the instability of the new government. In 1659 he made a visit to Dunkirk, for the purpose of disputing in the convents and monasteries, and of attempting to convert their inhabitants. This attempt was perilous, and served only to excite horror and aversion. Upon his return to England, his zeal was kindled by the news of the bloody persecutions of the Quakers by the Presbyterians of New England: and immediately after the restoration of Charles II. he obtained access to him, and so far succeeded in representing the distressed state of his brethren in America, as to procure a mandamus, and the appointment of Nicholas Shattock, a Quaker, banished from New England on pain of death, to carry it out to the colony. Notwithstanding the laudable interference of Charles on this occasion, a persecution against the Friends commenced in 1662 in his own metropolis, which he adopted no means of preventing. Burrough was at this time, at Bristol; but as soon as he received the intelligence, he determined to confront the storm in London, though in parting with his friends he had intimated an apprehension, that his own life would be the sacrifice. Soon after his arrival he preached at a meeting-house of the society, and was committed to Newgate; and refusing to pay the fine imposed upon him at the ensuing sessions, he was remanded to prison, where, with 150 other persons confined on the same account, he remained about eight months. At length, he fell a sacrifice to the fever that carried off many of his companions, and expired on the 14th of February 1662-3, in his 28th year. During his illness, his mind retained its usual vigour, and he derived consolation from the conviction, that he had passed his life in performing the will of his maker. Against his enemies he retained no animosity, but prayed by name for Richard Brown, the alderman, who had committed him. His character, notwithstanding the enthusiasm of the new sect to which he was attached, appears to have been truly estimable; and his efforts for restraining the spirit of persecution, redound much to his honour. His works were numerous; and they were collected in 1672 in one volume, small folio. Gen. Biog.

BURROUGH-DUCK, in *Zoology*, a common English name for the **TADORNA**.

BURROUGHS'S MACHINE, in *Mechanics*, a machine for grinding and polishing glasses, invented by Mr. Burroughs of Southwark, for which the Society of Arts gave him a premium of 70*l*.

This machine consists of a cog-wheel *A*, *Pl. II. Optics* fig. 4. 12 feet in diameter, carrying 72 cogs; which turn a trundle-head *B*, one foot four inches in diameter, and furnished with eight rounds; and also an horizontal spur-wheel *C*. of 12 cogs, and one foot eight inches in diameter. The trundle-head *B* turns a spur-wheel *D*. of ten cogs, and two feet eight inches in diameter. This spur-wheel has two cranks, *a*, *b*,

in its shaft; one of which *a* gives motion to a wooden frame, *c*, about 34 inches long and 19 broad. On the under side of this frame are fastened by screws twelve pieces of polished metal, each five inches and a half long, and three broad, covered with leather; and underneath these polishers, a glass plate cemented in another frame is placed on the bench *d*, and polished with tripoli by the motion given to the upper frame by the crank *a*. The nuts of the screws which fasten the polishers to the upper frame are not screwed close to the wood, in order to give the frame room to play; by which contrivance the perpendicular rise of the crank is avoided, and the motion of the polishers always parallel and equal. The under frame may be moved by the hand in any direction without stopping the machine: by which means the plate, when larger than the polishing frame can cover in its motion, will be equally polished in every part.

The other crank, *b*, gives motion to two other polishers marked *n*, *o*. which have an alternate motion by the bending of the crank; they move upon the same plate, and have an equal number of polishers as that already described.

The same crank also gives motion to a contrivance represented at *e* for polishing spectacle-glasses. It consists of two segments of the same sphere: one concave and the other convex. On the latter the glasses are cemented; and polished by the former, which is moved by the crank *b*. The convex segment may be moved round by the hand without stopping the machine, so that all the glasses on its superficies will be equally polished.

The other spur-wheel *C*, by means of a crank in its shaft, gives motion to another frame *g*, employed in grinding the glass-plates. The rod *h*, extended from the crank *f* to the frame *g*, is fastened to the latter by means of a pivot, in order to admit of a rotatory motion, as well as that given it by the crank in a longitudinal direction. This rotatory motion is effected by means of a rod of iron *i*, called a *trigger*, sharp at the extremity next the frame, where it touches the teeth of an horizontal spur-wheel, or circular piece of wood, fixed on the grinding plate, while the other end is extended three feet two inches to the centre of motion.

But this contrivance, in which the merit of the machine principally consists, will be much better conceived from a small delineation of it by itself *fig. 5*, where *F* is the crank marked *f* in *fig. 4*. and turned by the spur-wheel *C* in the same figure. *G*. is the trigger, three feet two inches long. *I*, a roll fixed on the trigger for the rod to slide on. *H*. the horizontal spur-wheel, eleven inches in diameter, fixed on the grinding plate; the teeth of which are touched by the trigger; but with a very unequal force, as it will wholly depend upon the grinding-plate's being farther from, or nearer to the centre of motion of the trigger. By this simple contrivance, the grinding-plate has a very compound motion, never moving exactly in the same track, and therefore mult grind the plates equally in every part. Several attempts have been made by others for producing the same effect: but without success; the grinding-plate always follows the same track, and consequently the plates are ground equally.

BURROW, or **BARROW**. See **BARROW**.

BURROW, **SIR JAMES**, in *Biography*, master of the crown-office, was a fellow both of the Royal and Antiquarian Societies, and on the death of Mr. West in 1772, he occupied the chair of president at the Royal Society till the anniversary election, when he surrendered it to Sir John Pringle; and in 1773, on occasion of an address presented by the society to his majesty, he received the honour of knighthood. He published two volumes of reports in 1766, two others in 1771 and 1776, and a volume of decisions of the court of king's bench, upon settlement cases, from

1732 to 1772, to which was subjoined an "Essay of Punctuation," in three parts 4to., 1768, 1772, 1776. This essay was also printed separately in 4to. 1773. He also published, without his name, a few anecdotes and observations relating to Oliver Cromwell and his family, serving to rectify several errors concerning him; published by Nicol. Comm. Papadopolis, in his "Historia Gymnasii Patavini," 1763. 4to. He died Nov. 5, 1782.

BURROWS, holes in a **WARREN**, serving as a covert for rabbits, &c.

A coney's coming out of her burrow is called *bolting*. To catch coney, they sometimes lay purse-nets over the burrows, then put in a terrier close muzzled, which making the creature bolt, she is caught in the net.

BURRVILLE, in *Geography*, a post-town of America, in Anderson county, Tennessee, 570 miles from Washington.

BURRUN-Sunker, in *History*, the denomination of a fifth or adventitious class of Hindoos, distinct from, and subordinate to the four regular casts or classes into which they are distributed, and supposed to be the offspring of an unlawful union between persons of different casts. These are mostly dealers in petty articles of retail trade. This adventitious cast is not mentioned by European authors; and they seem to consider the members of this cast as belonging to the **SOODER**. Preface to the code of Gentoo laws, p. 46 and 99. See **CAST**.

BURS, in *Navigation*, are boats so called in Bengal, which are used for inland navigation on the Ganges, and are very lightly built of thin deals, without either keel or side-timbers. The edges of the planks are fastened together with staples, and the seams are stopped up with moss, and payed with grease. Their largest breadth is about one third of their whole length from the stern, where they run up with a bend: they are very sharp forwards, and are not very high above the water. Although they are of different sizes, they are all of the same shape and construction; and some of them can load 50,000 lbs. weight of merchandize, and more. They are provided with a single mast, which has a large square sail; and as they take in a great quantity of water from the sides and bottoms, the crew are compelled to employ some persons continually in baling. They are used for the carriage of cotton, and other bulky materials, the weight of which cannot bear any proportion to their size. In common with all the other boats of the country, their bottoms are nearly flat; and indeed, it would be impracticable on the Ganges to employ vessels formed for drawing any considerable quantity of water, as the navigation is rendered extremely dangerous from the continual shifting of the sands.

BURSA, *Burse*, originally signifies a purse.

BURSA is more particularly used, in *Middle Age Writers*, for a little college or hall in an university, for the residence of students, called *burfale*, or *burfarii*.

BURSA, *Burse*, or *Burse*, in the French universities, still denotes a foundation for the maintenance of poor scholars in their studies.

The nomination of burse is in the hands of the patrons and founders thereof. The burse of colleges are not benefices, but mere places assigned to certain countries and persons. A burse becomes vacant by the burser's being promoted to a cure, as being incompatible.

BURSA, or **PRUSA**, in *Geography, a beautiful town of Asiatic Turkey, in the province of Natolia, situate at the northern foot of mount Olympus, and well watered by springs. The Jews have four synagogues, the Greeks three churches, and a metropolitan; the Armenians have likewise a church, and an archbishop. The Bazaar is a spacious edifice, well built and filled with warehouses and shops, in*

which are exposed to sale all kinds of merchandizes, brought hither from the Levant, besides the beautiful carpets, silk stuffs, velvet, &c. manufactured in the city itself. The Bithynian silk, which is the finest in Turkey, is mostly manufactured here, besides considerable quantities brought from Persia, which, though less fine, is wrought by the Prussian workmen, who are allowed to be the best in Turkey for weaving hangings, tapestry, carpets, and such articles, which are in great request, and carried from hence into all parts of Europe. The commerce of this place is much increased by the caravans that pass through it from Aleppo and Smyrna to Constantinople, and also to Ispahan. This city was built by Prusias, king of Bithynia, after whom it was called Prusa or Prusia. In the year 947, it was taken and dismantled by Seifeddulat, an Arabian prince of the race of Hamadan; but soon after conquered and fortified by the Greeks, who possessed it from that time till the year 1356, when Orchan, the son of Othman II., the emperor of the Turks, reduced it and made it the seat of his empire. From the conquest of Prusa, authors have dated the true era of the Ottoman empire. About a league from the town are some celebrated warm baths, on the road to which are seen the tombs of several sultans, and chapels of marble and jasper. By Tournefort's computation of families, the number of inhabitants has been estimated at 60,000. N. lat. 40° 3'. E. long. 28° 15'.

BURSA, in *Zoology*, a species of **ALCYONIUM**, called in common the sea-purse. This is somewhat globular, pulpy, and green. Gmel. Pallas describes it as being subglobular, hollow, very green and soft, or pulpy, and thickly covered with transparent papilæ.

The alcyonium bursa inhabits the sea coasts of Europe; it is coriaceous, and about the size of a middling apple. The species is termed by Ray, &c. *bursa marina*: *Aurantia marina*, C. Bauh. *Aurantium marinum*, Marf. hist. mar. &c.

BURSA mucosa, in *Anatomy*, is an apparatus for facilitating the motion of muscles and tendons upon those parts on which they are designed to glide backwards and forwards.

They are also found between other parts which have a similar sliding motion on each other; as for instance, between the joint of the shoulder and the acromion.

The apparatus consists of a bag, one surface of which is closely connected to the muscle, and the other to the subjacent parts.

In structure it resembles the bursa or capsules of joints, as in them there is secreted into its cavity a slippery fluid like the synovia. When a muscle or tendon moves freely and frequently upon a bone, the surface of the latter is rendered more smooth by a thin crust of cartilage being formed upon it; and this circumstance further increases the similitude of these contrivances to joints. An instance of this may be observed on the upper part of the os calcis upon which the tendo Achillis glides. These burse will be noticed in the description of the individual muscles to which they belong. Dr. Monro has published a detailed account of the bursa to which the reader is referred.

BURSA fagloris, in *Botany*, *alpina*, *rosea*, *lutea*, Mor. See **DRABA**.

BURSA alpina, hirsuta, C. Bauh. See **DRABA hirta**.

BURSA major, loculo oblongo. C. Bauh. and J. Bauh. See **DRABA muralis**.

BURSA minor, loculo oblongo. C. Bauh. See **DRABA verna**.

BURSA. Fucks.

BURSA major, folio sinuato. C. Bauh.

BURSA major, folio non sinuato. C. B.

BURSA media. C. B.

See **THLASPI**.
Bursa papaveris.

BURSA minor. Dod.

BURSA minor, foliis incis. C. Bauh.

BURSA parva, folio glabro spisso. J. Bauh. } See IBERIS nudicaulis.

BURSA minima, Lob.

BURSA orientalis, Tourn. See BUNIAS cornuta.

BURSALI, in *Geography*, a country of Africa, in Negroland, situated on the side of the river Gambia; about 12 leagues in length.

BURSALIS musculus, in *Anatomy*, a name given by Cowper and others to a muscle of the thigh, called also *marfupialis* by the same authors. It is the *obturator internus* of Winslow and Albinus, and is described by Vesalius under the name of *decimus tertius moventium*, and by Spigelius under that of *circumagentium tertius*, or *obturator internus*.

BURSAM, *revocatio per*, in the Norman *Laws*, is a right belonging to the next akin, to redeem or purchase back, within a year after sale, a fee or tenement alienated by his kinsman, on paying the price it had been sold at. Du-Cange.

BURSAR, or BURSER, *burfarius*, is used in *Middle Age Writers*, for a treasurer or cash-keeper.

In this sense we meet with bursars of colleges. Conventual bursars were officers in monasteries, who were to deliver up their account yearly on the day after Michaelmas.

The word is formed from the Latin *burfa*; whence also the English word *purse*: and hence the like officer, who in a college is called bursar, in a ship is called PURSER.

BURSARS, or BURSERS, in *Universities*, also denote those who enjoy certain benefices left for defraying the expences of the education of young men of promising parts, and small fortune. Actions brought for the effects of a college, are entered in the name of the principals and *bursars*. See BURSA.

BURSARIA, *Burfary*, in *Middle Age Writers*, denotes the place of receiving and paying money and rents by the bursars, or officers of account, in religious houses. See BURSA and BURSAR.

BURSARIA, in *Botany*. Cavanilles. Icon. Plant. 350. Class and order, *pentandria monogynia*. Gen. Ch. *Cal.* very small, deeply divided into five segments. *Cor.* Petals five, linear. *Stam.* five. *Pist.* germ. superior, style short, stigma simple. *Peric.* capsule heart-shaped, compressed, one-celled, opening into two parts, each with two valves, and two horns. *Seeds* two.

Sp. *Bursaria Spinosa*; a shrub. *Leaves* alternate, ridge-shaped, obtuse, emarginate, on short petioles. *Spines* axillary, very long. *Flowers* reddish in axillary racemes. A native of New-Holland.

BURSARIA, in *Entomology*, a species of APHIS, found on the black poplar, in the hollow excrescences which it forms in the leaves.

BURSARIA, in *Zoology*, a species of SERTULARIA, described by Ellis, as an inhabitant of the British coasts. The denticles are opposite, compressed, fastigate, branched, and dichotomous; called the Shepherd's Purse coralline in English.

BURSCHEIDT, in *Geography*, a town in Germany, in the bishopric of Cologne, near Aix-la-Chapelle, with a Cistercian abbey, the abbots of which has a seat in the diet.

BURSE, in *Matters of Commerce*, denotes a public edifice for the assembly and intercourse of merchants and traders; and is used in the same sense with the more modern appellation of EXCHANGE. In the times of the Romans, there were public places for the meeting of merchants in most trading cities of the empire: that built at Rome in the 259th year after its foundation, under the consulate of Appius Claudius, and Publius Servilius, was denominated the "College of Merchants," of which some remains are still

visible, and known by the modern Romans, under the name "Loggia." The Hans towns, after the example of the Romans, gave the name of Colleges to their burses.

The first place of this kind to which the name burse was given, Guicciardini assures us, was at Bruges; and it took its denomination from a hotel adjoining to it, built by a lord of the family *de la Bourse*, whose arms, which are three purses, are still found on the crowning over the portal of the house. Catel's account is somewhat different, viz. that the merchants of Bruges bought a house or apartment to meet in, at which was the sign of the purse. From this city the name was afterwards transferred to the like places in others, as in Antwerp, Amsterdam, Bergen in Norway, and London.

BURSE of merchants, *Bourse des marchands*, denotes a court or jurisdiction established in several trading cities of France, for the taking cognizance, at the first instance, of all disputes arising between merchants, bankers, negociants, and the like, and from which no appeals lie but to the parliament.

The burse is a kind of consular jurisdiction, the judges whereof are also denominated *priors* and *consuls*.

The burse of merchants at Tholouse was established by Henry II. in 1549, after the manner of the judges conservators of the privileges of the fairs at Lyons. The chief officers are a prior and two consuls, chosen yearly, and empowered to choose and associate, to the number of 60, several merchants to assist them in the decision of differences. These are called judges *conseillers de la retenue*. The burse of Rouen, or as it is commonly called, the convention of Rouen, is of some years later standing than that of Tholouse, having only been erected in 1566. The latest of the consular burses is that of Marseilles, established by Louis XIV. in 1691; whose jurisdiction extends through several of the neighbouring dioceses.

BURSEEAH, in *Geography*, a town of Hindoostan, in the Malwa country; 90 miles E. of Ougein.

BURSER, in *Botany*, (in honour of Joachim Burser, the disciple of Caspar Bauhin, whose Herbarium, consisting of thirty volumes, is now at Upsal,) Linn. gen. 440. Schreb. 1608. Juss. 372. Vent. vol. 3. 448. Class and order, *hexandria monogynia* Linn. *Polygamia Diœcia* Schreb. Nat. Ord. *Terebinthaceæ* Juss.

Gen. Ch. *Cal.* small, caducous, one-leaved, with three or five divisions. *Cor.* Petals, three or five, ovate or lanceolate, a little longer than the calyx, and alternating with its divisions. *Stamens*, six, eight, or ten: filaments straight, shorter than the petals: anthers ovate or oblong. *Pist.* germ. superior, ovate, obtusely three or five cornered: style very short: stigma capitate, obtuse. *Peric.* capsule one-celled with three succulent valves. Linn. on the authority of Jacquin. *Berry* coriaceous, ovate, three-cornered; containing under a fleshy pulpy substance generally one, but sometimes two, three, or even five ovate, compressed nuts; convex and even on one side, angular and uneven on the other, inclosing a kernel. The natural number is more than one, but the rest are generally abortive. La Marck.

Essen. Ch. *Pericarp*, a coriaceous drupaceous berry, containing from one to five nuts, angular on one side, and convex on the other. La Marck.

Obf. La Marck observes, that as the fruit contains a true stone with a kernel within it; and as, moreover, it is inclosed in a pulpy substance, and with a fleshy skin, it cannot be considered as a capsule: but in opposition to this opinion given in the Encyclopædia, we may remark that, if his figure, (Illust.) be correct, it opens with three valves; a character not compatible with the definition either of a berry or a drupe. Authors differ much in their description of the fructification. Schreber places it in the class Polygamia, but doubts whether

whether it does not properly belong to *diccia*, the anthers in the pistiliferous plants appearing to be sterile.

Sp. 1. *B. gummifera*, Linn. (*Terebinthus*, Comm. Brown. Sloan. Catseb. Pistacia, Linn. Sp. Pl. Ed. 1.) La Marek Illust. pl. 256. Jamaica birch tree. "Racemes axillary, flowers white." La Marek. A large and lofty tree. Trunk upright, smooth, round, covered with a smooth, thin, brown or greyish epidermis, peeling off in shreds like the European birch. *Leaves*, deciduous, alternate, unequally winged; leaflets three, five, seven, and sometimes nine, opposite, petioled, ovate, acute, entire, smooth on both sides, a little shining beneath, about an inch and half or two inches broad, three inches long, a little heart-shaped at their base. *Flowers*, small, without smell, in compound axillary racemes, near the summit of the branches. *Fruit*, the size of a hazel nut, greenish, tinged with purple when ripe, resinous, odorous. La Marek. From the interior bark exudes a clear, glutinous balsamic juice, which smells like turpentine, and soon thickens in the air, into the form of a gum. The bark of the root is thought to be the *Sima-rouba* of the shops, which is an effectual remedy in bloody fluxes. La Marek supposes that the *Terebinthus* of Catseb. with lanceolate leaves, and a bluish-violet fruit, is either a distinct species, or at least a well-marked variety. A native of the West Indies. 2. *B. paniculata*. La Marek. "Racemes panicled, terminal; flowers purple." Com. Herb. Ic. and MSS. A large tree: *Branches* below the leaves rough with tubercles and scars. *Leaves* alternate, unequally winged: leaflets five or seven, ovate-acuminate, entire, smooth, petioled, with nerves slightly projecting beneath. *Flowers* small, numerous in panicled, terminal racemes about six inches long. *Calyx* small, one-leafed, three-lobed. *Petals* three, longer than the calyx, broad at their base, obtuse at their summit, with a small scarcely discernible point. *Stamens* six: filaments half the length of the petals, nearly connivent: anthers, brown, oblong, with three furrows. In many flowers, Commerçon could not observe any appearance of a pistil, but in others there was a very obtuse stigma in the centre of a kind of receptacle flattened above, and somewhat five-cornered. It produces a resinous juice like the preceding. A native of the Île de France. 3. *B. obtusifolia*. La Marek. (*Marignia*, Comm.) "Racemes panicled, subterminal; leaflets obtuse." A large tree, very resinous. *Leaves* alternate, scattered, unequally winged; leaflets five or seven, and sometimes nine, ovate-oblong, obtuse, thickish, coriaceous, smooth on both sides, even and shining above, petioled, opposite, an inch and half broad, three inches long. *Flowers* small, very numerous, whitish: racemes much branched. *Calyx* very small, with five divisions. *Petals* five, ovate-lanceolate, expanding, nearly twice the length of the calyx, and attached between its divisions. *Stamens* ten: filaments very short; anthers small, round, yellowish. *Germ.* round; stigma almost sessile. *Fruit*, a drupaceous coriaceous berry, about the size of a hazel nut; pulp rather thick, gelatinous, and reddish: nuts from one to five, rather thick, convex on one side, angular on the other. A native of the Île de France.

BURSERIA, Lf. See VERBENA *Lappulacea*.

BURBLEM, in *Geography*, a village of Staffordshire, in England, famous for its pottery; three miles N. of Newcastle under Line.

BURSONTOWN, a post-town of America in Bucks county, Pennsylvania.

BURSTADT, a town of Germany, in the circle of the Lower Rhine, and electorate of Mentz; two miles E. of Mittenberg.

BURSTEN, a person ruptured, called by physicians *herniosus*; in middle age writers, *ponderosus*. See HERNIA.

VOL. V.

BURTHEN. See BURDEN.

BURTON, WILLIAM, in *Biography*, a skilful topographer, and antiquary, was born of a good family at Lindley in Leicestershire, in 1575; and educated at Brazen Nose college in the university of Oxford. When he left college, he entered for the study of the law in the Temple, and in due time was called to the bar. But as his fortune was easy, and his health delicate, he declined pursuing his profession, and retired into the country, where he devoted himself to the study of antiquities, and became eminent in this department. His description of Leicestershire, published in 1622, in a small folio, and republished by William Wittingham of Lynn, in 1777, was one of the earliest county histories, having been preceded by only four others; and from this circumstance it derives its chief reputation. The style of it is loose and the digressions are numerous. After having been much injured by the civil wars, he died at his seat of Fulde, in Staffordshire, in 1645; and left behind him several MSS. collections of arms, monuments, and other matters of antiquity. His son, whom he named Cassiblan, published a translation in verse of Martial's epigrams.

Another William Burton was born in London, and educated at Queen's college, Oxford; and after having been Greek lecturer in Gloucester Hall, was constrained by indigence to leave the university in 1630. He afterwards became master of the free grammar school at Kingston upon Thames, which office he resigned two years before his death in 1657. Besides his principal work, which was "A Commentary on Antoninus his Itinerary, &c." illustrated with a chorographical map of the several stations," Lond. 1658, folio, he wrote, in Latin, a history of the Persian language and other works, enumerated by Wood in his *Athenæ*. His great-grandfather is said to have expired with excess of joy upon being informed of the death of Queen Mary. Biog. Brit.

BURTON, ROBERT, brother of the antiquary, *William*, was born at Lindley, in 1576, and educated at Brazen-nose and Christ-church colleges, in the university of Oxford. He retained two preferments in the church, viz. the vicarage of St. Thomas in Oxford, and the rectory of Segrave in Leicestershire, till his death in 1639. He was much addicted to astrology, and is said to have predicted the time of his own death. With the character of a general scholar and hard student, well versed in the pedantic literature of the times, he combined great integrity and benevolence. But his temper was of an humorous and melancholic cast, which gave a singular kind of oddity to his conduct. In order to relieve his melancholy, he diverted himself by listening to the ribaldry of the bargemen, which seldom failed to occasion vehement bursts of laughter. At other times he was one of the most facetious companions in the University. His famous book, entitled the "Anatomy of Melancholy," was composed with a view of soothing his peculiar disposition; and consists chiefly of extracts from ancient authors, illustrating the causes, effects, and cure of that morbid affection. The author's own reflections are few; but they are original, ingenious, and striking. To the bookseller, this work, printed first in 4to. and afterwards frequently in folio, was very profitable. After it had been long neglected and almost forgotten, it attracted notice in consequence of an ingenious essay by Dr. Ferriar of Manchester, who detected among the plagiarisms of Sterne, various passages copied verbatim from Burton. The author died in 1639; and the following inscription, written by himself, was put upon his monument in Christ-church: "Pauca notus, paucioribus ignotus, hic jacet Democritus junior, cui vitam dedit et mortem melancholia." Biog. Brit.

BURTON, JOHN, a learned divine of the last century, was born

BURTON.

born in 1696, at Wembworth, in Devonshire, and admitted a scholar of Corpus Christi college at Oxford in 1713, of which he at length became a tutor. In the exercise of this office, he devoted himself with singular assiduity and zeal to the improvement of his pupils; and he exerted himself in a variety of ways for the advancement of learning. Besides the attention which he paid to academical discipline, he improved the mode of discussing philosophical questions in the schools, and had the honour of introducing the study of Locke, and other modern philosophers, in connection with Aristotle. He also took great pains in promoting classical literature, by frequent lectures both in the Greek and Latin languages; and he extended the utility of the university press for the aid and encouragement of literary undertakings. In 1733 he was elected a fellow of Eton college; and about the same time was presented to the vicarage of Maple-Dunham, in Oxfordshire. On this occasion he was induced, by motives of sympathy and compassion, to marry the widow of his predecessor in that living, with the charge of three infant daughters that were left destitute; and though he thus formed a connection which, according to the maxims of the world, would be condemned as imprudent, he found in the event that the choice of a person who possessed every qualification for fixing his attachment, except money, contributed to his future happiness. In this retired station of a country clergyman, he continued for several years; occupying himself in literary pursuits, and in the improvement of his house and grounds, not less for the benefit of his successors than for his own amusement. After the death of his wife in 1748, an event which deeply affected him, and which he much lamented, he chiefly resided on his fellowship at Eton; where his situation was such in every respect as suited his studious and literary disposition. In 1752 he took his degree of doctor in divinity; and continued to appear occasionally both as a writer and a preacher, much esteemed by the higher and lower classes of his own order, with whom he had frequent and free intercourse, and also by the common people, with whom he associated in the most condescending and affable manner. His leisure hours he amused by poetical exercises. Towards the close of his life he was attacked with a fever, which impaired his intellects, and shattered his decaying frame; but at intervals he seemed to recover the powers both of his body and mind. On the evening of Sunday, the day before his death, he discoursed according to his usual manner, with more than usual perspicuity and elegance, on some theological subject; and after a very serene sleep, he gently departed this life on the following day, February the 11th, 1771, and was buried at the entrance of the inner chapel at Eton. The works of Dr. Burton are chiefly collected in two volumes of *Sermons*, which are much laboured, of a considerable length, and containing a great variety of matter; an octavo volume of theological dissertations, entitled "*Opuscula Miscellanea Theologica*;" and another of "*Opuscula Miscellanea Metrico-prosaica*;" comprehending a variety of pieces in Greek and Latin, with two or three copies of English verses. In one of these pieces, entitled "*Commentariolus Thomæ Secker, Archiep. Cantuar. memoriæ facer*," Dr. Burton indulged himself in some severity of animadversion against the dissenters, on account of their supposed opposition to the settlement of a bishop in America, which induced Dr. Furneaux in his letters to Mr. Justice Blackstone, to vindicate that body of men against the charge brought against them. Dr. Burton was also the author of some other publications besides those contained in the volumes above-mentioned. In 1744 he published at

Oxford, in large 8vo. "*The Genuineness of Lord Clarendon's History of the Rebellion*, printed at Oxford, vindicated," in which he fully refutes the slander that had been advanced by Oldmixon, in his *Critical History of England*. In 1758, appeared his "*Dissertatio et Notæ Criticæ speculantes ad Tragædias quasdam Græcas, editas in Pentalogia*." The publication of the five select tragedies, which constitute the "*Pentalogia*," had been recommended to him by a pupil of promising talents, Joseph Bingham, who had printed almost the whole text and notes, when in 1736 he was cut off by a premature death. Dr. Burton has added a preface, dissertations, and additional notes. This work has been reprinted at the Clarendon press, and is much esteemed as a book for students in Greek. In 1766, Dr. Burton published a discourse, entitled, "*Papists and Pharisees compared, or Papists the corrupters of Christianity*," occasioned by Philips's life of Cardinal Pole. About the same time he also delivered a set of sermons, still in MS.; the design of which was to refute the articles of the Council of Trent. He is also understood to have been the author, under the name of Phileutherus Londinensis, of "*The Remarks on Dr. King's Speech before the University of Oxford, at the dedication of Dr. Radcliff's library, on the 13th of April, 1749*;" to which Dr. King replied in his "*Elogium famæ inferniæ Jacci Etonensis, or Gigantis; or, the Praises of Jack of Eton, commonly called Jack the Giant; collected into English metre, after the manner of Thomas Sternhold, John Hopkins, John Burton, and others*." To which is added, a Dissertation on the Burtonian Style, by a Master of Arts." But the most severe attack on Dr. Burton's style, as affected and pedantic, was that of Churchill in one of his poems, (works, vol. iii. p. 124,) who has exercised all the uncandid severity of his pen to expose it to ridicule. However, prejudice cannot deny, that Dr. Burton was "an able divine, a sound scholar, and an excellent academic; and that he set an useful example to university-men, whether as fellows, tutors, or officers, editors. In short, his abilities, virtues, and learning were such as justly entitle him to have his name transmitted with honour to posterity." *Biog. Brit.*

BURTON, JOHN, the scholar of Keeble, a harpsichord player, with a powerful hand, and much enthusiasm in his art; but having in his youth exercised his hand more than his head, he was not a deep or correct contrapuntist. He had, however, in his pieces and manner of playing them a style of his own, to which, from his having been one of the first harpsichord players in our country, who attempted expression and light and shade, he excited an interest and attention, which would now perhaps be much more difficult to obtain.

Travelling into Italy, with Mr. Beckford, at the time when the *Mall'aria* raged, he became a victim, about 1779, to the imprudence of passing from Rome to Naples on the verge of the Pontine marshes, in spite of the admonitions of the native inhabitants.

BURTON, or BURTON in Kendal, in *Geography*, a small market-town on the borders of Lancashire, in the county of Westmoreland. Here are some good houses and two large inns, situated on the great turnpike road. It derives some advantages from travellers; and from the canal, lately brought here, by which a commercial communication is opened with the rivers Dee, Mersey, Trent, Derwent, Humber, Severn, &c. Here are a small market on Tuesdays, and one fair annually. It is 25½ miles N.W. from London, and contains 128 houses, and 548 inhabitants. Housman's *Topographical Description of Cumberland, &c.* 8vo. 1800.

BURTON-upon-Trent, is an ancient and large market-town of Staffordshire, England. It is situated in a pleasant and fertile valley on the banks of the river Trent, which separates

rates this part of the county from Derbyshire. This town has long been celebrated for its ale breweries and malt-houses. The Burton ale is a beverage in high repute at most of the large towns of England, and is exported to different places on the continent. It is commonly of a thick and glutinous quality, of a sweetish taste, and a small quantity produces inebriation with those persons not accustomed to it (vide ALE). Among the manufactures of this place are hats, which are made in large quantities for the army, navy, &c.; screws, spades, and other iron utensils, are also made here; as are some tammies and woollen cloths. Three extensive cotton manufactories are established in the vicinity of the town; and about half a mile distant on an island, is a considerable forge, for converting bloom and scrap iron into bars. The river Trent has long been made navigable from Gainsborough to this town for boats of large burthen. The Burton boat company are proprietors of this navigation, and of many boats on the grand trunk canal. This passes parallel with the town, and at about one mile distance communicates with the Trent.

Burton, in the time of Leland, had "one parish church, a chapel at the bridge end," and was noted for its marble and alabaster works. Here is a long bridge of 36 arches, which crosses the Trent, and was, according to Mr. Gough, "built in the time of Henry II., or earlier." The parish church, built in 1722, adjoins the abbey, which was founded by Wulf-ric Spot, in 1004, for Benedictines. Some of its ancient walls remain, but are altered and fitted up as the manor house. Its abbot had a large piece of hilly ground, about one mile from the abbey, which he called Sinai. This still bears the name of Sinai park. Burton was formerly ornamented with a castle, which, Mr. Gough says, was built by one of the Ferrars' family, in the time of the conqueror. Here are a free school, two alms-houses, and a town-hall, the latter of which was built in 1772, by the earl of Uxbridge, who is lord of the manor, and holds his courts-leet, &c. in this structure. The town has, within a few years, been greatly improved by the paving and lighting of its streets. It has a large market on Thursdays, and four fairs annually, one of which continues for five days, and is noted for its large shew of horses. Burton is 125 miles N.W. from London, and contains 738 houses, with 3678 inhabitants, the greater part of whom are engaged in trade and manufactures. Gough's edition of Camden's Britannia, vol. ii. Shaw's History of Staffordshire.

BURTON, a small township of America, in Grafton county, New Hampshire, incorporated in 1766, and containing 141 inhabitants.—Also a township in the British province of New Brunswick, situated in Sunbury county, on the river St. John.

BURTON, in *Sea Language*, a small tackle consisting of two single blocks, and a rope passing through them, until it becomes three or four fold. It is employed in loading or discharging goods, as bales, casks, &c. and in removing the anchors, or any weighty body, on deck, in setting up the top-mast rigging, &c.

BURUGERD, in *Geography*, a town of Persia, in the province of Irak-Agemi; 92 miles S.E. of Amadan.

BURULUK, a town of Russia, in the government of Voronetz; 96 miles S.W. of Voronetz.

BURUN, a town of European Turkey, in the province of Romania; 50 miles E. of Emboli.

BURUNNIUTAPCHARA, a cape in the Caspian sea, 112 miles S. of Guriev. N. lat. 52° 50'. E. long. 63° 14'.

BURWAH, a town of Hindoostan, in the country of Bahar; 155 miles S. of Patna. N. lat. 23° 10'. E. long. 84° 30'.

BURY, is sometimes used to denote the hole or den of some animal under ground. See BURROW.

In which sense we say the bury of a mole, a tortoise, or the like. The *gryllotalpa*, or mole cricket, digs itself a bury with its fore-feet, which are made broad and strong for that purpose. Naturalists speak of a kind of urchins in the island of Maraguan, which have two entries to their buries, one towards the north, the other to the south, which they open and shut alternately, as the wind happens to lie.

BURY, in *Geography*, a market town of Lancashire, England, is seated in a fine valley on the banks of the river Irwell, at the distance of 195 miles N.W. from London, and 9 miles N. of Manchester. Situated in the midst of a great manufacturing district, most of its houses and inhabitants are appropriated to and engaged in the cotton works. Leland mentions Bury as being only a poor market-town, in his time, but it has now acquired considerable wealth and commercial importance; which has partly arisen from the laudable exertions of Sir Robert Peel, bart. who, having a seat at Chamber-hall, in this neighbourhood, has established and promoted some large manufactories for calico printing, &c. The principal of these works, under the firm of Peel and Co. are situated on the side of the Irwell, from which they have large reservoirs of water.

The cotton manufactories, which are now so very flourishing in this district, appear to have been brought here from Bolton. Since their establishment at Bury, they have been greatly facilitated and promoted by means of various scientific and mechanical contrivances, which Sir Robert Peel has encouraged. Among the inventions that have been brought forward under his patronage, is one called the wheel, or flying shuttle, invented many years ago, and the card making machine which was first invented by Mr. Robert Kay, and is formed for making several cards at once. It straightens the wire out of the ring, cuts it into lengths, staples it, crooks it into teeth, pricks the holes in the leather, puts the teeth in, row after row, and performs the whole with a single operation of the machine, in an expeditious manner, by one person turning a shaft and touching neither the wire nor the leather.

The parish of Bury is large, and divided into six townships, and has four chapels of ease, besides a modern handsome church in the town. The presbyterians, independents, and methodists have also places of worship. Here is a handsome free-school, well endowed, and provided with two masters; also a charity school for boys and girls. About one half of the town is leasehold, under the earl of Derby, and the remainder is glebe belonging to the rectory. The living, in the gift of that earl, is rendered very valuable from the following circumstance: an act of parliament passed in 1764, empowering the rector, for the time being, to grant building leases for 99 years, renewable at any intervening period, on an agreement between the parties. The relative population of Bury, and its present extent, may be estimated from comparing the accounts of each in 1773 and 1801. In the former period there were 463 houses and 2090 inhabitants, and at the latter, according to the report of the house of commons, 1384 houses and 7072 inhabitants.

According to tradition there were two castles in and near this town. Indeed, its name partly confirms this; and at the west end of the town is a field called *Castle cress*, where foundation walls have been dug up. At *Castle fields* in Walmisley was an encampment; and near it is an eminence called Castle-hill. Aikin's Description of the Country round Manchester, 4to. 1795.

BURY St. Edmund's, is a large, populous, and ancient borough town in the county of Suffolk, England, and

seated on the side of a hill, which slopes gently to the river Larke. This place obtained its present name and principal importance from the relics of king Edmund, who being barbarously murdered by the Danes at Hoxne in this county, was proclaimed a royal martyr, and his shrine became an object of great veneration in the time of British monachism. Though a monastery had been previously founded here by Sigebert, king of the East Angles, yet it does not appear that this monarch's establishment excited any notoriety, or attracted many inhabitants. The abbey founded here in honour of St. Edmund, was raised by Aylwin, about the year 903, but was afterwards augmented by additional endowments, and enlarged in buildings. Nearly the whole was, however, destroyed by Sweyn king of Denmark, whose son Canute rebuilt the abbey, and restored the town to its former importance. Previous to this event, it appears that the town was known by the name of Beodrichworth. Canute offered up his crown at the shrine of St. Edmund, as did many other English kings his successors. The church and monastery appear to have been rebuilt in the year 1020, and the former was consecrated on St. Luke's day, A.D. 1032, by Agelnothus, archbishop of Canterbury. From this period it grew into great repute, and several monarchs, with many eminent persons, were desirous of being interred in this holy place. During the prosperity of the abbey, it was environed with a strong wall and ditch, and there was an hospital, or religious house, at every gate of the town. Among these, the abbey-gate, or entrance to the abbot's palace, is the principal structure remaining; and this is an interesting relic of architectural antiquity. It was erected in the reign of Richard II. about the year 1377, and at present is in a good state of preservation. Its western front is adorned with several niches and carvings in tabernacle work, &c. Another of these structures, called Church-gate, or the portal, is remaining, and formerly led to the grand conventual church. It now serves as a tower to St. James's church, and is supported on two semicircular arches, which admit of a free passage for carriages.

The town of Bury St. Edmunds, with its suburbs, extends from north to south, about $1\frac{1}{2}$ mile, and in breadth $1\frac{1}{4}$ mile. It is divided into five wards, and contains 34 streets, which are well paved, and intersect each other at nearly right angles. While the abbey was standing, there were three churches within its precincts, besides the one belonging to the monastery. That dedicated to St. Margaret is now made use of, with considerable alterations, as the shire-hall, where the county assizes are held. The two other churches "are deservedly esteemed for their exact and beautiful symmetry, their large and elegant windows, neat pillars, and noble roofs." In the church of St. Mary, it appears that Mary Tudor, third daughter of Henry VII. and wife of Lewis XII. king of France was interred. After the decease of the latter monarch, she married Charles Brandon, duke of Suffolk, and died in his life time at Westhorpe in this county.

Bury has, at different times, been the seat of the English sovereign, and the place of assembling his parliaments. King Edward I. and Edward II. had mints here; and Stow says that here was also a mint in king John's time. Among the other public buildings and establishments of the town, are the guildhall, the wool-halls, the gaol, the bridewell, the theatre, the market-crofs, the butchery, and new shambles, the subscription rooms, the free grammar school, and four meeting-houses.

Bury has the privilege of three annual fairs, one of which usually continues for three weeks. Here are also two

weekly markets on Wednesdays and Saturdays. In 1758, the number of inhabitants in this town was 5,819, and in 1801, they appear to have increased to 7,655. Though the population has thus evidently greatly increased, yet at some former periods many inhabitants have been swept away by the plague, &c. Mr. Nichols, in his History of Leicestershire, states that 1000 persons died of the plague in Bury in 1257, and in 1638 upwards of 600 persons died of this dreadful calamity.

Bury was first privileged to send members to parliament by king James I. who incorporated it in the fourth year of his reign; and by two other charters in the sixth and twelfth years of his reign. The right of election is vested in the aldermen, burgessees, and common-councilmen, amounting to 37. Gillingwater's Historical and Descriptive Account of St. Edmund's Bury, 12mo. 1804.

BURYING *alive*, was, among the Romans, the punishment of a vestal (see VESTAL), for the violation of her vow of chastity. After being tried and sentenced by the pontifices, this punishment was inflicted and accompanied with funeral solemnities in a place called the "Campus Sceleratus," near the Porta Collina; and her paramour was scourged to death in the Forum. The unhappy priestess was let down, on this occasion, into a deep pit, with bread, water, milk, oil, a lamp burning, and a bed on which to lie; but this was mere show, for the moment she was at the bottom, they began to cast in the earth upon her, till the pit was filled up. Mem. Acad. Inscr. t. iii. p. 278. This mode of punishment is said to have been first devised by Tarquinius Priscus. Dionys. iii. 67. Lord Bacon mentions instances of the resurrection of some persons who had been buried alive. Of this number was the famous Duns Scotus. See DUNS. For the places and different modes of burying, see BURIAL.

BURZANO, in *Geography*, a town of Naples, in the province of Calabria Ultra; 10 miles E.N.E. of Bova.

BURZET, a town of France, in the department of the Ardèche, and chief place of a canton in the district of l'Argentiere. The place contains 2670, and the canton 4945 inhabitants; the territory comprehends 110 kilometres and 4 communes.

BUS, CÆSAR DE, in *Biography*, the founder of the Fathers of the Christian doctrine, was born at Cavaillon in 1544, and after pursuing, for some time, a licentious course, became sensible of his misconduct, entered into the church, and was appointed canon of a cathedral. Adopting a rigorous mode of living, and distinguished by his zeal in instructing the ignorant, and exhorting sinners to repentance, he formed a new institution for teaching the principles of the Christian religion. See FATHERS of the Christian doctrine. De Bus lost his sight some years before his death, which happened at Avignon in 1607. To him is also ascribed the establishment of the URAULINES in France. He published a set of "Familiar Instructions on the Christian Doctrine," written in a simple style, and still read by pious persons. Nouv. Dict. Hist. Mosheim. Eccles. vol. iv.

BUSANCY, in *Geography*, a town of France, in the department of the Aisne, and district of Soissons; 4 miles S. of Soissons.

BUSARD, in *Ornithology*. See MOOR BUZZARD.

BUSBEC, or FOESBEC, AUGHER GHISLEN, in Latin *Busbequius*, in *Biography*, a celebrated traveller and ambassador, was the natural son of Ghissen, lord of Boesbec, a village on the Lys, and born at Commines, in Flanders, in 1522. Having been legitimated by a rescript of the emperor Charles V., he pursued his studies with great diligence and

and success, in some of the most celebrated universities of Europe. He accompanied the ambassador of Ferdinand, king of the Romans, to England, and was present at the marriage of Philip and Mary; and was appointed by this sovereign, when he became emperor, as his ambassador to sultan Solymán II. During his seven years' residence in the Turkish dominions, he acquainted himself with various particulars relating to the natural and political history of the country, and collected a great number of MSS. and inscriptions, together with drawings of plants and animals, which served, on his return, to form a narrative, written in Latin, and abounding with valuable information. He was afterwards entrusted with the education of the sons of Maximilian II., and in 1570, conducted this emperor's daughter to France, on occasion of her marriage with king Charles IX. After the death of Charles, he continued in that country as minister for the queen-dowager, and also for the emperor Rodolph, till the year 1592. Having obtained permission to take a journey into the Low Countries, he was assaulted in Normandy by a party of soldiers belonging to the garrison of Rouen, and the treatment he suffered produced a degree of irritation, which terminated in a fever that proved fatal to him at the house of a lady near Rouen, in 1592. He was a man of extensive literature, and master of seven languages. The first copy of the famous "Monumentum Ancyranum", which he caused to be transcribed at Ancyra, was brought by him into Europe. Besides his "Travels in the East," he wrote "Letters from France to the Emperor Rodolph," which exhibit an interesting picture of the French court at that period. An edition of all his works was published by Elzevir at Leyden in 1633, and at Amsterdam in 1660, in 4to. Gen. Dict.

BUSBY, RICHARD, an eminent school-master, was born at Luton, in Lincolnshire, in 1606, educated at Westminster school as a king's scholar, and elected student of Christchurch, in 1624. At college he was esteemed a great master of the Greek and Latin languages, and a complete orator. Having taken orders, he was admitted, in 1639, to the prebend and rectory of Cudworth, in the church of Wells, and in 1640, he was appointed master of Westminster school, which office he held with singular reputation for 55 years. His talents for this arduous office have been greatly extolled; though it does not now appear what was his peculiar and discriminating excellence. It has been said that he possessed a singular sagacity in discovering the appropriate genius of his pupils, and that he so much approved an early manifestation of wit in his scholars, as to pardon the imprudent exercise of it, when he himself was its object. Perhaps, his pre-eminence to others who have occupied similar stations might have principally consisted in the firmness and vigour of his mind and in that kind of uniform and systematic discipline, attended with a considerable degree of severity, which commanded awe and maintained order. With a reference to this trait of his character, sir Roger de Coverley (see Spectator, N^o 329.) is made to exclaim, at the view of his effigies, "Dr. Busby; a great man! he whipped my grandfather; a very great man!" Pope also gives us a lively description of a master belonging to the Busbian class, or of the "Genius of the public Schools," in the following appropriate lines:

"When lo! a spectre rose, whose index-hand
Held forth the virtue of the dreadful wand;
His beaver'd brow a birchen garland wears,
Dropping with infant's blood, and mother's tears.
O'er every vein a shudd'ring horror runs:
Eton and Winton shake through all their sons.

All flesh is humbled; Westminster's bold race
Shrink, and confess the genius of the place;
The pale boy-senator yet tingling islands,
And holds his breeches close with both his hands."

Dunciad, B. iv.

Dr. Busby, however, though his fame has descended to us as that of a strict and severe disciplinarian, was not an ill-natured man; but the severity which he exercised, and which has almost become proverbial, seems to have been the result of habit and system. It has, indeed, been inadvertently upon with disapprobation by some modern writers, not only as unjustifiable, but as tending to the extreme of cruelty. Somewhat to this purpose is the reflection of Mr. Knox, in his essay on parental indulgence (Essays, vol. ii. p. 344.) who says, "Inhumanity even in a Busby cannot admit of palliation." As a man of learning, Dr. Busby is known by several books, such as Latin and Greek grammars, and editions of the satires of Juvenal and Persius, and of the epigrams of Martial, adapted to the use of his school, and evincing his skill and accuracy as a grammarian. After the restoration, he was made a prebendary of Westminster, as well as treasurer and canon residentiary of the church of Wells; and in the same year he also took his degree of doctor in divinity. To the church and monarchy he was zealously attached, and he infused similar principles and spirit into the minds of his pupils, among whom were several who occupied some of the highest offices in the state. Several instances of his private and public charity are recorded. Having, by a course of temperance, notwithstanding the fatigues of his public station, attained to the advanced age of 89, he died in 1695, and was buried in Westminster abbey, where a monument, with an ample, laudatory inscription, was erected to his memory. Biog. Brit.

BUSCA, in Geography, a town of Italy, in the province of Coni; 7 miles W. of Coni.

BUSCHE, HERMAN VON DEM, in Latin *Buschius*, in Biography, a distinguished scholar, who contributed to the revival of literature, and the improvement of taste in Germany, was the descendant of a noble family in Westphalia, and born at the castle of Sassenborg in the bishopric of Minden, in 1468. After a previous course of study improved by travels through Italy, France, and Germany, and various attempts to excite among his own countrymen a taste for pure Latinity, he established a school at Cologne; but here his residence was made uneasy to him by the monks, so that in 1506 he removed to Leipsic. The ecclesiastics, however, whose Latin style he condemned, and which he wished and laboured to reform, counteracted his efforts of improvement, and he was under a necessity of often changing his abode. At Cologne, whither he returned after his travels in Germany and the Low Countries, he published "Pemptades Decimationum Plautinarum," and a "Commentary on Claudian de Raptu Proserpinæ." The clergy again molested him in this city, as he had given them fresh occasion of offence by aiding Ulric Von Hetton in composing the celebrated "Epistola Obscurorum Virorum," in which the monastic Latin of that period is the subject of ridicule. From Cologne, he removed to Wesel, where, as rector of the Latin school, he read the works of Luther, Melancthon, and Pomeranus, which had been just published. From Wesel, he went to Wittenberg; and, at the recommendation of Luther and others, the landgrave of Hesse appointed him professor of history at Marburg, where he published "A Treatise on the Authority of the Word of God." About this time he embraced the doctrines of Luther, and married in the year 1527. Towards the close of his life,

he had an unhappy quarrel with the anabaptists at Munster, which agitated a constitution, already enfeebled by years, to such a degree, as to occasion his death, in 1534. His principal works are "Commentar. in Donatum;" "Annot. in Silium Italicum;" "Comment. in primum lib. Martialis;" "Scholia in Æneid;" "Annot. ad Juvenal;" "Epigrammatum, libri iii.;" "Comment. in Satyr. Persii," Paris, 1644. He also published many Latin poems. According to the account given of his writings by Erasmus, they are nervous, lively, and animated, and display great acuteness of judgment; and his style is said to approach nearer to that of Quintilian than to that of Cicero. Gen. Biog.

BUSCHETTO, DA DULICHIO, a celebrated Greek architect, was a native of the isle of Dulichio, and employed, in 1016, by the republic of Pisa, in building and ornamenting their dome or cathedral church; which he enriched with many marble columns, and which has ever since been reckoned one of the most sumptuous edifices in Italy. He died at Pisa, where was erected a monument to his memory, bearing an inscription which intimates his extraordinary knowledge of the mechanic powers. His disciples were numerous, and he is regarded as the principal founder of the science of architecture in modern Italy. Felibien, Vies des Archit.

BUSCHING, ANTHONY-FREDERICK, a well-known geographer, was born at Stadthagen, a town of Germany, in 1724, and instructed for several years by Hauber, afterwards pastor of a German congregation at Copenhagen, in the Greek, Chaldaic, and Syrian languages, and also in astronomy, algebra, and other branches of the mathematics. In 1744, he entered as a theological student at Halle, where he derived singular benefit from the patronage of the celebrated professor S. J. Baumgarten; and in 1746, he published his first work, which was "An introduction to the Epistle of Paul to the Philippians," with a preface by his patron. At the close of his academical studies he began his exegetical lectures on Isaiah, which were followed by those on the New Testament. In 1748, he was invited to superintend the education of the eldest son of count Lynar, at Koftritz; where he was also employed in revising a German edition of Vitringa on Isaiah, and where he commenced an extensive correspondence with persons of eminence in the literary world. In the following year he accompanied count Lynar to Petersburg; and in the course of his journey thither he formed the plan of a new geography, with a view of supplying the imperfections of Hubner's and Hager's works on this subject. After encountering some difficulties and discouragements in the progress of his undertaking, he determined to devote his whole time to it; and releasing himself from his engagements as tutor, repaired, in 1752, to Copenhagen, where he enjoyed peculiar advantages for the completion of his work. During his residence in this city, he conducted a monthly publication, in which he gave an account of the state of the arts and sciences in Denmark. In 1754, he removed to Germany, and at Halle wrote a dissertation, entitled "Vindiciæ Septentrionis," announcing also his intention to commence a course of lectures on the constitution of the principal states of Europe; but he was diverted from prosecuting this plan by an invitation to the office of extraordinary professor of philosophy at Gottingen, with a salary of 200 rix-dollars to enable him to finish his geography. Accordingly, he accepted the invitation, and having settled at Gottingen, in 1754, he married in the following year a literary lady, several of whose poetical pieces he had previously published. This lady had been elected an honorary member of the German society at Gottingen, and had also been named imperial poetess laureat by Haberslein, pro-rector of the university of Helmstadt. In the

prospect of a vacancy in the chair of theological professor in the university of Gottingen by the death of Mosheim, Busching was advised by his friends, in 1755, to offer himself as a candidate; but as he had conceived a dislike to the theology of the schools, he thought it most honourable to announce his sentiments to the public, before he undertook the office of theological professor. Accordingly, on occasion of his applying to the theological faculty of Gottingen for the degree of doctor, he delivered to them, in MS., his "Epitome theologiæ e foliis sacris literis concinnatæ, et ab omnibus rebus & verbis scholasticis purgatæ," which he afterwards printed; and, after some opposition, he obtained the degree. This dissertation was afterwards reprinted with additions; and as it contained some points of doctrine that were thought exceptionable, he was accused of heterodoxy, and ordered by a rescript issued in 1757, to forbear publishing any thing on the subject of theology, till it had been submitted to the inspection of the privy-council of Hanover; and he was also commanded to abstain from giving theological lectures, particularly on disputed subjects. He remonstrated against this treatment, and in a letter to Munckhausen, the Hanoverian minister, he expressed his purpose in the following declaration: "If your excellency should make me chancellor of the university, with a salary of a thousand dollars, on condition of my teaching nothing but the usual theology of the schools, I would respectfully refuse your offer." At this time Busching had a salary of 400 dollars at Gottingen, besides pecuniary presents from the minister, and some privileges, which enabled him to expedite his great geographical works. In 1759, he was appointed public professor of philosophy, and the first part of his geography had already gone through three editions. He was now at leisure to prosecute it; and, that he might not be interrupted, he declined accepting several advantageous offers. On the subject of education he had published a treatise, compiled from his lectures at Gottingen, which very much contributed to his reputation. In 1761, he undertook the office of pastor to a Lutheran congregation at Petersburg; and here he founded a school on a large scale for the benefit both of boys and girls. To this school he paid particular attention; and in 1763, it had risen to such reputation, that it contained upwards of 300 scholars of various nations and sects; and Catharine II. granted to it, by the recommendation of field-marshal count Munich, several privileges. But on occasion of a dispute between Busching and his congregation respecting this new institution, he abandoned the direction of it, and determined to return to Germany; though the empress Catharine was very desirous of retaining him in Russia. Among other connections which he formed during his residence at Petersburg, he contracted an intimacy with Muller, the celebrated historian and traveller; and from the information he thus obtained with regard to Russia, he was enabled to publish his "Historical Magazine." The place which he selected for his residence, with a view to the prosecution of his literary labours, was Altona; and here he continued, declining some advantageous proposals, made to induce his return to Gottingen, and resolving never to accept a pension, till the year 1766, when he was appointed director of a gymnasium at Berlin. In this capital he was treated with great respect; and besides the employment of superintending the seminary committed to his care, he engaged in writing various elementary treatises for the use of the different classes in the Latin and French languages, natural history, the history of religion, the fine arts, &c.; which were favourably received by the public. His incessant application, however, impaired his health, and brought on a pulmonary complaint with which he was afflicted for several

several years, and which terminated his useful life, in 1793, after he had been director of the gymnasium at Berlin for 26 years. He was buried in his garden at mid-night, without pomp or ceremony, according to his own desire expressed in his will. In his own delineation of his character, he acknowledges, that though he was candid and open-hearted, affable, ready to assist others, and of a compassionate disposition, he had behaved with harshness to many persons, and on various occasions. He expresses his confidence in the Supreme Being, his firm faith in the Saviour of the world, and his satisfaction with the dispensations of providence. His temper, he says, was warm, and occasionally irritable; and his firmness had sometimes assumed the appearance of obstinacy; and his quickness had betrayed him occasionally into precipitation. "I am moderate," says he, "in all things; contented with little, and master of my appetites. In my intercourse with the world I expect too much from myself; I am therefore often dissatisfied with my own conduct; and on that account wish to confine my intercourse within a very narrow circle, and to shun society. I am free from pride, but not void of ambition, though I often struggle with this passion, and on reflection endeavour to suppress it. I am so much attached to labour, that it seems to me a requisite to life, and that my impulse to it is greater than to any sensual pleasure whatever."

Busching was a ready writer, so that his literary productions amounted to more than a hundred, consisting of elementary books, relating to schools and education, and such as were theological, historico-geographical, and biographical. Although his works possess considerable merit, they abound with repetitions, and his style is diffuse and inelegant. But the department in which he principally excelled was that of geography. His "Geography" comprehending Europe and the Russian part of Asia, contains a variety of interesting and useful information; and was published after the year 1754, at different periods, in single volumes, of which eight editions were published during the life of the author. His "Magazine for Modern History and Geography" was comprised in 22 parts, 4to. and published between the years 1767 and 1788: and his "Weekly Account of new Maps" appeared in detached parts, during an interval of 15 years, from 1773 to 1787. Gen. Biog.

BUSCHOFF, in *Geography*, a town of the duchy of Courland; 8 miles S. of Seelburg.

BUSCHWEILER, a town of France, in a district of the same name, in the department of the Lower Rhine, formerly Alsace.

BUSE, in *Ornithology*. See FALCO BUTEO.

BUSELAPHUS, *Caji*, in *Zoology*. See ANTILOPE RUBALIS.

BUSENTO, in *Geography*, a river of Italy, which runs into the sea, near Policastro.

BUSEY, a town of the island of St. Domingo, situated near Port-au-Prince, and having a fort.

BUSH, a tuft or assemblage of boughs or branches.

Bush also denotes a coronated frame of wood hung out as a sign at taverns. It takes the denomination from hence, that, anciently, signs where wine was sold were *bushes* chiefly of ivy, cypress, or the like plants, which keep their verdure long. And hence the English proverb "Good wine needs no bush."

Bush, in *Geography*, the name of a river in Ireland, which after taking a winding course through the northern part of the county of Antrim, falls into the north channel about a mile west of the Giant's Causeway.

BUSH-town. See HARFORD.

BUSH-barrow, in *Agriculture*, an implement constituted

of any sort of bushy wood, interwoven in a kind of frame consisting of three or more cross bars, fixed into two end-pieces in such a manner as to be wider behind than before, and very rough and brushy underneath. To the extremities of the frame before are generally attached two wheels, about eight or twelve inches in diameter, upon which it moves; sometimes, however, wheels are not employed, but the whole rough surface is applied to, and dragged on the ground. See HARROW.

Bush harrowing, the operation of harrowing with an implement of the kind described above. It is chiefly necessary on grass-land, or such as has been long in the state of pasture, for the purpose of removing the worm-casts and of breaking down and reducing the lumps and clods of the manures that may have been applied, and thereby rendering them more capable of being washed into the ground, or, in some measure, for removing the mossy matter that may have formed on the surfaces of such lands.

A rather dry time should be chosen for the performing of the business, in order that these substances may be in a more pulverizable state, and of course more readily broken down and applied to the roots of the grass plants. It should never be attempted when there is such a degree of moisture as to produce clogginess.

Bush-vetch, a plant of the vetch kind, which may probably be cultivated to advantage by the farmer, where lucerne and other plants of a similar nature cannot be grown. It is observed by Mr. Swayne, in the third volume of the letters and papers of the Bath Society, that "its root is perennial, fibrous, and branching; the stalks many, some of them shooting immediately upwards, others creeping just under the surface of the ground, and emerging, some near to, and others at a considerable distance from the parent stock. The small oval leaves are connected together by a midrib, with a tendril at the extremity: the flowers are in shape like those of the common vetch, of a reddish purple colour; the first that blossom usually come in pairs, afterwards to the number of four at a joint; the pods are much shorter than those of the common vetch, larger in proportion to their length, and flatter, and are of a black colour when ripe; the seeds are smaller than those of the cultivated species, some speckled, others of a clay colour." Being a perennial plant, it should seem, he thinks, "to be a very proper kind to intermix with grass seeds for laying down land intended for pasture; and that it is as justly entitled to this epithet as any herbaceous plant whatever, having observed a patch of it growing in one particular spot of his orchard for 14 or 15 years past. It is not only a perennial, but an evergreen; it shoots the earliest in the spring of any plant eaten by cattle with which he is acquainted, vegetates late in autumn, and continues green through the winter, though the weather be very severe; add to this, that cattle are remarkably fond of it." See VICIA.

These peculiarities should make it particularly valuable to the farmer as a green food for sheep in the winter and spring, when food of that denomination is so exceedingly scarce.

The same writer has likewise observed, that, "the chief reason which has hitherto prevented its cultivation has been the very great difficulty of procuring good seed in any quantity. The pods," he finds, "do not ripen altogether; but as soon almost as they are ripe, they burst with great elasticity, and scatter the seeds around; and after the seeds have been procured, scarce one-third part of them will vegetate, owing," as he supposes, "to an internal defect, occasioned by certain insects making them the nests and food for their young."

It appears from this author's account also, that a crop of this kind of vetch "may be cut three or four times, and in some cases even so early as the beginning of March;" a circumstance of much importance to such farmers as have a large stock of cattle. In his trials with this plant, cut in this way, a plat of good stiffish loamy land, of twenty-five square yards, produced,

1st cutting, 16lb. green,	supposed 4lb. dry.
2d do. 130 do.	would have weighed 21½ dry.
3d do. 62 do.	would have weighed 14 dry.
4th do. 76½ do.	would have weighed 12½ dry.
Total 284½ green.	52 dry.

An acre, therefore, says he, reckoning 4840 square yards to it, in the same circumstances, would have produced the total amount of

Tons	cwt.	qrs.	lb.
24	11	3	3 green.
4	9	3	15 dry-fodder.

And it is further added, "that at the time the first cutting was made there was scarce a green blade of grass to be seen; and that the season, till after the third cutting, was as unfavourable to vegetation as perhaps any in the memory of man."

It is said to succeed best on soils of the clayey kind; but from the stems rising so closely together there is danger, in moist seasons, of their rotting at the root. See VETCH.

BUSH, *burning*, in *Scripture History*, denotes that bush in which God manifested himself to Moses at the foot of mount Horeb, as he was feeding the flocks of his father-in-law, by the schechinah or symbol of his presence in a flame of fire. Exod. chap. iii. The emblem of the burning-bush is used as the seal of the church of Scotland, with this motto: "Tho' burning, is never consumed."

BUSH-lime, among *Bird-Catchers*, denotes an arm or bough of a bushy tree, full of thick and long, yet smooth and straight twigs, daubed over with bird-lime, and placed on some hedge where birds frequent, used especially for the taking of pheasants and fieldfares. See BIRD-lime.

BUSHEER, or ABUSCHÆHR, in *Geography*, the capital of an independent state of Arabia of the same name, near the Persian gulph, possessing a commodious harbour, in which ships can approach close to the houses. This circumstance induced Nadir Shah to station a fleet here. Since that time, this city has been better known, and become more considerable. It is at present the sea-port town of Schiras; and the English, the only European nation who continue to trade with Persia, have a factory in this place. The Arabs inhabiting the district of Abuschæhr are not of the tribe of Houle, who possess all the ports on the whole coast from Bender Abbas to Cape Berdisan. Among them are three eminent families; the two first of which have been, from time immemorial, settled in this country. The third, named "Matarisch," came lately from Oman, where they were employed in fishing, entered into alliance with the other two, and found means to usurp the sovereign authority, which they have now held for several years. The present scheich of this family possesses likewise the isle of Bahrein, by which he is enabled to maintain some shipping, and he has also considerable domains in Kermesir. By abandoning the Sunnites, becoming a Shiite, and marrying a Persian lady, he had rendered himself odious to his subjects and neighbours; and his children are no longer reckoned among the Arabian nobility. Abu schæhr lies south from Bender-Rigk, which see.

BUSHEL, a measure of capacity for things dry; as grains, pulse, dry fruits, &c. containing four pecks, or eight gallons, or one eighth of a quarter.

Du-Cange derives the word from *buffellus*, *busellus*, of *bissellus*, a diminutive of *buz*, or *buxa*, used in the corrupt Latin for the same thing: others derive it from *buffulus*, an *urn*, wherein lots were cast; which seems to be a corruption from *busulus*.

Buffellus appears to have been first used for a liquid measure of wine, equal to eight gallons. "*Octo libræ faciunt galonem vini, & octo galones vini faciunt bussellum London, quæ est octava pars quarterii.*" The word was soon after transferred to the dry measure of corn of the same quantity. "*Pondus octo librarum frumenti facit bussellum, de quibus octo conficit quarterium.*"

By 12 Henry VII. cap. 5. a bushel is to contain eight gallons of wheat: the gallon, eight pounds of wheat, troy weight; the pound, twelve ounces troy-weight; the ounce, twenty sterlings; and the sterling, thirty-two grains, or corns of wheat growing in the middle of the ear.

This standard bushel is kept in the Exchequer; when, being filled with common spring water, and the water measured before the house of commons in 1696, in a regular parallelepiped, it was found to contain 2145.6 solid inches; and the said water, being weighed, amounted to 1131 oz. and 14 penny weights troy. Greaves, Orig. of Weights, p. 25.

By act of parliament made in April 1697, it was determined, that every round bushel with a plain and even bottom, being made 18½ inches wide throughout, and eight inches deep, should be esteemed a legal "Winchester bushel," according to the standard in his majesty's exchequer. A vessel thus made will contain 2150.42 cubic inches; and consequently the corn gallon contains only 268½ cubic inches. Ward's Mathematics, p. 36.

Besides the standard or legal bushel, we have several local bushels, of different dimensions in different places. At Abingdon and Andover, a bushel contains nine gallons; at Appleby and Penrith, a bushel of pease, rye, and wheat, contains 16 gallons; of barley, big, malt, mixt malt, and oats, 20 gallons. A bushel contains at Carlisle, 24 gallons; at Chester, a bushel of wheat, rye, &c. contains 32 gallons, and of oats 40; at Dorchester, a bushel of malt and oats contains 10 gallons; at Falmouth, the bushel of stricken coals is 16 gallons, of other things 20, and usually 21 gallons; at Kingston upon Thames, the bushel contains eight and a half, at Newbury, 9; at Wycomb and Reading, eight and three fourths; at Stamford, 16 gallons. Houghton. Collect. tom. i. n. 46. p. 42. At Paris, by the old measures, the bushel was divided into two half bushels; the half bushel into two quarts; the quart into two half quarts; the half quart into two litrons; and the litron into two half litrons. By a sentence of the provost of the merchants of Paris, the bushel was to be eight inches two lines and an half high, and ten inches in diameter; the quart four inches nine lines high, and six inches nine lines wide; the half quart four inches three lines high, and five inches diameter; the litron three inches and an half high, and three inches ten lines in diameter.—Three bushels made a minot, six a mine, twelve a septier, and an hundred and forty-four a muid.

In other parts of France, the bushel varied: fourteen or eighth bushels of Amboise and Tours made the Paris septier. Twenty bushels of Avignon made three Paris septiers. Twenty bushels of Blois made one Paris septier. Two bushels of Bourdeaux made one Paris septier. Thirty-two bushels of Rochel made nineteen Paris septiers. Oats were measured in a double proportion to other grains; so that twenty-four bushels of oats made a septier, and 248 a muid. The bushel of oats was divided into four picotins

entire, the picotin into two half quarts, or four litrons. For salt four bushels made one minot, and six a septier. For coals eight bushels made one minot, sixteen a mine, and 320 a muid. For lime, three bushels made a minot, and forty-eight minots a muid. See MEASURE and WEIGHT.

By 31 G. III. c. 30. the bushel by which all corn shall be measured and computed for the purposes of this act, shall be the Winchester bushel, and a quarter shall be deemed to consist of 8 bushels; and the justices of each county, and the mayor of such cities and towns as are counties of themselves, or enjoy exempt jurisdictions, and from which returns are by this act directed to be made, shall cause a standard Winchester bushel to be provided and kept; and all measures shall be computed by the stricken and not by the heaped bushel: and where corn shall be sold by weight, 57lbs. avoirdupois of wheat shall be deemed equal to one Winchester bushel; and 55lbs. of rye; 49lbs. of barley; 42lbs. of beer or bigg, and 38lbs. of oats; and further, 50lbs. of wheat-meal, 45lbs. of wheat-flour, 53lbs. of rye-meal, 48lbs. of barley-meal, 41lbs. of beer or bigg meal, and 22lbs. of oat-meal, shall be deemed equal to every such bushel of corn unground. And for the more easy measuring ground corn in sacks, the proper officer may make choice of and weigh two sacks out of any number not exceeding twenty, and so in proportion; and thereby compute the quantity of the whole. And the inspector of corn returns shall make a comparison between the Winchester measure and that commonly used in the city or town for which he is inspector; and within one month after his appointment, shall cause a statement in writing of such comparison to be hung up in some conspicuous place in the market and town-hall of such city and town; and shall renew the same if defaced, and shall return a copy thereof, to the receiver of corn returns.

BUSHING. See COAKING.

BUSHMILLS, in *Geography*, a small town of the county of Antrim, and province of Ulster, in Ireland, where there is a bridge over the river Bush. In the bed of the river, near the bridge, are ranges of basaltic columns, similar to those of the Giant's-causeway; and also on the summit of an adjoining mountain. In the neighbourhood is the ruin of the castle of Dunluce, which is situated in a singular manner on an isolated abrupt rock, perforated by the waves; which have formed under it a very spacious cavern. The only approach to this castle is along a narrow wall, built somewhat like a bridge; which circumstance must have rendered it almost impregnable before the invention of artillery. Bushmills is 120 miles north of Dublin, and about 6 miles east of Coleraine. Hamilton's Antrim.

BUSHWICK, a small but pleasant town of America, in King's county, Long Island, New York. The inhabitants, 540 in number, are chiefly of Dutch extraction; and of these 99 are electors.

BUSHY RUN, a north-east branch of Sewickly creek, near the head of which is General Boquet's field. The creek runs south-easterly into Youghiogeny river, 20 miles S. E. from Pittsburg, in Pennsylvania.

BUSIR, or **BOUSIR**, anciently *Busiris*, the name of four different towns or villages of Egypt, viz. one on the west side of the Nile, at a small distance from the pyramids, and 18 miles S.W. of Cairo. N. lat. 29° 56'. E. long. 31° 6'. —Also, another on the west side of the Nile, 7 miles N.W. of Achmounain or Hetsmunein. N. lat. 28° 10'. E. long. 30° 44'. See **BUSIRIS**. —A third near the western banks of the Nile, 12 miles S.W. of Atlich —A fourth in the Delta, on the western side of the east branch of the Nile;

about 5 miles S. of Semennud, mentioned by Herodotus (l. ii. c. 59). See **BUSIRIS**.

BUSIRIS, in *Entomology*, a species of *PAPILIO*, (Hespi. Urb.) with oblong entire wings of a black colour; on the anterior pair two yellow spots and dots; posterior ones with a yellow disk. This is a native of India. Donov. Inf. Ind.

BUSIRIS, in *Ancient Geography*, a city of Lower Egypt, now **BUSIR**, on the Buhitic branch of the Nile, and capital of the Buhitic nome in the Delta; said to have been built by Busiris, a cruel tyrant, who was slain by Hercules; but Strabo (Geog. vol. ii. p. 1154.) denies the existence of such a person. Isis had a stately temple erected to her in this city, some ruins of which are said to be still remaining. The Busiris of the Thebais, the second Busiris mentioned in the preceding article (**BUSIR**), having revolted from the Romans, was destroyed by Dioclesian in his expedition against Egypt, A. D. 296.

BUSIRIS, in *History*, the name of several kings, who, according to Diodorus Siculus (l. i. c. 17.) reigned in Egypt; one of whom is said to have built the magnificent and powerful city to which the Greeks gave the name of Thebes. He acknowledges; however, that the barbarity of a certain Busiris was fabulous; and that the fable was grounded on a custom practised in Egypt, of sacrificing all the red-haired people they met with, most of whom were strangers, as the natives of the country were scarcely ever of this colour, to the manes of Osiris: Busiris signifying, in the Egyptian tongue, the sepulchre of Osiris. Virgil ranks the barbarity of this tyrant among the fictions of the poets. Virgil, however, has been censured for applying the epithet "Inlaudati" to Busiris (Georg. l. iii. v. 3.); as it does not sufficiently express the terror which the cruelty of such a monster tended to excite. Aulus Gellius (l. ii. c. 6.) has endeavoured to vindicate Virgil's use of this term, as implying a tacit condemnation and detestation of the character of Busiris, because a person who, in all things, and at all times, remains unpraised, "illaudatus," must be the worst and the most wicked of wretches; and if "laudare" be considered as signifying, in old Latin, to name, "illaudatus" being the same as "illaudabilis" implies, in Virgil's use of it, that Busiris did not deserve to have his name repeated. Bayle, dissatisfied with these apologies for the Roman poet, suggests that this verse is one of those in which poets are forced, upon account of the length or shortness of syllables (the different feet) to employ useless words, mere expectives, or even such as prejudice the sense. Although Isocrates made a panegyric on the tyrant Busiris, Bayle suggests that he only intended to censure the impertinent panegyric of Polycrates, a teacher of oratory in the island of Cyprus, who had written the eulogium of Busiris, and the accusation of Socrates, Melancthon, from his researches (in Chron. lib. ii.) concludes, that Busiris was probably the Pharaoh who occasioned the destruction of the children of the Israelites. Orosius places him 775 years before the foundation of Rome; and, according to Eusebius, he was contemporary with Joshua, about 700 years before Romulus built Rome. Gen. Dict.

BUSITIS, in *Geography*, a district of Arabia Deserta, said to have derived its name from Bus or Buz, Nahor's second son, and to have been the country of Eihlu, the fourth interlocutor in the history of Job; called by the LXX. **BUZETES**.

BUSK, a town of the duchy of Courland; 18 miles S.S.W. of Mittaw.

BUSKIN, **COTHURNUS**, an article of dress, somewhat in the manner of a boot, covering the foot and mid-leg, and tied beneath the knee: very rich and fine, and used principally on the stage by the actors in tragedy.

The buskin is said to have been first introduced by Æschylus: it was of a quadrangular form, and might be worn indifferently on either leg. Its sole was made so thick, as by means of it, men of ordinary stature might be raised to the pitch and elevation of the heroes they personated: in which it was distinguished from the sock, worn in comedy; which was a low, popular shoe. By aid of this appendage, the stature of the tragic actors was frequently increased to four cubits, or about six English feet and half an inch, the height of Hercules and the most ancient heroes. The buskins raised them four or five inches; while gauntlets lengthened their arms; and their breast, sides, and every part of the body, were rendered apparently thicker in proportion.

Dempster observes, that the buskin was not confined to actors only, but girls likewise used it to raise their height; and travellers and hunters to defend themselves from the mire, &c.

As the buskin was the distinguishing mark of tragedy on the stage, we find it in classic authors frequently used to signify "tragedy itself," and to express strong and vehement declamation or lofty style, which was usually affected by these actors of colossal figure.

BUSKY, in *Geography*. See BUCK.

BUSLEIDEN, JOHN, in *Biography*, a native of Arlon, in Luxemburg, became master of the requests in the court of Charles V. and counsellor to the sovereign council of Mechlin. He was also employed in embassies to pope Julius II. and the kings Francis I. and Henry VIII. As a man of literature he was distinguished, and he was an intimate friend of several learned men, particularly of Erasmus and sir Thomas More. He founded, in the University of Louvain, the college of the three tongues, for teaching Latin, Greek, and Hebrew. On his journey to Spain, in 1517, he fell sick, and died at Bourdeaux. The only piece of his writing is a letter prefixed to More's *Utopia*. Gen. Dict.

BUSODRA, in *Geography*, a town of Asiatic Turkey, in the Arabian Irak; 90 miles N.W. of Bassora.

BUSS, in *Navigation*, a small ship, used by the English and Dutch in the herring-fishery, which see.

The word is originally Flemish, *buis*, or *buys*, which signifies the same.

The ship has three short masts, each in one piece. On each is carried a square sail, and sometime a top-sail above the main-sail. In fine weather are added a sort of studding sail to the lower sails, and a driver. Occasionally is also added a jib forward, upon a small bowsprit or spar. To shoot their nets, the seamen lower the main and fore-masts, which fold on deck by large hinges, and stow aft upon crotches. The buss is commonly from forty to seventy tons burthen. It has two apartments, one forward, and the other aft; the former of which is used as a kitchen. Every buss has a master, an assistant, a mate, and seamen in proportion to the size of the vessel. The master commands in chief, and without his express orders the nets can neither be cast nor taken up; the assistant has the command after him; and the mate is next in order, whose business is to see the seamen manage their rigging in a proper manner; to attend to those who draw in their nets, and those who kill, gut, and cure the herrings, as they are taken out of the sea. The seamen generally engage by the voyage; and their provisions consist commonly of biscuit, oat-meal, and dried or salt and fresh fish.

Buss, *Buffa*, is also the name of a large sort of vessel of war, in use in the middle age, spoken of by antiquaries and historians under the several denominations of *bussa*, *buscia*, *burcia*, *buzza*, *bucca*, and *bucia*.

BUSSCHOFF, HERMAN, in *Biography*, a Dutch physician, was born at Utrecht in the beginning of the 15th cen-

tury, and resided many years at Batavia, in the East Indies; and while in that country, was induced, he says, to make use of an Indian doctress, to cure him of the gout, by burning little conical pellets of moxa (the pith of a species of artemisia,) on the parts affected; a mode of treatment in that and various other complaints, in great repute in China and Japan. The operation lasts, he says, about half an hour, and is attended with very little pain. It leaves small scars on the parts, which in a few days are digested out, and the little ulcers that remain heal under any common applications. As soon as the operation was over, he fell into a profound sleep, which lasted twenty-four hours. On waking he was entirely free from the pain of the gout, and the swelling and tenderness of the parts which remained were dissipated in a few days. A second attack of the gout, which occurred some years after, was cured in the same manner. He had known, he says, scirrhus tumours, nodes, and lethargies relieved by the same application. Having collected accounts of a sufficient number of cures effected in this way, he wrote a small treatise on the subject, in the Dutch language, and sent the manuscript to Holland to be printed. He also sent a parcel of the moxa, and of matches made of sandlewood, which the Indians use to light the pellets with. The book was printed in 1675, at which time sir William Temple was ambassador at the Hague, and on his being attacked with the gout (it was his first fit) he was easily induced to try the remedy, which procured him the promised ease. The following year he published an essay on the cure of the gout by moxa, with an account of the method of using it, and the benefit he had received from it. The same year Busschhoff's book was translated into English, on the recommendation, sir William says, of the professors of Gresham College, but no notice is taken of them in the title or preface to the translation. It was published in 12mo. with chirurgical observations by Henry Van Roonhuysen. The remedy became for a time extremely popular here; but, not being found to answer the expectations that had been raised, it is long fallen into disuse. It is probable, however, than in recent cases, and in constitutions not broken by intemperance, some benefit might accrue from the application. Haller. Bib. Med. The Author's Preface, &c.

BUSSET, in *Geography*, a town of France, in the department of the Allier, and district of La Palisse; 5 miles S.E. of Cassel.

BUSSETTO, a town of Italy, and capital of a small district in the duchy of Placenza; 8 miles S.E. of Cremona.

BUSSI, BUSSISI, or BOISSISI, an island of Africa, in the Atlantic, near the island of Bisão.

BUSSIERE-*Badil*, a town of France, in the department of the Dordogne, and chief place of a canton in the district of Nontron; 8 miles N. of it. The place contains 1,230, and the canton 7,049 inhabitants: the territory includes 150 kilometres, and 9 communes.

BUSSIERE-*Galande*, a town of France, in the department of the Upper Vienne, and district of Limoges; 5 leagues S.W. of it.

BUSSIERE-*Poitvine*, a town of France, in the department of the Upper Vienne, and district of Bellac; 10 miles N.W. of it.

BUSSIERES, JOHN DE, in *Biography*, a distinguished writer of France, was born, in 1607, at Ville-Franche, in Beaujolois, and entered among the Jesuits. His poems, written in French, are forgotten; but his Latin poems, first printed at Lyons, in 1658, 12mo. are still read. Of these the principal is "Scanderbeg," an heroic poem in 8 books; besides which there are "Rhæa Delivered," some Idylls and Eclogues. Bussieres likewise wrote a "History of France," 2 vols.

2 vols. 4to.; and an abridgement of universal history, entitled "Fleculi Historiarum." He died in 1678.

BUSSIERES, in *Geography*, a town of France, in the department of the Upper Marne, and district of Langres; 4 leagues S.E. of Langres.

BUSSORES, by corruption from *Buffora* in Persia, whence they were originally brought, a name given by some to that species of pigeon called the *CARRIER*.

BUSSOVATZ, in *Geography*, a town of Bosnia; 20 miles S. of Serrajo.

BUSSY le Grand, a town of France, in the department of the Côte d'Or, and district of Semur, three leagues N.E. of it.

BUST. See *BOST*.

BUST, or *BUSTO*, in *Sculpture*, that portion of the human figure, which comprises the head, neck, breast, and shoulders; the Italians also apply this term to the human figure as low as the hips, with or without the head and arms. This definition of the bust agrees with that species of sculpture which represents the portraits of illustrious Romans, either entirely round and mounted on pedestals, or in alto relievo on the sides of sarcophagi, or other sepulchral monuments, and was most likely of Roman production; very different from the *Erma* of the Greeks, which we call *Terms*: The *Erma* was a four square prop with the head of some divinity or man upon it.

The etymology of the Italian busto is perhaps from the Latin, *bustum*; Festus says "the place is properly called *bustum*, in which the dead is burnt and buried, (quasi bene utum,) as if well burnt; where it is only burnt, but buried in another place, the first is said to be *ustrina*, (ab urendo,) burning; but *bustum*, the place of burial, which we call the sepulchre;" as many of these bustos have been principal ornaments of the sepulchre, they may have derived their name from the situation, or, on account of their consequence in it, have had its name transferred to them. The series of Roman emperors in the capitol, and the fine bronze busts in the king of Naples' collection at Portici, exhibit examples of every species in this kind of sculpture. Bernini and other artists among the moderns, have likewise left examples of the several varieties.

BUSTS, *Communicative*, in *Acoustics*, are two heads of plaster of Paris, plac'd on pedestals on the opposite sides of a room, and connected with each other by means of a tin tube about an inch in diameter, passing from the ear of one head, through the pedestal under the floor, and ascending to the mouth of the other. The end of the tube which adjoins the ear of the one head, should be considerably larger than the end which proceeds from the mouth of the other. The whole apparatus should be so contriv'd, that there may not be the least suspicion of any communication. If a person speak with a low voice into the ear of one bust, the sound will be reverberated through the length of the tube, and will be distinctly heard by every one who shall place his ear to the mouth of the other. By means of two tubes, one passing to the ear and the other to the mouth of each head, two persons may converse together, by applying their mouth and ear reciprocally to the mouth and ear of the busts; and at the same time, other persons that stand in the middle of the chamber, between the heads, will not hear any part of the conversation. If a bust be plac'd on a pedestal in the corner of a room, and two tubes, such as those above mentioned, be so dispos'd, that one may pass from the mouth, and the other from the ear of the busts through the pedestal and the floor, to an under apartment, we shall obtain what is called the "Oracular head." There may be likewise wires that pass from the under jaw and the eyes of the bust,

by which they may be easily moved. A person plac'd in the under room, who, at a given signal applies his ear to one of the tubes, will hear any question that is asked; and may immediately reply, favouring the deception by moving at the same time the mouth and the eyes of the bust, by means of the wires. Hooper's Rational Recreations, vol. ii. p. 203, &c.

BUSTA Gallica, was a place in ancient Rome, wherein the bones of the Gauls, who first took the city, and were slain by Camillus, were deposited. It differed from

BUSTA Gallorum, a place on the Appennines, thus called by reason of many thousands of Gauls killed there by Fabius.

BUSTARD, in *Geography*, a river of Upper Canada, which runs into the river St. Lawrence, westward of Black river, in a bay of its own name. It communicates with inland, with several lakes in its extended course; and at its mouth lie the Ojibwa islands. N. lat. 49° 20'. W. long. 68° 5'.

BUSTARD is also a bay on the east coast of New Holland, with a good anchorage in five fathoms. S. lat. 24° 4'. E. long. 151° 42'.

BUSTARD, in *Ornithology*. See *OTIS*.

BUSTIA, in *Geography*, a town of European Turkey, in the province of Albania; 52 miles W.S.W. of Delfino.

BUSTLETON, a post-town of America, in Philadelphia county, Pennsylvania, about ten miles N.W. of the city.

BUSTO Grande, a town of Italy, in the duchy of Milan; 16 miles N.W. of Milan.

BUSTUARIE mæche, a kind of public prostitutes, who frequented the *byssa* or tombs, which it seems were ordinarily places of rendezvous for persons of this description. Others suppose that these were women hired to attend a funeral, and lament the loss of the deceased.

BUSTUARI, a kind of gladiators, among the ancient Romans, who fought about the *bustum*, or pile, of a deceased person, in the ceremony of his obsequies.

The practice at first was, to sacrifice captives on the tomb, or at the *bustum*, of their warriors: instances of which we have in Homer, at the obsequies of Patroclus, and among the Greek tragedians. Their blood was supposed to appease the infernal gods; and render them propitious to the manes of the deceased. In after-ages, this custom appeared too barbarous; and in lieu of these victims they appointed gladiators to fight; whose blood, it was supposed, might have the same effect.—According to Valerius Maximus and Flores, Marcus and Decius, sons of Brutus, were the first, at Rome, who honoured the funeral of their father with this kind of spectacle, in the year of Rome 489.—Some say, the Romans borrowed this custom from the Etruscians; and they from the Greeks.

BUSTUM, in *Antiquity*, denotes a pyramid or pile of wood, whereon were anciently plac'd the bodies of the deceased, in order to be burnt. The Romans borrowed the custom of burning their dead from the Greeks. The deceased, crowned with flowers, and dressed in his richest habits, was laid on the *bustum*. (See *BURNING*.) Some authors say, it was only called *bustum*, after the burning, *quasi bene utum*: before the burning it was more properly called *pyra*; during it, *rogus*; and afterwards, *ustrum*. When the body was only burnt there, and buried elsewhere, the place was not properly called *ustrum*, but *ustrina*, or *ustrinum*.

BUSTUM, in the *Campus Martius*, was a structure whereon the emperor Augustus sitt, and, after him, the bodies of his successors were burnt. It was built of white stone, surrounded with an iron palisade, and planted within side with alder trees.

BUSTUM was also figuratively applied to denote any tomb. Whence those phrases, *facere bustum*, *violare bustum*, &c.

Bustum of an altar, was the hearth or place where the fire was kindled.

BUSULGINO, in *Geography*, a settlement of Siberia, on the Indigirda; 288 miles N.N.E. of Laschiverik.

BUSULUTZH, a district of Russia, in the province of Orenburgh and government of Ufa, seated on the Samara, near the river Busuluk; 172 miles S.W. of Ufa.

BUSZA, a town of Poland, in the palatinate of Bracław; 52 miles S.W. of Bracław.

BUTCHER, a person who slaughters cattle for the use of the table, or for sale. The method of slaughtering cattle by a separation of the spinal marrow, is now successfully practised in many parts of the world, and is much recommended on the ground of humanity, as well as of expedition. Lord Somerville in his work "On the System of the Board of Agriculture," informs us, that with a view to the introduction of it into this kingdom, he made it his business during his residence in Portugal, to have a person instructed in the use of the knife which is used for this purpose with great adroitness. He has given a plate exhibiting the mode of operation, as well as the size and form of the knife with which it is performed. The animal, in this mode of slaughtering, is unnerved from head to foot at the first touch of the spinal marrow: and the term of "laying down cattle," which expresses the operation, bespeaks the mildness with which it is executed. The person employed in this business has "laid" without being head-lined, 15 oxen in a row, with surprising regularity and expedition, and their fall is almost instantaneous. Holding them only by the horn in the left hand, and standing in front of the animal, he passes the knife over its brow, through the vertebrae of the neck, into the spine. The method in that country of the carter walking at the head of his oxen, when at work, may probably induce them to stand more quietly than would otherwise be the case. Should that be the fact, cattle in this country may be head-lined as usual, and the operation would then be as safe as it is easy.

Among the ancient Romans there were three kinds of established butchers; viz. two colleges, or companies, composed each of a certain number of citizens, whose office was to furnish the city with the necessary cattle, and to take care of preparing and vending their flesh. One of these communities was at first confined to the providing of hogs, whence they were called *suarii*; and the other were charged with cattle, especially oxen; whence they were called *pecuarii*, or *boarii*. Under each of these was a subordinate class, whose office was to kill, prepare, &c. called *lani*, and some times *carnifices*. Brissotius, Modius, and others, mention a pleasant way of selling meat, used for some ages among this people: the buyer was to shut his eyes, and the seller to hold up some of his fingers, if the buyer guessed aright, how many it was the other held up, he was to fix the price; if he mistook, the seller was to fix it. This custom was abolished by Apronius, prefect of Rome; who in lieu thereof introduced the method of selling by weight.

The Jews have their own butchers; as they have a peculiar method of selling and preparing their meat. The exercise of this office has been considered among them as singularly important, and requiring previous instruction, for which, application has been sometimes made to a learned rabbi, and for which, a formal licence has been thought necessary.

Some derive the term butcher from *buccarius*, of *bucca*, mouth; others from *caedere*, killer of cattle.

The French call a place set apart either for the slaughter of cattle, or exposing their flesh to sale, a *butchery*, *boucherie*. The English distinguish, calling the latter a *flesh shamb-*

ble, or market, the former a *slaughter-house*.—Nero built a noble edifice of this kind at Rome; on which occasion was struck that medal, whose reverse is a building supported by columns, and entered by a perron of four steps; the legend, MAC. AVG. S. C. *Macellum Augusti Senatus Consulto*.

In London, the furnishing of the markets with butcher's meat is cantoned into several offices. We have carcasses butchers, who kill the meat in great quantities, and sell it out to another sort called retail butchers, dispersed in all out-parts, villages, and towns near the city. There are besides cow-jobbers, or salesmen, who buy and sell cattle, acting between the butchers and the breeders, or feeders. Something like this also obtains at Paris.

The company of butchers was not incorporated until the third year of king James I. when they were made a corporation by the name of master, wardens, and commonalty of the art and mystery of butchers; yet the fraternity is ancient. Their arms are azure, two axes saltier-wise argent, between three boars' heads couped, attired or, a bear's head gules, between two garbes vert. See *COMPANY*.

There are some good laws made for the better regulation of butchers, and for preventing the abuses committed by them.

By stat. 2 and 3 Edw. VI. 15. revived, continued, and confirmed by stat. 22 and 23 Car. II. c. 19. now expired, butchers (and others) conspiring to sell their victuals at certain prices are liable to 10l. penalty, or 20 days' imprisonment, with merely bread and water, for the first offence; 20l. or the pillory, for the second offence; and 40l. or pillory, and the loss of an ear, and infamy for the third offence: the offence to be tried by the sessions or leet. By stat. 4 Hen. VII. c. 3. no butcher shall slay any beast within any walled town, except Berwick and Carlisle, on pain of forfeiting for every ox 12d. for every cow or other beast 8d. By the ordinance for bakers, butchers, &c. butchers selling swine's flesh mangled, or dead of the murrain, or that buy flesh of Jews, and sell the same to Christians, for the first time shall be grievously amerced, the second time suffer the pillory, the third time be imprisoned and fined, and the fourth time forswear the town.

By stat. 3 C. I. c. 1. butchers are not to kill or sell meat on Sundays, on the penalty of forfeiting 6s. 8d., one-third to the informer, and two-thirds to the poor. By 1 Jac. I. c. 22. and 9 Ann. c. 11. regulations are made as to the watering and gashing of hides, and penalties annexed to the violation of them; and also to the selling of putrefied or rotten hides; and also by the said stat. 1 Jac. I. no butcher shall be a tanner or currier. See *CATTLE*, *FORESTALLING*, and *VICTUALS*.

BUTCHER-bird, in *Ornithology*. See *LANIUS*.

BUTCHER's broom, in *Botany*. See *RUSCUS aculeatus*.

BUTCHER's island, in *Geography*, a small island of the East Indies, about two miles long and one broad, distant about three miles from Bombay, and deriving its name from the cattle that are kept there for the use of that settlement. It has a small fort.

BUTE, an island in the Frith of Clyde, situated a little to the west of Renfrewshire, and a little south of Argyleshire. The name at different periods has been variously written, as *Bote*, *Both*, *Bothe*, and *Boote*, and is denominated *Botis* by the anonymous geographer of Ravenna. This island was from "very early times part of the patrimony of the Stuarts; large possessions of it were granted to sir John Stuart, son of Robert II. by his beloved mistress Elizabeth More; and it has continued in the same family to the present time." Bute island occupies an area of ground measuring on an average about 18 miles in length, by four in breadth, and containing about 20,000 acres, and 4000 inhabitants. The

northern

northern parts of it are rocky and barren, but its southern parts are mostly inclosed, well cultivated, and fertile. The whole is divided into two parishes, in one of which is the royal burgh of *Ruthefay*, which is the principal town of the island and of the shire. The coast is rocky, and indented with several small harbours, from which are annually fitted out a number of buibs for the herring-fishery. This is the principal trade of the island, and has been promoted even at the expence of agriculture. The climate, as usual in small islands, is necessarily damp. Its produce is barley, oats, and potatoes; turnips with artificial grasses have been lately cultivated. Indeed, from the example and recommendation of the marquis of Bute, who is the principal proprietor of the island, and derives his title from it, the system of agriculture pursued here is far before most of the northern counties, and such as is calculated to obtain the greatest produce from the lands. The same nobleman has also directed the fishermen and farmers to be distinct, and each to attend to his respective pursuit. The farms are mostly small, as few exceed the rent of sixty pounds a year, but the medium is about twenty-five. Arable land was let, when Mr. Pennant visited the island, at nine or ten shillings an acre, and the price of labourers was eight-pence a day. Rents were mostly paid in money, and the rent-roll of the island was about 4000l. a year. The government of Bute is managed by a deputy-sheriff, who is always resident, and determines most petty actions; but criminal actions are carried to Inverary, where the judges of the court of judiciary meet twice a year. The marquis of Bute is admiral of the county, by commission from his majesty, and not at all dependent on the lord high admiral of Scotland. He has, therefore, full powers, either in himself, or by deputy, to judge and decide on all crimes of murder, piracy, &c. Among the remains of antiquity is part of a Druidical circle at Langal chorid. At Kin-garth are the ruins of a church, of which two cemeteries remain. One of these was exclusively appropriated to the interment of females, because, observes Mr. Pennant, "in old times certain women being employed to carry a quantity of holy earth, brought from Rome, lost some by the way, and so incurred this penalty for their negligence, that of being buried separate from the other sex." Near this place is a circular inclosure called the *Devil's Cauldron*; it is made of stones piled together without mortar, but trimmed in the inside in a smooth and regular manner. The walls are about seven feet in height, and ten feet in thickness. The area is thirty feet in diameter, and the entrance gradually narrows, from the outside of the wall inwards. Near Rothefay are the remains of an ancient castle, with a fort, barracks, and drawbridge, which was formerly the residence of the kings of Scotland. See *ROTHESAY*.

BUTE, a county or shire of Scotland, comprehending the above island, with those of Arran, the two Cumbrays, and Inchmarnock. This county, with that of Caithness, combine to send one member to parliament alternately. See *Pennant's Tour in Scotland*, vol. iii. *Sinclair's Statistical Account of Scotland*.

BUTEA, in *Botany*, (in honour of the late earl of Bute, a munificent patron of botanical science). Willd. 1323. Roxburgh Corom. i. p. 22. Class and order, *diospyros decandra*. Nat. Ord. *Papilionacea*, Linn.—*Leguminosae*, Juss.

Ess. Ch. *Gal.* subbilabiate. Cor. standard very long, lanceolate. *Legume* compressed, membranaceous, with one seed at the summit. Willd.

Species, 1. *B. frondosa*. Roxb. Corom. i. tab. 21. (Plaso, Rheede. Mal. 6. tab. 16, 17. Arbor siliquosa trifolia indica, Ray Hist. 1721. *Erythrina monosperma*, La Marck Encyc.

tom. ii. p. 391.) "Little branches pubescent; leaflets roundish, emarginate." Willd. An evergreen tree. Stem about fifteen feet high; outer bark, cinereous, dry, brittle, clothed with a dark-red cuticle; inner bark, soft, but thick, from which, when cut, exudes a gummy blood-red juice, of a sweetish taste. *Leaves* alternate, petioled, growing by threes, about ten inches long; leaflets about four inches long, even above, transversely nerved beneath, reticulated between the nerves; the terminal leaflet at right angles with the other two, wedge-shaped at its base; the lateral leaves larger on the exterior side than on the interior, with short and thick petioles. *Flowers* red, rather large, in racemes, on alternate, or scattered, somewhat tomentous, peduncles. *Calyx* short, five-toothed. Wings of the *corolla* a little shorter than the standard; keel shorter than the wings. *Legumes* elliptic-oblong, pubescent, from four to five inches long, and near two inches broad. Ray from Rheede, and La Marck from a dried specimen, communicated by Jussieu. A native of the East Indies, on the coasts of Malabar and Coromandel.

Obs. Jussieu informed La Marck that from this tree is procured the gum lac of commerce; and in fact there are found here and there, on the branches of most of the specimens in his Herbarium, resinous lumps which greatly resemble that substance. These lumps are much divided, and not in entire masses, like those of gum or resin which proceed from various trees; so that they do not appear to be the inspissated juice mentioned by Rheede, but, agreeably to the common opinion with respect to gum lac, may be elaborated by a species of ants, somewhat in the same manner as bees form their wax, and discharged on the same tree from which the crude juice was obtained.

2. *B. superba*. Roxb. Corom. i. tab. 22. "Little branches smooth; leaflets attenuated at the base, roundish, obtuse." Willd. Very similar to the preceding, but differs in the particulars mentioned in the specific character, and in having leaves three times as large, the leaflets being a foot long. A native of the coast of Coromandel.

Dr. Roxburgh has described these two species in the third volume of the *Asiatic Researcher*, p. 469, 8vo. The first is the Madaga of the Gentoos. The juice above-mentioned hardens into a ruby-coloured brittle altringent gum, soon losing its beautiful colour when exposed to the air; entirely soluble in water, and also in a great measure in spirits. Infusions of the flowers dye cotton cloth, previously impregnated with a solution of alum, or alum and tartar, of a most beautiful bright yellow. The second species is the Tida madaga of the Gentoos. This also yields a red gum from its bark, and its flowers afford the same beautiful yellow dye and pigment.

BUTEO, in *Ornithology*, the species of *FALCO* we call the common buzzard in this country. It has the cere and legs yellow; the body brown, and the belly pale, with brown spots. This is rather larger than a kite in the body; its length about 20 inches.

BUTEONIS, in *Zoology*, a species of *ECHINORHYNCHUS*, of a very clear white colour, with the vesicles of the tail blueish and lentiform. Goeze. Length of this kind two inches and a quarter. Infests the intestines of the buzzard.

BUTEONIS, a species of *ASCARIS*, that infests the intestines of the buzzard, *Falco buteo*, but of which no particular description has been hitherto given. Goeze, Gmel. &c.

BUTEONIS, is also a species of *CUCULLANUS*, found in the intestines of the same bird, of which we have no description.

BUTHROTUM, **BUTRINTO**, in *Ancient Geography*, a maritime town of Epirus, mentioned by Virgil, Strabo, and Pliny, who represents it as a Roman colony. It was seated on a river, called Xanthus, in Thesprotia, over-against Corcyra, as Butrinto is at present opposite to Corfu. Cæsar gives it this position; and Virgil says that Æneas landed there, and was astonished to find a Trojan who reigned here, and who was Helenus the son of Priam. This king liberally supplied the wants of Æneas, and gave him useful advice with respect to his navigation.

BUTHROTUS, a river of Italy, in the country of the Brutians. Cluvier.

BUTHURUS, a town of Africa, in Libya Interior, and near the source of the river Bagrada. Ptolemy.

BUTHYSIA, *Βυθυσία*, in *Antiquity*, a sacrifice of the greatest kind: such were the hecatombs. See **SACRIFICE** and **HECATOMB**.

The Greeks frequently prefixed the particle *βυ*, *bu*, to words, to denote things of extraordinary magnitude, as alluding to the bigness of oxen.

BUTI, in *Geography*, a town of Italy, in the duchy of Tuscany, seated on the Arno, 20 miles N.N.E. of Leghorn. The mountains of Pifa form near this place a deep narrow hollow, called the valley of Buti, bounded by the sides of the mountains, which are covered with pine, chestnut, and olive trees. In the bottom is a smooth ground, cut by an impetuous torrent; and in the lowest part of it is situated the land of Buti, in two divisions, the higher, called the "castle," and the lower, the "town." It is continually exposed to a cold moist air, except during some days in summer; it is often covered with a thick cloud, and subject to sudden changes of weather, particularly to heavy rains; owing to its being below the high mountains of Pifa, and near to the lake of *Bientina*, which see.

BUTIGA, is an inflammation of the whole face, otherwise called *gutta rosacea*.

BUTIS, in *Ancient Geography and Mythology*: See **BUTUS**.

BUTLASS, in *Geography*. See **PUDDAR**.

BUTLER, or **BOTILER**, an officer whose chief charge is over the cellar and liquors. See **ARCH-Butler**.

BUTLERS, *buticularii*, among the Normans, denoted winc-tasters, appointed to examine liquors, and see that they were right and legal.

BUTLER of France, *buticularius Francia*, was one of the four great officers of the household of the ancient kings of that country, who signed all the royal patents, or at least was present at the dispatch of them. His seat was among the princes, and he even disputed the precedency of the constable of France. He had a right of presiding at the chamber of accounts; and in the registers of that office of the year 1397, mention is made that John de Bourbon, grand butler of France, was admitted there as first president. But the title has been since abolished, and, in lieu thereof, a new office of *grand echançon*, or cup bearer, was erected.

BUTLER, **JAMES**, duke of Ormond, in *Biography*, an accomplished English courtier and eminent statesman, in the 17th century, was the son of Thomas Butler, esq. a branch of the Ormond family, and by his mother, the grandson of sir John Poyntz, and born at Newcastle-house in Clerkenwell, London, in 1610. Upon the decease of Thomas, earl of Ormond, his grandfather, sir Walter Butler of Kilcash, assumed the title, and his father was called by courtesy viscount Thurles. After the death of his father, who was drowned on his passage from Ireland to England, in 1619, and who left a widow and 7 children in embarrassed circumstances, this title devolved upon him. In 1620, he was sent

over to England by his mother, and placed under the tuition of a parish schoolmaster at Finchley, near Barnet; but by the interposition of king James, who claimed the wardship of the young lord, he was removed to Lambeth, and his education was committed to the superintendence of archbishop Abbot. In this situation he is said to have enjoyed little advantage with regard to general instruction; but he acquired those principles of the Protestant religion to which he maintained a steady attachment in the progress of his life. Upon the death of king James, he was taken home by his grandfather, the earl of Ormond, and no farther care seems to have been taken with regard to his education. At the age of 18, he attended the duke of Buckingham at Portsmouth, and after the assassination of this favourite by Felton, he returned to London; and marrying his cousin, the lady Elizabeth Preston, in 1629, he brought to an amicable termination the disputes that had long disturbed the harmony and injured the interests of both families. In the following year he removed to Ireland, and purchased a troop of horse. In 1632 his grandfather died, so that he succeeded to the title and estates of the earldom of Ormond; and in 1633, when lord Wentworth, afterwards earl of Strafford, became governor of Ireland, he was distinguished by the peculiar attention of this eminent statesman; who, on occasion of their first interview, said to his attendants, "that if his skill in physiognomy did not fail him, that young nobleman would make the greatest man of his family." The connection thus formed between the lord-deputy and the young earl, subsisted, with little interruption, during the whole of Strafford's administration. At the age of 24 he was sworn of the privy council, and on occasion of the troubles which broke out in Scotland, he was appointed to the command of the army levied in Ireland, under the lord-lieutenant. To the interest of lord Strafford he uniformly adhered; and this unfortunate nobleman testified the sense he entertained of the importance of his services, by requesting that the king would confer his blue garter upon his friend the earl of Ormond, which, however, he declined accepting during this reign. Upon the commencement of the great rebellion in Ireland in 1641, the earl of Ormond was appointed lieutenant-general and commander in chief of the army, which consisted at that time of no more than 3000 men. With this inconsiderable force, and a few additional troops which he was able to raise, he resisted the progress of the rebels, and in 1642 dislodged them from the Naes near Dublin, raised the blockade of Drogheda, and routed them at Kilrush. His exertions, however, were impeded by the jealousies of the lords justices, and afterwards of the earl of Leicester, the lord lieutenant; but the king, with a view of counteracting this opposition, gave him an independent commission under the great seal, and, as a further mark of favour, created him marquis of Ormond. In 1643 he obtained a considerable victory with very inferior forces over the rebels under the command of the Irish general Preston, but for want of suitable encouragement, he was under a necessity of concluding a cessation of hostilities, for which measure he was much blamed in England; though he availed himself of it by sending over troops to the assistance of the king, who was then at war with the parliament. His majesty, in recompence of his fidelity, and the service rendered to the royal cause, created him lord-lieutenant of Ireland, in the room of the earl of Leicester; and he entered upon his government in the beginning of the year 1644. In the exercise of this office, he had to contend with many difficulties, occasioned by the rebellious spirit of the old Irish, and the machinations of the English parliament. Having maintained an unsuccessful struggle for three years, he was at length, viz. in 1647, obliged to sign a treaty with the parliament's

parliament's commissioners, and to come over to England, where he waited on the king at Hampton-court, and obtained his majesty's full approbation of all his proceedings. His circumstances, however, were embarrassed and perilous, so that he thought it most prudent to provide for his own safety by embarking for France.

During his short residence in this country, he corresponded with the Irish for the purpose of inducing them to engage in the royal cause; and having engaged lord Ingham to receive him in Munster, he landed at Cork, after escaping the imminent danger of shipwreck, in 1748. On his arrival, he adopted measures which seemed to revive the hopes of the king's friends. These hopes were farther encouraged by the abhorrence excited through the country on occasion of the king's death, and in consequence of this favourable impression on the public mind, the lord lieutenant caused Charles II. to be immediately proclaimed. But Owen O'Neill, instigated by the pope's nuncio, and supported by the old Irish, raised obstacles in his way, which he determined to overcome by the bold enterprise of attacking the city of Dublin, then held for the Parliament by governor Jones. This enterprise, however, failed, with very considerable loss on the part of the Marquis: and soon after Cromwell arrived in Ireland, and having stormed Drogheda, surrendered it to military execution, thus striking terror into the Irish, so that they became dissatisfied with the lord-lieutenant, and insisted on his leaving the kingdom. At the close of the year 1650, he embarked for France, and there joined the exiled family. In order to retrieve his own affairs, the marchioness went over to Ireland, and having in some measure succeeded in exempting her own estate from forfeiture, she remained in the country, and never saw her husband till after the restoration. In the mean while the marquis was employed in various commissions in behalf of the king; and he rendered essential service to his cause by rescuing the duke of Gloucester out of the hands of the queen-mother, and preventing her severe treatment from inducing him to embrace the Catholic religion. He was also instrumental in detaching the Irish Catholic regiments from the service of France, one of which he was appointed to command, and in obtaining the surrender of the town of St. Ghilan, near Brussels, to the Spaniards. In a secret embassy to England for the purpose of investigating the state of the royal party, he escaped several hazards of discovery from the spies of Cromwell; and at length, when Charles II. was restored to the throne of his ancestors, the Marquis accompanied him, and was liberally recompensed for his faithful attachment and active services. Besides the restoration and augmentation of his large estates in the county of Tipperary, he was raised to the dignity of duke of Ormond, and he officiated as lord high steward of England at the king's coronation. After his appointment to the lord-lieutenancy, in 1662, he made several efforts, attended with considerable success, for reducing the country to a state of tranquillity, and he promoted various improvements, particularly with respect to the growth of flax, and manufacture of linen, which very much conduced to its subsequent prosperity. His attachment to earl Clarendon, however, involved him in the odium which pursued that great man; and though his conduct, after rigorous scrutiny, furnished no matter of just censure, he was nevertheless deprived of his government by the machinations of the duke of Buckingham, in 1669; but in the same year he was elected to the office of chancellor of the university of Oxford. In 1670, a desperate design was formed against him by colonel Blood, whom he had imprisoned in Ireland on account of his having engaged in a plot

for the surprisal of Dublin castle. Blood, being at this time in London, determined to seize his person, in his return from an entertainment given in the city to the prince of Orange; and in the prosecution of his purpose, his accomplices dragged the duke out of his coach, and placed him behind one of them who was on horseback, in order to convey him to Tyburn, and execute him on the public gallows; or, as others say, to take him out of the kingdom, and compel him to sign certain papers relating to a forfeited estate of Blood. The duke by his struggles threw both the man and himself from the horse, and by seasonable assistance he was released from the custody of these assassins. This daring act of violence excited the king's resentment; but Blood, for certain reasons, having been taken into favour, his Majesty requested the duke to forgive the insult. To which message he replied, "that if the king could forgive Blood for attempting to steal his crown, he might easily forgive him for an attempt on his life; and that he would obey his Majesty's pleasure without inquiring into his reasons." For seven years the duke of Ormond, who was equally adverse to papists and fanatics; and who possessed a spirit which would not stoop to the cabals formed by mistresses and persons destitute of honour, was neither in favour with the court nor employed by it; but at length, in 1677, he was surprised by a message announcing the king's intention to visit him. The object of this visit was to disclose his Majesty's resolution of appointing him to the lord-lieutenancy of Ireland; and this resolution had been adopted by the influence of the duke of York, who had reason to imagine that the "cabal," or court-party, proposed to introduce the duke of Monmouth into this high station in the room of the earl of Essex, who had been removed. In order to counteract this plan, the duke of York recommended his grace of Ormond to the king; as the most likely person to engage general confidence, and to unite discordant parties in both countries. The king persisted in his resolution, and the duke of Ormond took possession of the government. Upon his arrival he adopted vigorous measures for disarming the papists and maintaining public tranquillity; and though he did not escape calumny, the king determined to support him against all attempts for removing him, and declared with an oath, "that while the duke of Ormond lived, he should never be put out of that government." He was desirous, indeed, of calling a parliament in Ireland for settling affairs, but to this measure the king would not give his consent. In 1682, when he came over to England to acquaint the king with the state of his government, he was advanced to the dignity of an English dukedom; but notwithstanding this mark of royal favour, he had given such offence by his importunity with respect to an Irish parliament, that immediately on his return he was apprised of an intention to remove him. Upon the accession of James, the duke caused him to be proclaimed, and soon after resigned his office and came over to England. Although the duke's principles did not suit the projects of the new reign, he was treated with respect by the king, and received from him the honour of a visit, whilst he was confined to his chamber with the gout. He died at Kingston-hall, in Dorsetshire, July 21st, 1688, in the 78th year of his age, and was buried in Westminster-abbey.

"The character of the duke of Ormond was that of a high spirited and liberal nobleman, upright in his intentions and steady to his political principles, which were those of monarchy with large prerogatives, but not beyond the law. He was a steady friend to the church of England, and had in his family several men of learning who attained to eminence, among whom were Dr. Hough, the

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excellent bishop of Worcester, and the very ingenious Dr. Burnet of the Charter-house. From a low though honourable beginning, he arrived at great rank and prosperity, and left a numerous progeny, of which he lived to see the third generation. He was active and well versed in business; and his talents, though not of the first class, enabled him to appear with reputation in several difficult conjunctures." *Biog. Brit. Gen. Biog.*

BUTLER, JOSEPH, an eminent prelate of the English church, was born at Wantage in Berkshire, in 1692, and was intended by his father for the ministry among protestant dissenters of the presbyterian denomination. With this view, after having finished his grammatical education at his native place, he was sent to a dissenting academy, kept by Mr. Samuel Jones, first at Gloucester and afterwards at Tewksbury. Of his application and proficiency as a theological student, he exhibited a signal evidence in two letters addressed to Dr. Clarke, and containing a statement of doubts that had occurred to him concerning the conclusiveness of some arguments in the Doctor's "Demonstration of the Being and Attributes of God." The first of these letters, dated Nov. 4, 1713, displayed a sagacity and depth of thought which excited the particular notice of Dr. Clarke. Encouraged by this condescension, Mr. Butler addressed the Dr. again upon the same subject; and received an answer. The whole correspondence, which comprised three other letters, was annexed to the celebrated treatise above-mentioned, and retained in all the subsequent editions. The correspondence was secretly conducted by Mr. Secker, the friend and fellow pupil of Mr. Butler; and procured for him, as soon as he became known, the friendship of Dr. Clarke. Whilst he was engaged in the prosecution of his studies at Tewksbury, he entered into an examination of the principles of nonconformity: and the result of his inquiry was a resolution of conforming to the established church. His father was at first dissatisfied with his purpose, and attempted to divert him from it; but, finding that his son's resolution was fixed, he consented to his removal to Oxford, where he was admitted a commoner of Oriel college in 1714. Here he formed an intimate friendship with Mr. Edward Talbot, second son of bishop Talbot, and to this circumstance he owed all his future preferments in the church. Having taken orders soon after his admission at Oxford, he was recommended, in 1718, by Mr. Talbot and Dr. Clarke to sir Joseph Jekyll, who appointed him preacher at the Rolls chapel. In this situation he continued till the year 1726, when he published, in one volume octavo, "Fifteen sermons preached at that Chapel." These sermons established his character as an acute and solid reasoner; and as they are rather deep disquisitions, than popular discourses, adapted solely to a learned and attentive audience, the author thought proper to make an apology for their abstruseness in a preface to a second edition, revised and improved in 1729; in which preface he has also abridged and illustrated the principles laid down in his sermons. The style of these compositions is destitute of that ease and perspicuity, which might justly have been desired, but which Butler was never able fully to attain. His friend Secker is said to have taken pains in rendering more familiar the language both of these discourses and of his other works. By the judicious reader, notwithstanding these defects, they have been always held in high estimation. Under the patronage of Dr. Talbot, then bishop of Durham, to whom Butler was recommended by his son on his death-bed, he was presented, first, viz. in 1722, to the rectory of Houghton near Darlington, and afterwards, viz. in 1725, to that of Stanhope in the same

diocese. At this latter place, Mr. Butler, having resigned the Rolls chapel in 1726, resided during seven years, diligently discharging the duties of a good parish priest. The situation, however, was too retired and solitary for a person of his gloomy disposition; and his friend Mr. Secker, who was apprised of this circumstance, was anxious to draw him out of solitude into a more active and conspicuous scene. With this view he took the liberty of mentioning him to queen Caroline; who, apprehending that he was dead, asked archbishop Blackburne, if this was not the fact: to which the archbishop replied, "No, madam, but he is buried." By the recommendation of Mr. Secker, the lord chancellor Talbot nominated him his chaplain; and Mr. Butler, accepting the nomination, came up to London by way of Oxford, in 1733, and was created doctor of laws. The chancellor also gave him a prebend in the church of Rochester, and it was stipulated that he should continue to reside half the year at Stanhope. In 1736, he was appointed clerk of the closet to queen Caroline, and in the same year he published his celebrated work, entitled "The analogy of Religion, natural and revealed, to the Constitution and Course of Nature."

The first edition of this work, which for depth and originality of thought and reasoning, is one of the most masterly performances that ever appeared in the world, was published in 1736 in 4to.: the subsequent editions have been in 8vo. and the last by Dr. Halifax, bishop of Gloucester, was published in 1788. The foundation of the mode of reasoning pursued in this treatise had been laid by the author in his sermons, and particularly in the last of them "On the Ignorance of Man." For a general account of it; see the article ANALOGY. To the "Analogy" are annexed two Dissertations; one on Personal Identity, and another on the Nature of Virtue.

Whilst queen Caroline lived, Dr. Butler attended her for two hours every evening; and by her urgent recommendation to the king, he was raised in the year following that of her death, viz. in 1738, to the see of Bristol, and in 1740, to the deanery of St. Paul's in London, upon which he resigned his rich living of Stanhope. Besides attention to the various duties of his diocese and deanery, bishop Butler preached several sermons in the metropolis on particular occasions, which were printed, and which have since been annexed to the later editions of the sermons at the Rolls chapel. In 1746, he succeeded Dr. Egerton, bishop of Hereford, as clerk of the closet to the king; and in 1750, he was translated to the see of Durham. At his primary visitation in 1751, he delivered a charge to his clergy, of which the principal subject was "External Religion." In recommending on this occasion the utility of outward forms and institutions towards fixing and preserving in the minds of men a sense of devotion and duty, he was thought by several persons to have spoken too favourably of pagan and popish ceremonies, and to have countenanced, in a certain degree, the cause of superstition. He had also put up a plain marble cross in his chapel at Bristol. The charge was animadverted upon by an able and spirited writer in 1752, in a pamphlet entitled, "A Serious Inquiry into the Use and Importance of external Religion, &c." The circumstance of the cross at his chapel, and the offence taken by some persons at this charge, might possibly have given rise to the calumny which was advanced, almost 15 years after his death, in an obscure and anonymous pamphlet, entitled "The Root of Protestant Errors examined;" and which charged him with having died in the communion of the church of Rome. The charge is absurd and groundless, and hardly deserves refutation. It is sufficiently exposed in
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bishop Porteus's life of archbishop Seeker; and the character of the worthy prelate has been more amply vindicated by Dr. Halifax, then bishop of Gloucester, in a preface to the second edition of his charge, printed in 1786, containing an account of the character and writings of the author. Soon after his removal to his new bishopric, the health of bishop Butler began visibly to decline; and having made ineffectual trial of the waters at Bristol, he removed to Bath, where he died on the 16th of June, 1752. His remains were interred in the cathedral at Bristol, where a monument, with an inscription, is erected to his memory. For bishop Butler's intellectual character, it will be sufficient to refer to his invaluable writings. Of his piety we may observe, that it was sincere and fervent, but perhaps inclining too much to the gloomy and ascetic extreme. His benevolence was ardent and diffusive. During his residence on the see of Bristol he expended in the repairs and improvement of the episcopal palace the sum of 4000*l.*, which exceeded the whole amount of his receipts from that see. His benefactions were numerous and liberal. He maintained the hospitality and dignity of his diocese with spirit, setting apart three days in the week for the entertainment of the principal gentry of the county, and condescending to invite the poorest of his clergy to his table, and to visit them in their parishes. At his decease it is said that he ordered all his MSS. to be burnt, without unfolding the covers of any of them. *Biog. Brit. Halifax's Preface.*

BUTLER, SAMUEL, a celebrated poet of the 17th century, was born at Strensham, in Worcestershire, as some say in 1600, and according to others, in 1612. Having laid the foundation of grammar-learning in the free-school at Worcester, he was sent to Cambridge, where he resided, without being matriculated in that University, for 6 or 7 years. Upon his return to his native county, he lived as clerk with an eminent justice of the peace, in whose easy and reputable service he had leisure for applying to his favourite studies, history and poetry, and also for amusing himself with music and painting. Under the patronage of Elizabeth, countess of Kent, he had access to a valuable library, and the opportunity of frequent intercourse with the great Mr. Selden, who employed him in writing foreign letters, and translating for him. He also lived for some time with sir Samuel Lake, a gentleman of an eminent family in Bedfordshire, and a famous commander under Oliver Cromwell. About this time he wrote his celebrated burlesque poem, entitled "*Hudibras*," under which character, as it is generally supposed, he intended to ridicule sir Samuel. After the restoration, Butler was made secretary to Richard earl of Carberry, lord president of Wales, and by him appointed steward of Ludlow castle, when the court was revived there; about which time he married Mrs. Herbert, a lady of good family and some fortune. The first part of his "*Hudibras*" was printed in 1663, and it was introduced to the notice of the court by the "*Mercenarius*" of that age, the earl of Dorset, and yet though it was highly extolled by the prevailing party both in church and state, and much admired as well as frequently cited, by the king, the author received no other recompence besides praise and barren promises, and was suffered to pass his days in an obscure and neglected condition. The only boon which was conferred upon him by the king, (and even this grant is disputed) was a donation, exempt from office fees, of 300*l.* which he honourably devoted to the discharge of his debts; but the professions of regard and service made to him by lord chancellor Clarendon, and by the duke of Buckingham, were futile and inefficient. Respected for his integrity and beloved for his social qualities by his few intimate friends, he died in 1680, and was buried in the

church-yard of St. Paul's, Convent-garden, at the expence of his friend Mr. Longueville of the Temple; and, in 1721, a monument was erected to his memory among the poets in Westminster abbey, by alderman Barber, the printer. The inscription sanctions the common opinion of his poverty by the following words: "*Ne cui vivo decrant ferè omnia desset etiam mortuo tumulus*;" *i. e.* lest he who, when living, wanted almost every thing, should, when dead, want also a tomb.

A monument has since been erected, by private subscription, in the portico of the church, near which he was buried, bearing the poet's bust, taken from that in Westminster abbey; and on a stone beneath the medallion are inscribed the following lines, contributed by Mr O'Bryan:

"A few plain men, to pomp and pride unknown,
O'er a poor bard have raised this humble stone,
Whose wants alone his genius could surpass,
Victim of zeal! the matchless Hudibras!
What! tho' fair freedom tumbled in his page!
Reader! forgive the author—for the age—
How few, alas, disdain to cringe and cant.
When 'tis the mode to play the sycophant!
But Oh! let all be taught from Butler's fate,
Who hope to make their fortune by the great,
That wit and pride are always dangerous things.
And little faith is due to courts and kings."

His poem, entitled "*Hudibras*" is one of the most original works, with regard both to its style and matter, that was ever written. It is of the burlesque kind, being usually styled a "mock-heroic," or "mock-epic," and much resembles Homer's "*Margites*," which, according to Aristotle, bore the same relation to comedy, that the *Iliad* and *Odyssey* do to tragedy. The hint of it was suggested by the inimitable Don Quixote; and it was intended as a general satire on those times of anarchy and confusion, during which the poet lived, and its leading aim was to expose by ridicule the religious and political principles of the Puritans, as they appeared after the civil war which overthrew church and state in the reign of Charles I. Of this poem there are three parts, which were printed separately; but the story was left unfinished. The diction and versification are often grossly familiar and negligent, though, upon the whole, they add to the humorous effect; and it is justly remarked by Dr. Johnson, in opposition to the judgment of Mr. Dryden, that the heroic style and measure would not have been better adapted to the author's purpose. The frequent double rhymes, introduced by the author, although they are often very imperfect, seem to give a kind of comic tone to the whole, and to improve the wit by combining the most incongruous ideas. Butler, besides the talent which he possessed of interesting and amusing the reader by odd and whimsical notions and associations, was well acquainted with human life. To this purpose Dr. Johnson (*Lives of the Poets*) observes, that "he had watched with great diligence the operations of human nature, and traced the effects of opinion, humour, interest and passion. From such remarks proceeded that great number of sententious distichs which have passed into conversation, and are added as proverbial axioms to the general stock of practical knowledge." Of the numerous editions of this poem, the most valuable is that of Dr. Zachary Grey, published in 1744, with copious annotations, and a preface in two volumes 8vo. The singular popularity of this poem produced several unsuccessful imitations of it, and some vain attempts to translate parts of it into Latin. But it is not easy or perhaps possible, to transfer the humorous turn of the phrase, for which this performance is distinguished, into any foreign language. The undertaking, however difficult,

scult, was attempted in a French translation of *Hudibras*, in 3 vols. 12mo. with notes, by — Townley, jun. esq. of Townley in Lancashire. A collection of pieces, under the title of "The Posthumous Works of Mr. Samuel Butler," was published after his death, in 3 vols. 12mo. but most of these are falsely ascribed to him, and none of them are of much value. However, in 1759, there appeared a more respectable publication, entitled "Genuine Remains in Prose and Verse of Mr. Butler, from the original MSS. formerly in the possession of W. Longueville, esq." 2 vols. 8vo. The editor was Mr. Thyer of the Manchester library, who has established the authenticity of these pieces, and accompanied them with notes. The poetical part contains a satire on the Royal Society; and the prose consists of "Characters," drawn with much force and humour, and "Thoughts" on various subjects. *Biogr. Brit.*

BUTLER, CHARLES, Magd. Col. Oxford, Master of Arts, published, in 4to. 1636, the principles of music in singing and setting, with the twofold use thereof, ecclesiastical and civil. This tract, which is dedicated to Charles I. seems to have been the only theoretical or didactic work, published on the subject of music, during his reign. The author appears to have been a learned and ingenious man. He had previously published "The Principles of Grammar," in which he had proposed a new and more simple orthography for our language, of which Dr. Johnson has given an account in the grammar prefixed to his dictionary. The Saxon and new characters he uses, in order to explode such letters as are redundant, or of uncertain powers, render this musical tract somewhat difficult to peruse. It is, however, better digested, more compressed, and replete with useful information, than any work of the kind that appeared for more than a century after Morley's "Introduction." The quotations are perhaps too numerous, and the display of musical erudition may be thought to border on pedantry; yet, allowing these to be censurable, the book contains more knowledge, in a small compass, than any other of the kind, in our language.

BUTLER, ***, an eminent harpsichord master, who during many years had a constant and numerous succession of scholars. He succeeded Keeble in playing the organ at Ranelagh; was organist of St. Ann's church, Soho; and afterwards of St. Margaret's, Westminster: he played the harpsichord at Hickford's subscription concert, and at frequent benefits there and elsewhere. He was a correct but not a brilliant or learned performer; and seems never to have attempted composition. Travelling to Naples, about the year 1775, to place his son under Piccini, after that important business was done, in returning, to Rome, through the Pontine marshes, he was seized by the malarial fever, like poor Burton, and died on the road.

BUTLER, WILLIAM, born at Ipswich, about the year 1535, was educated at Clare-hall, in Cambridge, where settling and practising medicine, he became one of the most popular physicians in his time, and was frequently sent for, in cases of difficulty to distant parts of the country. Sir Theodore Mayerne gives an account of a cure performed by him, in a violent defluxion on the face; and Wood quotes a case, in his account of Francis Presham, esq. in which he pronounced a patient to have taken poison, from the change produced on a piece of gold he had directed him to hold in his mouth; probably, says Aikin, it was a preparation of mercury that had been swallowed.

Dr. Wittie, in his preface to his "Translation of Primrose's Vulgar Errors," says, he was in such repute, that many empirics, after his death, sold preparations under his name, which were much sought for. He appears to have been a

humourist, from various stories current concerning him; and perhaps, like Dr. Radcliffe, he owed much of his fame and fortune to that disposition. In the year 1612 he was called in to attend prince Henry, with sir Theodore Mayerne. He pronounced the fever to be a pestilence, and gave little hopes of his recovery. Five years after, viz. January 29th 1617, he died in the 83d year of his age, and was buried in St. Mary's church, Cambridge. He left no writings, but the following elegant inscription was placed on his tomb:

"Guilielmus Butlerus, Ciarencis quondam socius, medicorum omnium quos præfens ætas vidit facile princeps, hoc sub marmore secundum Christi adventum expectat; et monumentum hoc privata pietas statuit, quod debuit publica: Abi viator, et, ad tuos reversus, narra te vidisse locum in quo salus jacet."

BUTLER, in *Geography*, a county of America, in Pennsylvania, containing 3916 inhabitants, and divided into 4 townships.

BUTLER'S *ale*. See *ALE*.

BUTLER'S *bay*, in *Geography*, lies on the north side of an island, in the straits of Magellan; it is small and surrounded with rocks. S. lat. 53° 37'. W. long. 74° 9'.

BUTLER'S *stone*, a medicinal preparation of which the ancient chemists relate wonders. See Boyle's Works, *Abr.* vol. i. p. 50.

The inventor, from whom it takes its name, was a Scotchman, in great favour with king James I. and is said to have done wonders with it, not only in the speedy cure of the most dangerous distempers, but in the making of gold out of lead and quicksilver.

The preparation of this stone is given by Morley, *Collect. Chym. Leyd.* cap. 375.

BUTLER'S *town*, in *Geography*, a town of North America on the west side of the head waters of the Ohio.

BUTLERAGE, or PRISAGE, in *Political Economy*, a very ancient hereditary duty belonging to the crown, which is considerably older than the customs, being taken notice of in the great roll of the exchequer, 8 Rich. I. still extant. Prilage was a right of taking two tons of wine from every ship (English or foreign) importing into England twenty tons or more; one before and one behind the main; which by a charter of Edward I. called "Charta Mercatoria," (31 Edw. I. c. 1. & 2. 27 Edw. III. c. 26.) was exchanged into a duty of 2s. for every ton imported by merchant-strangers, and called *butlerage*, because it was paid to the king's butler. See *CUSTOMS*.

BUTMENTS, in *Architecture*, those supporters or props, on or against which the feet of arches rest.

Butments of arches are the same with buttresses. They answer to what the Romans call *sublices*; the French, *culees* and *buttes*.

The word comes from the French *bouter*, to abut or terminate on any thing; or rather from *buter*, to prop.

The name butment is also given to little places taken out of the yard, or the ground-plot of a house, for butteries, sculleries, &c.

BUTMENTS, or ABUTMENTS of a bridge, denote the two massives at the end of a bridge, whereby the two extreme arches are sustained and joined with the shore on either side. The butments of bridges next the banks should be built more firm and solid, as serving to sustain the whole series of arches, and hinder them from spreading. See *BRIDGE*.

BUTNERIA, in *Botany*, Duh. See *CALYCANTHUS floridus*.

BUTOA, in *Ancient Geography*, an island placed by Pliny among those of Crete, between Ophiussa and Arados.

BUTOMUS, in *Botany*, (*βουτομος*, from *βους* ox, and *τεμνω* to cut; a name given by Theophrastus to an aquatic plant,

plant, on account of its being greedily cropt by oxen, or as others think, with less probability, because the sharp edges of its stem wound their tongues and lips. Helychius defines it, *Gen. Suet. Helychius trochilus* or *χελύς*, a plant given to oxen for food like grass; and Suidas, *φύττον παραδίνον* *κατακνύοντες*, *ἐλίσσοντες* or *ἐλίσσιν*, a plant allied to the reed eaten by oxen. Caïpar. Bauhine supposes it to be his *juncus floridus*, the plant before us, to which Linnæus has since given the ancient name; others, the *sparganium ramosum* of Linnæus; and others, a species of iris. Linn. gen. 507. Schreb. 693. Willd. 804. Gært. 86. Juss. 46. Vent. vol. 2. 158. Class and order, *enacandria hexagynia*. Nat. ord. *Tripetaliades*, Linn. *Junci* Juss. *Alismoides*, Vent.

Gen. Ch. Cal. Involucere simple, three-leaved, short. Cor. Petals six, roundish, concave, withering; three outer ones alternate, smaller, more acute. Stam. Filaments nine, awl-shaped; anthers bilamellate. Pist. germs six, oblong, acuminate, ending in styles; stigmas simple. Peric. Capsules six, oblong, gradually attenuated, erect, one-valved, opening on the inner side. Seeds numerous, oblong-cylindrical, obtuse at both ends, fixed to the inside of the capsule.

Eff. Ch. Cal. none. Petals six. Capsules six, many-seeded.

Species. *B. umbellatus*. Flowering rush, or water gladiolus. Gært. Tab. 19. f. 3. La Marek, Illust. Pl. 324. Curt. Flor. Lond. 1. 29. Eng. Bot. 651. (*Juncus floridus*, Math. Camer. J. Bauh. C. Bauh. Ray. Park. Ruch. *Gledibus aquaticis*, Dod. Gerard. Johns.) Root perennial, horizontal, tuberous. Leaves all radical, linear, triangular, very entire, smooth, flat in the upper part, acute, near three feet long, erect. Scapus solitary, simple, round, taller than the leaves. Umbel terminal, simple, many-flowered. Involucere of three membranaceous, pointed leaflets. Peduncles bracteate at the base. Flowers variously shaded with rose-colour, purple and white. Stamens spreading, equal, placed in a regular circle on the receptacle; filaments white; anthers red. Germs keeled, red. Styles short; stigmas emarginate. A native of watery ditches and ponds in many parts of Europe, and a favourite of the British botanist, on account of its being the only indigenous plant of its class.

BUTONES, in *Ancient Geography*, a people placed by Strabo in Germany, and said to be subdued by Maroboduus.

BUTONICA, in *Botany*. Rumph. La Marek, and Bosc. See *BARRINGTONIA speciosa*.

BUTONICA, Rumph. See *EUGENIA acutangula*, and *racemosa*.

BUTORIUS, in *Ornithology*, a name by which some have called the common bittern, *ARDEA STELLARIS*.

BUTOW, in *Geography*, a town of Germany, in the circle of Upper Saxony, and Farther Pomerania, 39 miles N. E. of New Stettin.

BUTRINTO, anciently BUTHROTUM, a sea-port town of Arbania, in a gulf to which it gives name, in the canal of Asbania, the see of a Greek bishop, suffragan of Janina. It belongs to the Venetians; 56 miles W.S.W. of Delhino. N. lat. 39° 45'. E. long. 20° 45'.

BUTRIUM, or BUTRIO, in *Ancient Geography*, a town of Italy, in the country of the Cenomani, according to Ptolemy, and placed by M. d'Anville north of Ravenna.

BUTSKOPT, (Marten) in *Zoology*, synonymous with buttskopper.

BUTSKOPPER, (Egede). See *DELPHINUS ORCA*.

BUTT, in *Agriculture*, a provincial term applied to such ridges or portions of arable land as run out short at the sides or other parts of fields.

BUTT, in our *Ancient Customs*, denotes a place erected for archers to shoot at, and in which a mark or white was fixed.

BUTT, in *Commerce*, is used for a vessel, or measure of wine, containing two hogheads, or 126 gallons.—Otherwise called RIRE.

A butt of currants is from fifteen to twenty-two hundred weight.

BUTT, in *Ship-building*, the end of a plank, or strictly speaking, that end of a plank which was nearest the root of the tree. Each end of a plank is securely bolted to a frame or timber, to prevent its rising from the bottom or side of the ship, which, in that case, would be said to have sprung or started a butt. At sea this is very dangerous, and difficult to get secured if the plank is under water. Butt also signifies the ground or largest end of all timbers.

BUTTS, or BACKS, a denomination given to that sort of tanned leather, which is prepared from the stoutest and heaviest ox hides, and chiefly used for the soles of shoes. For the process of preparing it, see TANNING.

BUTTA, in *Ancient Geography*, a town of Africa, situated between the two Syrtis, N. of Tege. Ptolemy.

BUTTELSTETT, in *Geography*, a town of Germany, in the circle of Upper Saxony, and principality of Weimar; five miles N. of Weimar.

BUTTEN, a town of Arabia, 28 miles E. of Chamir.

BUTTER, WILLIAM, was born at a town in Derbyshire, in the year 1726. After the usual school education, he went to Edinburgh, and in 1761 took the degree of Doctor in Medicine, and published for his inaugural thesis, "*Disertatio Medica et Chirurgica de Arteriotomia*," 8vo. He then returned to Derby, where he practised medicine for about ten years, when he came and settled in London. In 1773 he published a treatise on the kink cough, the name he gives to the tussis convulsiva, or whooping-cough. In the cure he relied principally on the efficacy of the extractum cicute, which he considered as a specific in the complaint. Two years after, he gave an account of the puerperal fever, as it appeared in Derbyshire and some of the adjacent counties, 8vo. and in 1794, a treatise on the disease commonly called angina pectoris. This disease was first described by Dr. Heberden. His account of it is published in the second volume of "*Medical Transactions*," by the Royal College of Physicians. Dr. Butter had no doubt of its being a gouty affection, and calls it the diaphragmatic gout, and thinks it generally curable. In the fit he gives opium with aromatics. For the cure he recommends pills with aloe and soap, to keep the body soluble. These with temperance, he says, will usually succeed in putting an end to the complaint. While he was at Edinburgh, where he appears to have resided about seven years, he published "*A Method of Cure for the Stone, chiefly by Injections*," 12mo. 1754; and "*Disertatio de Frigore quatenus Morborum Causa*," 8vo. 1757. He died at his house in Lower Grosvenor-street, March 21st, 1805. European Mag.

BUTTER, in *Rural Economy*, a fat unctuous substance prepared from milk by the process of churning. It is a matter naturally distributed through the whole substance of the milk in very small particles, which are interposed betwixt the caseous and ferous parts, amongst which it is suspended by a slight adhesion, but without being dissolved. It is in the same state in which oil is, in emulsions; hence the whiteness of both; and hence, by rest, the oily parts separate from both these liquors, to the surface, and form a cream. When butter is in the state of cream, its proper oily parts are not yet sufficiently concentrated to form an homogeneous mass. While separated by the interposition of a large quantity of ferous particles, the butter cannot be completely formed; but by pressing out these heterogeneous parts by means of continued percussion, by the well known

BUTTER.

operation of churning, it then becomes an uniform soft mass.

Messrs. Parmentier and Deyeux, in a memoir on milk, (Mem. qui a remporté le premier prix, &c. Paris, 1791), instituted several experiments to ascertain whether butter really exists in the cream, and is merely separated by agitation, or by the act of churning, or whether this process effectuates a chemical change. They incline to the latter opinion; because they found that the separation of the particles of butter could not be produced in any other manner; cream left in the milk yields fat cheese, but not butter. The oily parts do not rise into butter by exposure of cream to heat, nor by boiling it. The application of acids by separating the cheesy matter blended with the cream, instead of facilitating, retards the fermentation of butter. Half an ounce of oil was mixed with four ounces of cream; this was gently agitated and exposed to moderate heat; part of the oil swam on the surface, without uniting with the buttery particles in the cream; the other part rendered the fermentation of butter more difficult, and its consistence softer. Thus, whether solvents were applied to attach the buttery or cheesy particles of the cream, agitation was still necessary, and the change into butter was rendered more difficult.

Different methods are employed in obtaining and preparing this substance from milk as well as in managing and preserving it for use. See DAIRYING.

BUTTER, Whey, an inferior sort of butter made from whey in extensive cheese dairies. It is prepared in different methods in different dairy-districts. See DAIRYING.

BUTTER, History of. The word *butter* is formed from *βουτυρον*, a compound of *βους*, *cow*, and *τυρος*, *cheese*; q. d. *cow's-cheese*. Some authors, from a regard to this etymon, affect to write the word *butter* and *butyr*. This is the etymology adopted by the Grecian and Roman authors. Cheese was known to them at a much earlier period than butter: and it is therefore possible, that, at first, they might have considered the latter as a kind of cheese, since it appears that *τυρος* once signified any kind of coagulated substance. But to the first syllable of the word, it has been objected, that the Greeks used the milk of sheep and goats much earlier than cow's milk; and, for this reason, some have conjectured, that this first syllable was added, agreeably to the custom of the Greeks, in order to magnify the object, or to express a superior kind of cheese. Varro, de Re Rustica, II. 5. p. 274. Vigerus, de præcipuis Græcæ Dictionis Idiotismis, Lugd. Bat. 1684. p. 40. Others have supposed, that the name *βουτυρον* is not originally Greek, but that it might have been introduced into Greece from some foreign country, together with the theory which it expresses. Accordingly, the term has been thought to be of Scythian extraction.

Butter, though commonly used at present in most parts of Europe, was not known, or very imperfectly known to the ancients. The ancient translators of the Hebrew writers, however, seem to have thought, that they found it mentioned in scripture, (Bochart Hierozoicon, II. 45. p. 473.) Accordingly, they have referred to the following passages: Gen. xviii. 8. Deuteron. xxxii. 14. Judges v. 25. 2 Sam. xvii. 29. Job. xx. 17. xxix. 6. Prov. xxx. 33. Isaiah vii. 15. 22. But biblical critics agree, that the word *חָמֶאֶב*, *chameab*, signifies milk or cream, or four thick milk; and some of them who doubt or deny the early use of butter among the Eastern nations, will not allow that it denotes butter. See Michaelis's Suppl. ad. Lexic. Heb. pars i. p. 807. The word, it is said, plainly alludes to something that is liquid; and it appears, that *chameab* was used for washing the feet, that it was drank, and that it

had the power of producing intoxication; and it is known, that mare's milk, when four, will produce the like effect. It is further said, that we may conceive of streams of milk, but not streams of butter. The error has been ascribed to the LXX interpreters who have translated the Hebrew term by the word *βουτυρον*, *boutyron*. These translators who lived 200 years after Hippocrates, and who resided in Egypt, might, as Michaelis suggests, have been acquainted with butter, or have heard of it; but it is highly probable, that they meant cream, and not our usual butter. According to the common translation, indeed, it may be concluded, that the passage in Proverbs, ch. xxx. describes the preparation of butter by shaking or beating; but the original words *חָמֶאֶב מִזֵּית הָלַב*, *chaleb metz*, signify squeezing or pressing, *frictio mulgentis educit lac*; so that milking and not making is supposed to be alluded to in this passage. It was late before the Greeks appear to have had any notion of butter. Homer, Theocritus, Euripides, and the other poets, make no mention of it: and yet they frequently speak of milk and cheese; nor does Aristotle, who has collected several curious particulars relating to the other two, say any thing of butter. At first, indeed, he gives milk only two component parts, the watery and the caseous; and he remarks afterwards, for the first time, and in a place where it would be little expected, (Hist. Anim. iii. 20. p. 388.) that in milk there is also a fat substance, which, under certain circumstances, is like oil. Herodotus is the most ancient writer, who, in his account of the Scythians, (l. iv. 2.) particularly describes the process used among them for making butter; and this circumstance affords a presumption, that butter was not then in use among the Greeks, and that they must have acquired it from the Scythians. The word *βουτυρον* first occurs in Hippocrates, (De Morbis, l. iv. ed. 1595. fol. 5. p. 67.) who was almost contemporary with Herodotus, as both of them flourished in the fifth century before Christ. "The Scythians," says Hippocrates, "pour the milk of their mares into wooden vessels, and shake it violently; this causes it to foam, and the fat part, which is light, rising to the surface, becomes what is called butter, (*ὃ βουτυρον καλεῖται*.) The heavy and thick part, which is below, being kneaded and perfectly prepared, is, after it has been dried, known by the name of "hippace." The whey or serum remains in the middle."

In this passage the author speaks very distinctly of butter, cheese, and whey. Butter is often mentioned by Hippocrates, and he prescribes it externally as a medicine under the appellation *πικεριον*, *pikerion*, which seems to have been in earlier use among the Greeks than the term *βουτυρον*, or butter. In the time of Galen this term *pikerion*, which the Greeks seem to have borrowed from the Phrygians, had ceased to be in use; and it is not to be found in Hesychius, Suidas, or Pollux. The poet Anaxandrides, who lived soon after Hippocrates, (see Fab. Bib. Græc. i. 665. 740.) describing the wedding of Iphicrates, who married the daughter of Cotys, king of Thrace, and the Thracian entertainment given on that occasion, says, that the Thracians ate butter, which the Greeks at that time considered as a wonderful kind of food. Athenæi, Deipnos. l. iv. p. 131. and Casaubon. Animadv. in Athen. l. iv. c. 3. p. 248. Strabo, in three passages (viz. l. 3. v. i. p. 233. l. xv. vol. ii. p. 1031. and l. xvii. vol. ii. p. 1176.) refers to butter. In the former, he says, that the Lusitanians used butter instead of oil; and in the last he mentions the same circumstance respecting the Æthiopians, who, as Ludolfus informs us, (Hist. Æthiop. l. iv. 4. 13.) were acquainted with butter; and in the third Strabo relates, that elephants, when wounded, drank this liquid in order to make the darts fall from their bodies. The genuineness

B U T T E R.

nests of this latter passage is doubted, as Aristotle, Pliny, and Ælian say that these animals used oil for this purpose. Ælian, indeed, (lib. xiii. c. 7.) says, that the Indians anointed the wounds of their elephants with butter. Plutarch, (*Adversus Colotem*, apud Op. t. ii. p. 1109, ed. Xyland.) informs us, that a Spartan lady paid a visit to Berenice, the wife of Deiotarus, and that the one smelled so much of ointment, and the other of butter, that neither of them could endure the other. Dioscorides, about the year 33 B. C. (*Mat. Med.* ii. 81. p. 107.), says, that good butter was prepared from the fattest milk, such as that of sheep or goats, by shaking it in a vessel till the fat was separated; and he ascribes the same effects to it, when applied externally, as those produced by our butter at present. Dioscorides is the first writer who observes, that fresh butter might be melted and poured over pulse and vegetables instead of oil, and that it might be employed in pailry in lieu of other fat substances. From him also we learn, that a kind of foot was prepared from butter, for external applications, and that it was used in curing inflammation of the eyes and other disorders. For this purpose the butter was put into a lamp, and, when consumed, the lamp was again filled, till the desired quantity of foot was collected in a vessel placed over it. Galen, who distinguishes and confirms in a more accurate manner the healing virtues of butter, observes, that cow's milk produces the fattest butter; that butter made from sheep's or goats' milk is less rich; and that asses' milk yields the poorest butter. He expresses his astonishment that Dioscorides should say, that butter was made from the milk of sheep and goats; he assures us, that he had seen it made from cow's milk, and that he believes it had thence acquired its name. *De Simplic. Med. Facult.* i. x. p. 151. ed. Basil. ii. p. 124. "Butter," says he elsewhere (*De Aliment. Facult.* iii. cap. 15. p. 54. ed. Basil. iv. p. 340.) "may be very properly employed for ointments; and when leather is besmeared with it, the same purpose is answered as when it is rubbed over with oil." In cold countries, which do not produce oil, butter is used in the baths; and that it is a real fat may be readily perceived by its catching fire when poured over burning coals. From the circumstances above recited we may infer, that butter must have been very little known to, or used by, the Greeks and the Romans in the time of Galen, who wrote at Rome and lived at the end of the second century of the Christian æra.

The Roman writers, who give an account of the ancient Germans, relate, that they lived principally on milk. Some say, that they used cheese, whilst others affirm that they were unacquainted with the method of preparing it. Strabo, (lib. iv. vol. i. p. 305), speaking of the ancient Britons, says, that some of them were so ignorant, that though they had abundance of milk, they did not understand the art of making a cheese; but by his mode of expression he intimates, that they were not all equally unacquainted with this art. Pliny, on the other hand, says, (*N. H.* lib. xxviii. c. 9. § 35.) that the barbarous nations not only made cheese, but butter, which they used as a most pleasant kind of food, and that it distinguished the rich from the poor; and to them he ascribes the invention of it. By "barbarous nations," this author most commonly means the Germans and Britons, because they were not thoroughly subjected to the Roman government, nor instructed in the Roman arts. He observes that butter was commonly made from the cow, the fattest from the sheep, and that it was also made from goats' milk; that in cold weather the milk was warmed, but that in summer this precaution was not necessary. The vessel, employed for making it seems, from his description, to have resembled

such as are now used; he says it was covered, and that in the lid there were holes. Whether Tacitus by "*lac concretum*," (*De Moribus Germanorum*, cap. 23.), which, according to him, was the most common food of the Germans, meant cheese or butter, is not easily determined.

From what has been above said it appears, that butter is not a Grecian, much less a Roman, invention; but that the Greeks were made acquainted with it by the Scythians, the Thracians, and the Phrygians, and the Romans by the people of Germany. It appears also, that when they had learned the art of making it, they employed it only as an ointment in their baths, and particularly in medicine. Columella, (l. vi. 12. p. 582.) and not Pliny, is, as Vossius thinks, the first Latin writer, who makes use of the word "*butyrum*." Pliny (l. xxviii. c. 19.) recommends it mixed with honey to be rubbed on children's gums, in order to ease the pain of teething, and also for ulcers in the mouth. The Romans, in general, seem to have used butter for anointing the bodies of their children to render them pliable; and we are told by Sidonius Apollinaris (*carm.* 12.) that the ancient Burgundians besmeared their hair with it. Clemens Alexandrinus (*Pædag.* i. p. 107.), informs us, that the ancient Christians of Egypt burnt butter in the lamps at their altars instead of oil; and the Abyssinians have retained a somewhat similar practice. It is certain, from the above detail, that butter was used neither by the Greeks nor Romans in cookery, or the preparation of food. It is never mentioned by Galen, and others, as a food, though they have spoken of it as applicable to other purposes. No notice is taken of it by Apicius; nor is any thing said of it in that respect by the authors who treat on agriculture, though they have given particular information concerning milk, cheese, and oil. Indeed, the ancients had usually accustomed themselves to the use of good oil; and butter in later times has been very little employed in Italy, Spain, Portugal, and the southern parts of France, where it has been sold in the shops of apothecaries for medicinal purposes. In warm countries it has been found difficult to preserve it for any length of time. In the Roman churches it was anciently allowed during Christmas time, to use butter instead of oil, on account of the great consumption of it in other ways. Accordingly, in the cathedral of Rouen, there is a tower called the "*butter-tower*," *tour du beurre*, because George d'Amboise, archbishop of Rouen, in 1500, finding the oil fail in his diocese during Lent, permitted the use of butter, on condition that each inhabitant should pay six deniers for the liberty, with which sum this tower was erected. There are other butter-towers at Notre Dame, Bourges, &c.

From the account of the method of making butter transmitted to us by the ancients, we have reason to suppose, that they were not acquainted with the art of making it so compact and firm as that of more modern times; but it seems to have been in an oily, or almost liquid state. Butter is spoken of as somewhat fluid. The moderns cut, knead, and spread butter; but the ancients poured it out like oil; and it is represented by the Greek translators of the scripture as flowing in streams. On this account the butter of the ancients would not be long kept or easily transported; and the use of it must have been very limited. See Beckmann's *Hist. of Inventions*, vol. ii.

In different ages and nations various processes have been used for making butter. In Barbary, the effect of the operation, which we call "*churning*," is produced by putting the cream into a goats' skin turned inside out, which the Arabs suspend in their tents, and then press to and fro in one uniform direction. In this way they quickly occasion

the

B U T T E R.

the necessary separation of the unctuous and wheyey parts. Shaw's Travels, p. 168. Dr. Chandler (Travels in Greece, p. 217.) took notice in his way from Athens to Corinth of another mode of churning practised in the Levant; which was that of treading on skins of cream in order to separate the butter from its more watery part: and this practice, as some have supposed, throws light on a passage of Job (ch. xxix. 6), that has hitherto been somewhat obscure. Harmer's Observations, vol. iii. p. 172.

In Bengal, butter is easily made by the slight turning of a stick in milk; and when they would make butter pass for fresh when it is old and rank, they melt it and pour upon it four curdly milk; some hours after which they strain it through a cloth for sale. For an account of other processes, relating to the making, curing, and preserving of butter, see DAIRYING.

BUTTER, in Commerce. The trade of butter is very considerable. The butter made in the county of Essex, and well known under the name of Epping butter, is that which is most highly esteemed in London and its vicinity. This appellation, in the more restricted use of it, is applied to that butter which is made from the milk of cows that feed during the summer months in Epping-forest, where the leaves and shrubby plants contribute to improve its flavour. For the method of making this butter, see DAIRYING. It is made up for market in long rolls, weighing a pound each; and in the county of Somerset the same kind of butter is dished in half-pounds for sale, rubbing salt round the inside of the dish, so as to make it in the working appear handsome. In many parts of the kingdom they colour their butter in winter; but by such means they do not enhance its goodness. It rarely happens that the farmers in or near Epping use any colour, and if they do, it is very innocent. They procure some sound carrots, the juice of which they press through a sieve, and mix with the cream when it enters the churn, which makes it appear like May butter: nor do they at any time use much salt, though a little is absolutely necessary. The Cambridgeshire salt butter is held in the highest esteem, and is made nearly after the same method as that of Epping; and, by washing and working the salt from it, the cheesemongers in London often sell it, at a high price, for fresh butter. It is deposited, when made, in wooden tubs, or firkins, each containing 56 pounds, which are exposed to the air for two or three weeks, and often washed; but the most ready method of seasoning them is by the use of unsalted lime, or a large quantity of salt and water well boiled, with which they should be scrubbed several times, and afterwards thrown into cold water, where they should remain three or four days, till they are wanted. They should then be scrubbed as before, and well rinsed with cold water; but before they receive the butter, care must be taken to rub every part of the inside of the firkin with salt. Then, if the butter be properly made and perfectly sweet, it may be gently pressed into the firkin; but it must be well salted when it is made up, and the salt should be equally distributed through the whole mass, and a good handful of it be spread on the top of the firkin; after which the head should be immediately put on. They pursue nearly the same method in Suffolk and in Yorkshire; nor is the butter made in those counties much inferior to that made in Cambridgeshire; indeed, it is often sold in London for Cambridge butter. Uttoxeter in Staffordshire has been long a market famous for good butter, with which the London cheesemongers are supplied. It is bought by the pot, of a long, cylindrical form, weighing 14 pounds. The mountains of Wales, the highlands of Scotland, and the moors,

commons, and heaths of England, produce excellent butter, under proper management; and though not equal in quantity, it is far superior in quality to that which is produced from the richest meadows.

Butter, in its natural state, contains a considerable proportion of mucilaginous matter which is more putrescible than the pure oily parts. When it is proposed, therefore, to expose the butter to the heat of warm climates, it ought to be freed from that mucilage, before it be covered and packed for keeping. In order to prepare butter for a distant voyage in warm climates, it should be put into a vessel of a proper shape, which should be immersed into another containing water. Let the water be gradually heated, till the butter be thoroughly melted; in that state let it continue for some time, and be allowed to settle; the mucilaginous part will fall entirely to the bottom, and the pure oil will swim at top, perfectly transparent, while hot: but when it cools, it becomes opaque, assumes a colour somewhat paler than the original butter, before it was melted, and a firmer consistence, more nearly resembling that of tallow; and consequently it will better resist the heat of a warm climate than common butter. When this refined butter is become a little stiff, and while it is still somewhat soft, the pure part should be separated from the dregs, then salted, and packed up in the same way with other butter; this will retain the salt better, and keep much longer sweet, in hot climates, than if it had been cured in its original state. This refined butter may be preserved by adding to it, after it has been purified, a certain proportion of fine honey; mixing them well, so that they may thoroughly incorporate. This mixture has a pleasant taste, and spread on bread, is useful for coughs and colds. It will keep for years, without manifesting the smallest tendency to rancidity; and of course butter might be thus preserved in long voyages without spoiling. Dr. Anderson suggests, that one ounce of honey might be sufficient to preserve 16 ounces of butter.

By 36 Geo. III. c. 86. the 13 & 14 C. II. c. 26. and so much of 4 W. c. 7. as discharges persons from the effect of any part of 13 & 14 C. II. for preventing frauds in the sellers of butter, after the factor or buyer hath contracted for the same, are repealed; and new regulations are made respecting the packing, weight and sale of butter, which are as follows:—every cooper or other person, who shall make any vessel for the packing of butter, shall make the same of good and well-seasoned timber, light and not leaky, and shall groove in the heads and bottoms thereof: and every such vessel shall be a tub, firkin, or half-firkin, and no other, capable of containing the several quantities of butter herein-after mentioned; viz. every tub shall weigh of itself, including the top and bottom, not less than 11lb. nor more than 15lb. avoirdupois weight, and neither such top nor bottom shall be more than $\frac{5}{8}$ ths of an inch thick in any part thereof, and shall be capable of containing 84lb. of butter, and not less; every firkin shall weigh of itself, including the top and bottom, not less than 7lb. nor more than 11lb. and neither the top nor bottom shall be more than $\frac{4}{8}$ ths of an inch thick in any part, and shall be capable of containing not less than 56lb. of butter: and every half-firkin shall weigh of itself, including the top and bottom, not less than 4lb. nor more than 6lb. and neither the top nor bottom shall be more than $\frac{3}{8}$ ths of an inch thick in any part, and shall be capable of containing not less than 28lb. of butter, on pain of forfeiting by the cooper or other person making the same, 10s. for every such vessel. The maker shall brand on the outside of the bottom with an iron, his name at full length in permanent and legible letters, together with the exact weight or tare thereof, on the like

B U T T E R.

like penalty. And by 38 Geo. III. c. 73. every maker shall mark in like manner his place of abode, or dwelling, after his name, on the same penalty. By 36 Geo. III. c. 86. every dairy-man, or seller of butter, or person packing butter for sale, shall pack it in such vessels, properly torked and seasoned, branding his name after such seasoning on the bottom within, and on the top without; and also on the outside of the top, and on the bough or body thereof, the true weight or tare of such empty vessel so seasoned, and his name on the body, across two different staves; and he shall distinctly and at full length, imprint his name upon the top of the butter in such vessel when filled; on pain of forfeiting 5*l.* for every such offence: the quantities to be packed, shall be, exclusively of the tare of the vessel, in every tub not less than 84*lb.*; firkin 56*lb.* and half firkin 28*lb.* of good and merchantable butter; and no butter which is old or corrupt, shall be mixed or packed up into any such vessel, with that which is new churned; nor shall any whey butter be packed or mixed with that which is made of cream; and no butter shall be salted with great salt, but with fine small salt, and not intermixed with more than is needful for its preservation, on pain of forfeiting 5*l.* Any fraud with regard to the vessel or butter, marks or staves, &c. shall render the person concerned in it liable to a forfeiture of 30*l.* for every such offence. Factors buying or selling butter in vessels not legally marked according to the acts, shall forfeit 20*s.* for every such offence: and cheesemongers and other dealers in butter, having in their possession any vessel containing butter for sale, not externally marked, shall forfeit 10*s.* for every such offence: and they are required to deliver the full quantity, or be liable to an action for recovery of satisfaction with costs: nor shall they repack butter for sale, on pain of forfeiting 5*l.* for every tub, firkin, or half firkin so repacked. Foreign butter, however, may be repacked in such vessels, the name of the original seller being erased, and the name of the person selling being marked with an iron brand, in words at length, together with the words, "foreign butter," upon the body of every such vessel: counterfeiting, or forging marks subjects to a penalty of 40*l.* All penalties above 5*l.* are to be recovered in the courts at Westminster; and those not exceeding 5*l.* may be determined by one justice, and levied by distress and sale of the offender's goods, for the use of the informer; or for want of sufficient distress, the offender may be committed to the gaol or house of correction, without bail, for a time not exceeding 3 calendar months, not less than 28 days. Every information or prosecution must be commenced, within four months after the offence committed.

The statute 4 W. c. 7. regulates the shipping of butter and cheese for London; the person shipping shall receive for his pains 2*s.* 6*d.* for every load; and if he shall make default, he shall forfeit on conviction before one justice; for every firkin of butter 10*s.* and for every weigh of cheese 5*s.* half to the poor, and half to the informer, to be levied by the constable by distress and sale. He shall keep a book of entry, for receiving and shipping the goods, under the penalty, of 2*s.* 6*d.* for every firkin of butter, &c. The master of a ship refusing to take in butter or cheese, before he is full laden, shall forfeit for every firkin of butter 5*s.* and for every weigh of cheese 2*s.* 6*d.* This act does not extend to any warehouse in Cheshire or Lancashire. In the act of 8 Geo. c. 27. there are special directions concerning the sale of butter in the city of York; and in 17 Geo. II. c. 8. concerning the same in New Malton.

BUTTER, in its reference to *diet* and *medicine*, may be regarded as resembling in its sensible qualities, and in consequence of a chemical analysis, the expressed and unctuous

oils of vegetables, and animal fats. Butter, by distillation in the water bath, gives out a portion of watery fluid, that either remained interposed between its parts from the first, or was taken up during the washing which it undergoes in the process of making. A stronger heat, carefully managed, expels first a strong acid of a penetrating smell, which is followed by a concrete coloured oil, possessing the same odour. Very little coal remains: the acid appears to be of the same nature as that distinguished by the name of the acid of fat; and it may be also obtained from butter by means of lime, or an alkali. See FAT and OIL. Butter, like the other mild and fat oils, is liable to a change called "Rancidity;" and it becomes rancid sooner than most other fat oils, probably on account of the water, which may favour the development of its acid. Washing with water, or ardent spirit, restores it in some measure to its former state, by carrying off the disengaged parts of the acid. Butter, not well freed from the milk, more readily becomes rancid, than that which is more entirely separated from it; and butter by being melted, and freed from a deposit which it makes, on being kept for some time in a melted state, may thus be longer preserved from rancidity. By the application of salt, the rancidity of butter is obviated; and the more perfect the salt is, the greater is its efficacy, and a less quantity will suffice: and if at the same time we assist its antizymic power, by the addition of a small quantity of nitre, sugar, and honey, we may then preserve butter very long in a condition fit to be used as an aliment. The rancidity of butter, according to the experiments of Parmentier and Deyeux, (Memoire qui a remporté le premier prix, &c. 1790.) is found to proceed entirely from the coagulable, or cheesy matter which is mixed with it. The quantity of this mixture is increased by the economical method of warming the milk, in order to increase the quantity of cream, and by letting the cream remain for too long a time before it is churned. Thus the cream that rises without the aid of warmth, and that is formed into butter, while perfectly fresh, will yield the most delicate kind, and may be preserved for the longest time. Whether the oily part of milk is most safely employed in the state of cream, when it is joined with some portion of the caseous and serous parts, or when it is more entirely separated from these in the state of butter, is a question that has not been absolutely determined. Dr. Cullen (Mat. Med. Vol. i. p. 349.) expresses his opinion, that a quantity of oil in the state of cream will be more easily digested than an equal quantity of the oily part in the state of butter. Some difference, however, in this matter may arise from the difference of stomachs, more or less disposed to digest oils; and persons have been known, who could digest cream better than butter. Another difference may also arise from the stomach being more or less disposed to acidity; and in the more aceseut stomach, cream may be more offensive than butter. Butter, as a wholesome aliment, should be fresh and free from rancidity, and not fried or burnt; otherwise it will disorder digestion, and be injurious. As to its medical effect, butter, as well as the other *olea blanda*, or mild oils, is considered as a laxative. To this purpose Dr. Cullen observes, that a person, being advised to take as a medicine, every morning, four ounces of fresh butter, found its constant effect to be that of producing a stool or two more than usual. By some it has been supposed, that it has a tendency to stop in the capillaries and glands, and to foul the viscera; whence proceed blotches and cutaneous diseases.

BUTTER, *clarified*, is newly churned butter, without salt, melted over a clear fire, and having the curdly part skimmed off. Two spoonfuls of the clarified remainder have been recommended:

commended to be given twice or thrice a day, as a sort of specific against the bloody flux, and defluxions of the eyes and breast.

BUTTER, May, BUTYRUM Majale, is a medicine in some repute among good women, for strains, aches, and wounds. It is made of butter churned at that time, and exposed to the sun of the whole month, till, by repeated fusions, it be brought to a whiteness. Helmont calls it *magistery of grass*. Quincy affirms it is no better than plain lard.

Naturalists speak of showers and dews of butter. See DEW.

BUTTER-milk, in *Rural Economy*, the milk which is left after the butter has been separated by means of churning or other processes.

In some districts this sort of milk is either sold to the poor, or made use of by the farmer's servants. But in large dairies it is most frequently employed as a food for hogs, and in moistening the bran which is given to the poultry in the farm-yard. See DAIRYING.

Butter-milk is commonly procured from milk after it has been kept some time, and has become more or less acid; but it may be procured from any recent milk, and in this case, it is not acid, and only differs from entire milk by the absence of its oily parts. In this state it is still tolerably nourishing; and being often more easily digested than entire milk, it has been employed in phthical cases with greater advantage than either the entire milk, or the watery parts of it in a more acid state. It is however, in this last state, that it is most commonly employed; and it is highly useful in all cases where the refrigerant powers of milk are required. As the longer it has been kept it seems to have its acidity increased, so it proves more powerfully refrigerant. Some have imagined, that in certain cases it might be dangerous, but unless when drank in very large quantity, or when the body is very warm, Dr. Cullen says, that he has not perceived its bad effects; and in the last case, it is probable that cold water would have been equally injurious. With respect to the acid of butter-milk, or other acid states of the watery part of milk, it is worth observing, that such acid does not increase the acescency of the stomach, or occasion the flatulency that recent vegetable acids and acescents commonly do; and therefore it is more safely than these employed by dyspeptic persons. Cullen, *Mat. Med.* vol. i. p. 353.

BUTTER-bump, or bittern, in *Ornithology*. See ARDEA *stellaris*.

BUTTER-bur, in *Botany*. See TUSSILAGO *petasites* and *hybrida*.

BUTTER-cup. See RANUNCULUS *acris*.

BUTTER-jags. See MEDICAGO *falcata*.

BUTTER-nut, a fruit in New England, whose kernel yields a great quantity of sweet oil.

BUTTER-wort. See PINGUICULA.

BUTTER, Butyrum, is also used to express several chemical substances—as *butter* of ANTIMONY, of ARSENIC, of BEN, of BISMUTH, of CACAO, of FLAX, of SATURN, of TIN, of WAX, &c. on account of their form of consistence resembling that of butter.

BUTTER of stone, a kind of mineral drug found on the highest mountains, and hardest rocks of Siberia, being drawn by the sun's heat, in the way of transudation, from the dry substance of the stones themselves, and adhering to the surface thereof like a sort of calx, which having received its full coction, is scraped off by the inhabitants under the name of *kamine mast*. The Russians ascribe many virtues to it. It is much used for the dysentery and venereal diseases; but its

operation is so violent, however corrected by other ingredients, that none but the Russians dare use it.

BUTTER, vegetable. See SHEA-trees.

BUTTERANT, in *Geography*, a village of the county of Cork, in Ireland, remarkable for the ruins of several ecclesiastical buildings. It was formerly a corporate town, governed by a mayor and aldermen, but it is now gone to decay. The ruins, which are situated on a precipice above the river Owbeg, have a very picturesque appearance. The poet Spencer lived in this neighbourhood. Distance S.W. from Dublin 130½ miles, and 21 miles N. by W. from Cork.

BUTTERFELDE, a town of Germany, in the circle of Upper Saxony, and New Mark of Brandenburg; 5 miles N. of Barwalde.

BUTTERFIELD, a settlement of America, in Cumberland county, and district of Maine, containing 189 inhabitants, and lying about 43 miles N. from Falmouth, on Casco bay; having Butterfield-slip on the north, and Bucktown on the south.

BUTTERFISH, in *Ichthyology*, a small species of the BLENNIUS genus, called specifically by naturalists *gunnellus*, and the *spotted blenny*: it is distinguished by the name of *butterfish* by the inhabitants on several of the English coasts. DONOV. Brit. Fishes. See BLENNIUS GUNNELLUS.

BUTTERFLY, in *Entomology*. See PAPILIO.

BUTTER-FLY, satyrion, in *Botany*. See ORCHIS.

BUTTERFLY fish, in *Ichthyology*, an English name of the ocellated blenny, *Blennius ocellaris*, a fish found in the Mediterranean sea: and which is distinguished by having a large black ocellar spot in the anterior part of the dorsal fin, whence this fish is supposed to bear a fanciful resemblance to the wing of a butterfly.

BUTTERHILL, in *Geography*, a high round hill of America, on the west bank of Hudson river, at the northern entrance of the High-lands.

BUTTERIS, in *Farriery*. See BUTTRESS.

BUTTERMERE, in *Geography*, a village of Cumberland, in England, is seated in a part of the country which has been frequently admired and described by topographers and tourists. The majestic mountains, and transparent lakes of this district, present those wild and delightful features of landscape, which cannot fail to awaken sensations of pleasure and delight. The village has nothing peculiar to excite notice, but the water or lake, which gives name to the place, is particularly beautiful. It occupies an area of about one mile and a half in length, by half a mile in breadth. Its western shore is hemmed in by a range of rugged mountains, rising abruptly from the margin of the water. These assume a dark and heavy aspect, and are known to the shepherds, who are almost the only persons that trace their craggy steep, by the names of Hay-cock, High-crag, High-stile, and Red-pike. The eastern shores rise more gently, are partially wooded, and admit of cultivation at a short distance from the lake; the north end is skirted by the verdant vale of Buttermere, and the southern extremity is bounded by Honister-crag, which forms an abrupt termination to a chain of mountains. From this steep, numerous torrents are continually pouring down their foaming waters into the lake: one of these cataracts falls between four and five hundred yards. The river which furnishes the principal supply of water to the lake, flows through Gatesgarth-dale, which is described by Mr. Gilpin as a most singular and tremendous scene. It winds slowly and solemnly in one large segment; being a narrow concave valley, the sides of which are almost perpendicular, and composed of a broken craggy rock. The river which runs through this valley, is as wild as the valley itself,

itself. It has no banks, but the fragments of rocks, no bed but a channel composed of rock strata, among which the water forces its course. The middle of the valley is adorned, as these valleys in some parts are, by a craggy hill: on the top of which stands the fragment of a rock, that looks, in Ossian's language, like the *stone of power*, the rude deity of desolation to which the scene is sacred. Gilpin's 'Tour to the Lakes, &c.

BUTTER-NUTS, a post-town of America, in St. Jago county, New York, 25 miles S.W. of Coopers town, containing 1388 inhabitants.

BUTTERY.—Officers in the king's buttery are a gentleman, yeoman, and three grooms of the buttery. The buttery among us is usually placed near the cellar; being commonly the room next the top of the cellar stairs.

BUTTHARD, in *Geography*, a town of Germany in the circle of Franconia, and bishopric of Wurzburg.

BUTTING, *imbutare*, in *Middle Age Writers*, is used for tunning of wine, or putting it into butts.

BUTTING-pillar. See **PILLAR**.

BUTTLINGEN, in *Geography*, a town of Germany, in the circle of Lower Saxony, and duchy of Lünenburgh Zell.

BÜTTNERA, or **BYTTNERA**, in *Botany*. (in honour of D. S. A. Büttner, professor of botany at Gottingen,) Linn. Gen. 268. Schreb. 366. La Marck. Illust. 383. Willd. 417. Juss. 217. Vent. vol. iii. 198. Class and order. *pentandria monogynia*. Nat. Ord. *Malvaceæ* Juss.

Gen. Ch. *Cal.* one-leafed, five-cleft, deciduous; segments ovate-lanceolate, acute, widely spreading. *Cer.* petals five, oblong, arched inwards, a little connivent, dilated and three-lobed at their summit; the middle lobe extended into a long filiform kind of awn, reflected outwards. *Nectary* surrounding the germ, pitcher-shaped, five-toothed. *Stam.* filaments five, awl-shaped, inserted between the teeth of the nectary; short, stretched outwards, covered by the arches of the petals: anthers ovate, twined. *Pist.* germ superior, globular, five-furrowed: style awl-shaped, short; stigma obtuse, pentagonal. *Peric.* capsule globular, muricate, five-grained; grains two-valved, opening at the inner side. *Seeds* solitary, ovate.

Ess. Ch. *Cal.* five-cleft; petals five, arched, three-lobed at their summit, the middle lobe prolonged into a filiform kind of awn. *Capsule* five-grained, muricate.

Sp. B. *seabra* Linn. Spec. "Leaves lanceolate, rib and petioles prickly." (Loef. it. 313. Aubl. Guian. 1. 241, t. 96.) *Root* perennial. *Stem* shrubby at bottom; branches alternate, long, angular, armed with short, reflexed, cartilaginous prickles. *Leaves* linear-lanceolate, alternate, toothed, midrib armed with recurved prickles; lower ones petioled, upper sessile: stipules two, deciduous. *Flowers* axillary, single, on short peduncles. Found by Aublet in Guiana, between Cayenne and Couron. 2. B. *carthagenensis*, Linn. Mant. "Leaves ovate; rib and petioles prickly." (B. aculeata Jacq. Americ. 76. pict. 41.) *Root* perennial. *Stem* with branches spreading on every side in the manner of the common bramble, rather woody, five-cornered; the furrows and angles obtuse, armed with crooked, reflexed prickles, tender branches, round, prickly, alternate. *Leaves* smooth, quite entire, or with only one or two serratures, alternate, deciduous; those on the old branches ovate, acute, four inches long or more, on the younger lanceolate-acuminate, less. *Racemes* short, aggregate, and axillary on the younger branches. *Flowers* without smell, small, white, very numerous. A native of Carthage and St. Domingo. Obf. La Marck and Willdenow unite the two preceding; but in concurrence with professor Martyn, we have not ventured to oppose the authority of Jacquin, who affirms that his aculeata and Aublet's plant are not the same species. 3. B. *ova-*

ta. La Marck. "Leaves ovate, serrated; petioles unarmed; branches five-angled, prickly; stem erect." (La Marck Illust. Pl. 140. Cavan. Diss. 5. t. 149. f. 1.) *Root* perennial. *Stem* four or five feet high, without prickles; branches all ascending, rather slender, green, smooth, supple, prickly at the angles. *Leaves* about an inch long. *Flowers* axillary, in a small corymbus or umbel, from three to six together, on short peduncles. *Calyx* with five acute, expanded divisions. *Petals* trifid at their summit; the middle segment a very long purple or violet thread. Found in Peru by Joseph de Jussieu, who sent seeds to the royal garden at Paris. Described from the living plant by La Marck. 4. B. *cordata*. La Marck (Büttnera aculeata Dombey Herb. Peruv.) "Leaves cordate, acuminate, serrated, pubescent beneath; petioles without prickles. *Stem* prickly." A Sarmentose shrub about eight feet high. *Stem* five-angled; prickles on the angles incurved. *Leaves* three inches broad. *Flowers* whitish, in small peduncled, axillary umbels. *Capsules* round, slightly hispid. Found by Dombey in the neighbourhood of Lima in Peru. 5. B. *reticulata*. La Marck. "Leaves ovate-lanceolate, acuminate, very entire; branches prickly, round." La Marck Ill. Pl. 140. f. 2. *Branches* a little pubescent. *Leaves* petioled, two inches long, about half an inch broad. *Capsules* small, round, more hispid than the preceding. Native of Peru, gathered by Joseph de Jussieu. 6. B. *microphylla*. Linn. Mant. "Branches zigzag, even; leaves ovate, obtuse, on short peduncles." La Marck. A shrub. *Stem* four or five feet high, much branched at its summit; prickles solitary, stipular, horizontal; branches green, smooth, supple, obtusely angular. *Leaves* sometimes emarginate, entire, smooth, about half an inch long. *Flowers* small, whitish green, peduncled, axillary, from three to five together. *Calyx* one-leafed, with five spreading divisions. *Petals* trifid; segments linear, the lateral ones the shortest. *Capsule* thorny all over. La Marck. A native of America, cultivated in the Imperial garden at Vienna. 7. B. *herbacea*. Willd. "Leaves heart-shaped, toothed, without glands; stem herbaceous, without prickles." Willd. Roxb. Corom. 1. tab. 29. A native of the East Indies, on the summits of mountains. 8. B. *catalpifolia*. Willd. "Leaves heart-shaped, very entire; stem climbing, without prickles." Jacq. Hort. Sch. t. 46. A native of Caracas in South America.

BUTTOCK, in *Ship Building*, that part of the after-body of a ship, bounded by the counter and quarters, and having the stem post in the middle. The buttock is the support of the after-part of the ship; it ought not, however to be too full, because then the ship would be difficult to steer, nor too lean, as, in a rough sea, the after-part will fall down too much.

BUTTOCKS of a horse, in the *Manege*, are situated below the crupper and the origin of the tail, and extend to the place where the hind-leg joins the body.

BUTTON, in its most ordinary acceptation, signifies a well known appendage to garments for conveniently fastening them together.

Trifling as this article may appear to some of our readers to be in itself, there is certainly no manufacture which includes such an infinite variety of operations as that of the button-maker. The number of substances of which they are made is almost inconceivable, and each requires a distinct set of manipulations. Amongst them are gold, silver, plated copper, white-metal, pinchbeck, steel, japanned tin, glass, foil stones, mother of pearl, ivory, bone, horn, tortoise-shell, jet, cannel-coal, paper, leather, and a thousand others; exclusive of those buttons which consist of a mould of wood or bone covered with silk or mohair, and the manufacture of which belongs to a different class of artisans. It would

very far exceed the limits of a work like the present if we were to enter into all the details of so multifarious a business as this; we shall therefore only trace a few outlines of the processes most ordinarily in use.

Of the manufacture of metal buttons. These are originally formed in two different ways; the blanks are either pierced out of a large sheet of metal with a punch driven by a sly-press, or cast in a pair of flasks of moderate size, containing 19 or 12 doz. each. In this latter case, the shanks are previously fixed in the sand, exactly in the centre of the impression formed by each pattern, so as to have their extremities immersed in the melted metal when poured into the flask, by which means they are consequently firmly fixed in the button when cooled. See *FOUNDERY*. The former process is generally used for yellow buttons, and the latter for those of white metal.

We shall first give an instance of the former mode of procedure as used in the manufacture of gilt buttons. The *gilding metal* is an alloy of copper and zinc, containing a smaller proportion of the latter than ordinary brass, and is made either by fusing together the copper and zinc, or by fusing brass with the requisite additional proportion of copper. This metal is first rolled into sheets of the intended thickness of the button, and the blanks are then pierced out as before mentioned. The blanks thus formed, are, when intended for plain buttons, usually planished by a single stroke of a plain die driven by the same engine, the sly-press; when for ornamented buttons, the figure is frequently also struck in like manner by an appropriate die, though there are others which are ornamented by hand. The shanks which are made with wonderful facility and expedition by means of a very curious engine, are then temporarily attached to the bottom of each button by a wire clamp like a pair of sugar-tongs, and a small quantity of solder and resin applied to each. They are in this state exposed to heat on an iron plate containing about a grofs, till the solder runs, and the shank becomes fixed to the button, after which, they are put singly in a lathe, and their edges turned off smoothly.

The surface of the metal, which has become in a small degree oxidated by the action of the heat in soldering, is next to be cleaned, which, in this, as in a great variety of other instances in the manufacture of metallic articles, is effected by the process of *dipping* or *pickling*; that is, some dozens of them are put into an earthen vessel pierced full of holes like a colander; the whole dipped into a vessel of diluted nitric acid; suffered to drain for a few seconds: again dipped successively into four or five other vessels of pure water, and then dried.

The next operation is the *rough burnishing*, which is performed by fixing the buttons in the lathe, and applying a burnisher of hard black stone from Derbyshire: the minute pores occasioned by the successive action of the heat and the acid are thus closed, and the subsequent process of gilding considerably improved, both with regard to economy and perfection.

The first step towards the gilding of all the alloys of copper consists in covering the surface uniformly with a thin stratum of mercury, by which means the amalgam, which is afterwards applied, attaches itself to it much more readily than it would otherwise do. This part of the process is called *quicking*, and is effected by stirring the buttons about with a brush in a vessel containing a quantity of nitric acid supersaturated with mercury; which latter is, of course, by the superior elective attraction of the copper for the acid, precipitated in its metallic state on the buttons, whose surfaces become uniformly and brilliantly covered with it. The mercury which hangs in loose drops on the buttons is then

shaken off by jerking the whole violently in a kind of earthen colander made for the purpose; and they are then ready for receiving the amalgam.

The amalgam is made by heating a quantity of grain gold with mercury in an iron ladle, by which means the former is soon dissolved, and the whole is then poured into a vessel of cold water. The superabundant mercury is strongly pressed out through a piece of chamois leather, and the remaining amalgam, which is of about the consistence of butter, is then fit for application.

This is performed by stirring the buttons, whose surfaces are already thinly covered, or wetted with mercury, in an earthen vessel with the requisite proportion of amalgam and a small quantity of diluted nitric acid, by which means the amalgam also attaches itself to their surfaces with a considerable degree of equality. The necessary quantity of gold is about five grains to a grofs of buttons of an inch in diameter.

The next process is the volatilisation of the mercury by heat, which is usually called by the workmen *drying off*. This is performed by first heating the buttons in an iron pan, somewhat like a large frying pan, till the amalgam with which they are covered becomes fluid, and seems disposed to run into drops, on which they are thrown into a large felt cap, called a *gilding cap*, made of coarse wool and goat's hair, and stirred about with a brush to equalize the covering of the surface by the gold. After this, they are again heated, again thrown into the gilding cap and stirred, and these operations successively repeated till the whole of the mercury is volatilised. This part of the process, as will readily be conceived, is extremely unwholesome, and has the most terrible effects on the constitution of the workmen, so that it would be no small desideratum, (and it does not seem to be difficult), conveniently to effect this agitation and friction of the heated buttons in a covered vessel; in which case also, though of inferior importance, the volatilised mercury might be saved. For preventing the waste and injury attending this process, an apparatus resembling that delineated in *Plate II. Miscellany, fig. 1.* has been partially and successfully adopted by Mr. Mark Sanders, an eminent button-maker of Birmingham.

"A hearth of the usual height is to be erected, in the middle of which a capacity for the fire is to be made; but instead of permitting the smoke to ascend into the top A, made of sheet or cast iron, through which the mercury is volatilised, a flue for that purpose should be conducted backwards to the chimney B. An iron plate, thick enough to contain heat sufficient to volatilise the mercury, is to cover the fire-place at the top of the hearth C. There must be an ash-hole, D, under the fire-place. The square space E, seen in the fire-place, is the flue, which serves to carry the smoke back under the hearth into the chimney B. The door of the fire-place and ash-pit may either be in front, as represented in the plate, or at the end of the hearth at F, which will perhaps less incommode the work-people. It would be of great advantage if the space between A and the iron plate C was covered up with a glass window coming down so low as only to leave sufficient room for moving the pan backwards and forwards with facility. If the sides were also glass instead of brick-work it would be still better, as the work-people would be able to have a full view of their work without being exposed to the fumes of the mercury, which, when volatilised by heat communicated to the pan by the heated iron plate over the fire-place, would ascend into the top A, appropriated for its reception, and descend into the tub G, covered at top and filled pretty high with water. By this means the hearth would, in fact, become a distilling

distilling apparatus for condensing and recovering the volatilised mercury. In the tub G the principal part would be recovered; for, of what may still pass on, a part would be condensed in ascending the tube H, and fall back, while the remainder would be effectually caught in the tub or cask I, open at the top, and partly filled with water. The latter tub should be on the outside of the building, and the descending branch of the tube H should go down into it at least 18 inches, but not into the water. The chimney or the ash-pit should be furnished with a damper to regulate the heat of the fire.

The water may be occasionally drawn out of the tubs by a siphon, and the mercury clogged with heterogeneous matter may be triturated in a piece of flannel till it passes through, or placed in a pan of sheet iron, like a dripping-pan, in a sufficient degree of heat, giving it a tolerable inclination, so that the mercury, as it gets warm, may run down and unite in the lower part of the pan. But the mercury will be most effectually recovered by exposing the residuum left in the flannel bag to distillation in a retort made of iron or of earthen ware.

When the mercury is volatilised from the buttons, or, as the workmen denominate it, when the buttons are dried off, they are finally burnished, and are then finished and fit for carding.

The reader unacquainted with this branch of manufacture will be surprised to learn how far a small quantity of gold, incorporated with mercury, will spread over a smooth surface of copper. "Five grains, worth one shilling and threepence, on the top of a gros, that is, 144 buttons, each of one inch diameter, are sufficient to excuse the manufacturer from the penalty inflicted by an act of parliament; yet many, upon an assay are found to be deficient of this small quantity, and the maker fined and the buttons forfeited accordingly. Many hundred grosses have been tolerably gilt with half that quantity; so extremely far can gold be spread, when incorporated with mercury, over the surface of a smooth piece of copper." *Philosophical Magazine*, N° 33. p. 19, &c.

The white metal buttons which are composed of brass alloyed with different proportions of tin, after having been cast as before mentioned, are polished by turning them in a lathe, and applying successively pieces of buffalo skin glued on wood, (or *buffs* as the workmen call them) charged with powdered grindstone and oil, rotten stone and crocus martis. They are then *white-boiled*, that is, boiled with a quantity of grain tin in a solution of crude red tartar, or argol, and lastly, finished with a buff with finely prepared crocus.

Glass buttons. These articles are also frequently wholly composed of glass of various colours in imitation of the opal, lapis lazuli, and other stones. The glass is in this case kept in fusion, and the button nipped out of it whilst in its plastic state, by a pair of iron moulds, like those used for casting pistol shot, adapted to the intended form of the button: the workmen previously inserting the shank into the mould so that it may become imbedded in the glass when cold.

Mother of pearl buttons. This substance is also frequently used in the manufacture of buttons; in which case, the mode of fixing in the shank is somewhat ingenious. It is done by drilling a hole at the back which is under-cut, that is, larger at the bottom than the top, like a mortise, and the shank being driven in by a steady stroke, its extremity expands on striking against the bottom of the hole, and it becomes firmly rivetted into the button. To these, foil-stones are also frequently added, in which case, they are usually attached with isinglass-glue. Steel studs are also often ri-

vetted into buttons of this and various other kinds. See FOIL-STONES and STUDS.

Shell buttons. This name is given to those buttons which consist of a back which is generally of bone without any shank, but corded with catgut, and covered in front with a thin plate of metal struck with a die. They are now, however, much less in use than formerly. The backs are cut out with a brace whose bit is a circular saw, like that of a surgeon's trephine, and the four holes through which the catgut passes are drilled by four drills moving parallel to each other, and acting at once. They are then corded by children who tie the catgut on the inside; the cavity is filled with melted resin, and the metal shell applied warm. The button is then pressed between two centres in a lathe, which are forced together by a weight acting on a lever, (an ingenious application of this engine frequently made use of in this manufacture), and the edge of the shell turned down during its revolution with a small burnisher.

In the year 1790, a patent was granted to Mr. Henry Clay of Birmingham for a new method of manufacturing buttons of slate, or slit stone; and in 1800, Mr. Joseph Barnett of the same place obtained a patent for an improved mode of making buttons, by fixing two shanks, or other fastenings, on one button, one on each side, on the under surface, opposite to each other, instead of only one in the centre.

The practice of wearing buttons consisting merely of a mould covered with the same kind of cloth as the garment itself, being at present extremely general, it may perhaps be proper to remark, that this is prohibited on pain of pecuniary penalties, from 4s. to 5l. per dozen, by several statutes which have been made at different times for the promotion of this manufacture; and under which, several convictions have taken place within a few years. These are, 10 W. 3. c. 2. 8 Ann. c. 6. 4 Geo. c. 7. and 7 Geo. c. 12. The importation of buttons is prohibited on pain of forfeiture, and penalty of 100l. on the importer, and 50l. on the seller, by 13 & 14 C. II. c. 13. § 2. and 4 W. III. c. 10. § 2.

By 36 Geo. III. c. 60, any person putting false marks on gilt buttons, erasing any marks except such as express the real quality, or any other words, except *gilt* or *plated*, incurs the penalty of forfeiting such buttons, and also 5l. for any quantity not exceeding 12 dozen; and if above, after the rate of 1l. for every 12 dozen. The penalty, however, does not extend to those who mark the words *double* and *treble gilt*, provided, in the case of double gilt buttons, gold shall be equally spread upon their upper surface, exclusively of the edges, in the proportion of 10 grains to the surface of a circle 12 inches in diameter; and in that of treble gilt, the gold shall amount to 15 grains in the same proportion. The penalty on making false bills of parcels, expressing any other than the real quality of such buttons, is 20l.; and that on mixing buttons of different qualities, forfeiture of the same, and 5l. for any number between one and 12 dozen, and above this number 1l. for every 12 dozen. In order to ascertain what shall be deemed gilt or plated buttons, gilt buttons shall have gold equally spread upon the upper surface in the proportion of five grains to the surface of a circle 12 inches in diameter; and plated buttons shall have the superficies of the upper surface made of a plate of silver fixed upon copper, or a mixture of it with other metals, previously to its being rolled into sheets or fillets. All pecuniary penalties may be recovered by action or suit within three calendar months, in the courts of Westminster, and one justice may, by warrant, cause metal buttons liable to

forfeiture, to be seized and kept in safe custody, to be produced as evidence upon any action, or cause them to be destroyed. Pecuniary penalties may also be adjudged by two justices in the place where the offender resides, or the offence is committed. This act, however, does not extend to buttons made of gold, silver, tin, pewter, lead, or mixture of tin and lead, or iron tinned, or of Bath or white metal, or any of these metals inlaid with steel, or buttons plated upon shells.

BUTTON, in *Botany*, a term sometimes used for a bud, in the technical language of the French naturalists; it is the middle state between the eye and the burgeon.

BUTTON, in *Building*, denotes a slight fastening for a door or window, made to turn on a nail.

BUTTON of a lock, denotes a round head serving to move the bolt.

BUTTON, in *Chemistry*, signifies the metal which is collected generally in a roundish mass at the bottom of a crucible after fusion, or which remains in the cupels after cupellation.

BUTTON, in *Fencing*, signifies the end or tip of a foil, being made roundish, and usually covered with leather, to prevent making contusions in the body.

BUTTON of the reins of a bridle, in the *Mange*, is a ring of leather, with the reins put through it, running all along the length of the reins. See *BRIDLE*.

To put a horse under the button, is when he is stopped, having no rider on his back, by the reins being laid on his neck, and the button lowered, so far that the horse's head is brought in by the reins, and fixed to the true posture or carriage.

BUTTONS, in reference to the *Rigging* of a ship, denote small pieces of thick leather under the heads of nails that are driven through ropes.

BUTTON and *Loop*, a short piece of rope, having at one end a walnut knot, crowned, and at the other end an eye. It is used as a becket to confine ropes in.

BUTTON'S Bay, in *Geography*, lies on the west side of Hudson's bay, north of, and near to Churchill river. It is so called from sir Thomas Button, who, attempting to discover a north-west passage, lost his ship, and came home in a sloop built in the country.

BUTTON'S Isles, are five small islands at the south end of Hudson's straits near the north coast of Labrador, and near the entrance of cape Chidley. N. lat. $60^{\circ} 18'$ to $60^{\circ} 40'$. W. long. $65^{\circ} 10'$.

BUTTON Island, called also *Bern island*, an island of the Indian ocean, north of Java, and near Banca and Billiton. S. lat. $5^{\circ} 49'$. E. long. $105^{\circ} 48' 30''$. This island, as well as the *Cap* in the same longitude and S. lat. $50^{\circ} 58' 30''$, are steep and rugged, and difficult of access. At a little distance they appear like the remains of old castles, mouldering into ruin, with tall trees growing upon the tops of them; but, at a nearer view, they exhibit traces of a volcanic origin. In the *Cap* are two caverns, running horizontally into the side of a rock, and containing a number of the birds' nests, so much prized by Chinese epicures. See *BIRDS' Nests*.

BUTTON stone, in *Natural History*, a kind of figured stone so denominated from its resembling the button of a garment.

Dr. Hook gives the figure of three sorts of button-stones, which seem to have been nothing else but the filling up of three several sorts of shells. They are all of them very hard flints, and have this in common, that they consist of two bodies, which seem to have been the filling up of two holes or vents in the shell. *Phil. Works*, p. 284. Dr. Plott

describes a new species of button-stone, finely striated from the top, after the manner of some hair buttons, on which account it may be denominated *porpites*, unless we should rather take it for a new species of *echinites*. *Hist. Oxf.* chap. 5. § 178.

This name is also given to a peculiar species of slate found in the marquisate of Bareith, in a mountain called Fichtelberg; which is extremely different from the common sorts of slate, in that it runs with great ease into glass in five or six hours time, without the addition of any salt, or other foreign substance, to promote its vitrification, as other stones require.

It contains in itself all the principles of glass, and really has mixed in its substance the things necessary to be added to promote the fusion of other stony bodies.

The Swedes and Germans make buttons of the glass produced from it, which is very black and shining, and it has hence its name button-stone. They make several other things also of this glass, as the handles of knives, and the like, and send a large quantity of it unwrought in round cakes, as it cools from the fusion, into Holland.

BUTTON-tree, or *Button-wood*, in *Botany*. See *CEPHALANTHUS* and *CONOCARPUS*. In North America the *Platanus occidentalis* is also called button-wood.

BUTTON-sweed. See *SPERMACEAE*.

BUTTONNESS, in *Geography*, a cape of Scotland, on the south-east extremity of the county of Angus, in the German ocean, at the north-west of the entrance into the frith of Tay; 9 miles E. of Dundee. N. lat. $56^{\circ} 26'$. W. long. $1^{\circ} 33'$.

BUTTRESS, a *butment*, or mass of stone, or brick, serving to prop or support the sides of a building, wall, or the like, on the outside; where it is either very high, or has any considerable load to sustain on the other side, as a bank of earth, &c. See *ARCH*, and *ARC-BOUTANT*.

The theory and rules of *buttresses*, or props for easing walls, is ranked among the desiderata of architecture. They are usually placed leaning against the edifice they are to sustain. We find them used against the angles of steeples, churches and other buildings of stone; also along the walls of such buildings as have great and heavy roofs, which would otherwise be subject to thrust the wall out. They are also placed as supports against the feet of arches turned cross great halls, in old palaces, &c. and are much used in fortification.

BUTTRESS, **BUTTRICE**, or **BUTTERIS**, likewise denotes a tool, made of steel and fitted to a wooden handle, used by farriers, to pierce the sole of a horse's foot, which is overgrown; to pare the hoof; to fit the shoe; and to cut off the skirts of the sole that overcast the shoe.

BUTTS, **WILLIAM**, in *Biography*, born towards the end of the 15th century, was educated at Gonville college in Cambridge, where he appears to have taken his degree of doctor in medicine. Being distinguished for his superior abilities, he was appointed physician to king Henry VIII.; and though he was not one of the founders of the College of Physicians, as Granger calls him, he was one of their early members, being admitted in the year 1529; and was in such repute for his learning, that Dr. Caius dedicated his works to him. It is also probable, that he assisted the surgeons in procuring their charter, as his portrait is among those of the members who were present when it was delivered to the company. Goodall's College of Physicians. - Aikin's Biog. Mem. of Medicine.

BUTTSTADT, or **BUTTSTETT**, in *Geography*, a town of Germany, in the circle of Upper Saxony, and principality of

of Weimar, situated on the Löss, and carrying on a great trade in cattle with Poland and Hungary; 9 miles N. of Weimar.

BUTUA, **BUDOA**, in *Ancient Geography*, a town of Illyria, named *Buthoe* by Steph. Byz. and *Butua* by Ptolemy. See **BUDOA**.

BUTUNTUM, or **BYTONTUM**, a town of Italy, in that part of Apulia called Peucetia, south-east of Bavinum, on the Trajan way.

BUTUS, in *Entomology*, a species of **SPHINX** (*Zygana*, Fabr.), the wings of which are greenish and shining, at the tips darker; abdomen fulvous. Fabricius. Inhabits South America.

BUTUS, *Sphinx butus* of Cramer, is the species described by Fabricius under the name of **GNOMA**, which see.

BUTUS, or **BUTIS**, in *Ancient Geography*, a town of Lower Egypt, seated on the west of that branch of the Nile anciently called *Hermopoliticus*, and which running near to Sebennytus, now called Samanoud, discharges itself into the lake of Bourlos or Berelos. It was famous for an oracle of Latona, called Butis, and in some respects the same with Ius, which was consulted by persons that repaired to it from all parts of Egypt. The temple of this divinity was spacious and magnificent; surrounded by a portico fifty feet high, which was supported by marble columns, and the sanctuary was formed out of an enormous mass of granite, 60 feet square and six thick, and weighing 15,000,000 pounds. It was hewn in a quarry in the isle of Philé, near the cataracts, and conveyed on rafts, through a distance of 200 leagues, to the place where it was deposited. Butus was also decorated with two temples in honour of Apollo and Diana. Herodotus, l. xi. c. 155. Strabo, l. 17. vol. ii. p. 802.

BUTZBACH, in *Geography*, a town of Germany, in the circle of the Upper Rhine, and principality of Upper Hesse, situate in a marshy, but fertile, plain; 7 miles S.S.W. of Gießen.

BUTZOW, a town of Germany, in the circle of Lower Saxony, and principality of Schwerin; 24 miles N.E. of Schwerin.

BUUDER, or **BUDENSTADE**, a trading place and fishing port of Iceland.

BUVEFTE, or **BUVETTE**, in the *French Law*, an established place in every court, where the lawyers and counsellors may retire, warm themselves, and take a glass of wine by way of refreshment; at the king's charge.

There is one for each court of parliament, but these are only for persons belonging to that body; there are others in the *palais* whither other persons also resort.

BUXALOONS, in *Geography*, an Indian town of America, on the north-west bank of Alleghany river; nearly 25 miles from Fort Franklin, at its mouth.

BUXBAUM, JOHN CHRISTIAN, in *Biography*, applied himself solely to the study of botany, in which he acquired considerable celebrity. His first work, "Enumeratio Plantarum in agro Halensi, locisque vicinis nascentium," was published in 1721 at Halle in Saxony, near which place he appears to have been born. Haller commends this catalogue, which contains many of the minutest plants, mosses, and fungi, some of which were then first noticed. This procured him so much credit, that he was sent for to Russia and made member of the academy at Petersburg. He then went to Constantinople, and visited several of the islands in the Archipelago, attentively examining all the varieties of plants, found in those rich countries. As the fruit of these travels, he published, in 1728, 4to. "Centuria prima Plantarum circa Byzantium et in Oriente observatarum. Petrop." in which he briefly described some new and many very rare plants.

He died the following year, but had previously prepared a second, third, and fourth centuries, which were published in 1729, 1733, and 1740. A fifth century, with an appendix, was added. Besides these, he was author of several communications on the subject of botany, which were published in the first, second, third, and fourth volumes of the Commentaries of the Imperial Academy at Petersburg. Hall. Bib. Bot.

BUXBAUMIA, in *Botany* (from Buxbaum, a German botanist, who travelled in Russia, and published descriptions of new plants.) Linn. gen. 562. Schreb. 1659. Jussieu 12. La Marck Enc. Class and order, *Cryptogamia musci*. Nat. ord. *Musci* Linn. and Juss.

Ger. Ch. *Caps.* ovate, oblique, gibbous, on one side. *Peristome* double; outer one of sixteen teeth truncate; inner membranaceous, plaited.

Species, 1. *B. aphylla*. "Capsule on a fruit stalk; leaves none." Linn. Amæn. 5. tab. 1. Dill. Musc. tab. 68. 5. Flor. Dan. 44. La Marck. Ill. Pl. 872. *Fruit stalk* swelling at the base into a black, somewhat villous, small bulb; half an inch long, dark, red, glossy, erect. *Capsule* of an uniform pale colour, ovate, gibbous, about the size of a common pea. The only moss known without leaves. Turner. Spic. Musc. Hib. This curious plant was first discovered by Buxbaum on the banks of the Volga, near Astracan; afterwards by Monti in Italy, and Celsius sen. in Sweden, both of whom sent specimens to Dillenius; and by Haller in Switzerland, and by others in different parts of Europe. It has lately been found near the lake of Killarney in Ireland. 2. *B. foliosa* (*B. fessilis* Semid. Hed. Phascum Flor. dan. t. 249. upper fig. Phascum montanum Hud. Maximum Light. Sphagnum acaulum maximum Dill. tab. 32. f. 13.) "Stem none; capsule nearly sessile, leaves linear-lanceolate." Dr. Smith. La Marck Illust. Pl. 872. f. 2. Eng. Bot. 329. *Stem* very short, or rather none. *Leaves* numerous, lanceolate, flat, keeled, acuminate; inner ones with a bristly tooth on each side towards the summit. *Capsule* solitary, nearly sessile, the size of a grain of wheat, ovate oblique, smooth green; calyptra awl-shaped, red; lid conic, striated; exterior fringe obsolete; interior membranaceous, white, plaited, closed. Dr. Smith. A native of England, and other parts of Europe.

BUXE FIÖRD, in *Geography*, a bay on the west coast of West Greenland. N. lat. 64° 15'. W. long. 49° 40'.

BUXENTUM, now *Poli-castro*, in *Ancient Geography*, a town of Italy, in the eastern part of Lucania, called by the Greeks *Pyxus*. It was founded by Micethus, a prince of Messina in Sicily, and afterwards deserted. It was colonized by the Romans. Strabo, Livy. According to Strabo (l. 6. vol. i. p. 253.) *Pyxus* was the name of a promontory, port, and river.

BUXI, in *Entomology*, a species of **TIPULA** (*Tipula flavo* of Schrank). The colour is yellow; head and thorax black; wings brown and incumbent. A native of Europe, Gmel. &c.

BUXI, a species of **CHERMES**, having setaceous antennæ, and yellowish brown wings, *Psylla Viridis*, &c. Geoffroy.

BUXTEHUDE, DIETRICH, in *Biography*, son of John Buxtehude, organist at St. Olaf at Elsinour, was a disciple of John Thiel, and organist of the church of St. Mary in Lubeck. Mattheson, in his *Uollkommene Capellmeister*, p. 130. celebrates him as a famous organist and composer, and speaks of six suites of lessons for the harpsichord of his composition, in which the motion of the planets is represented or delineated. With this is printed a choral composition to German words, being a lamentation on the death of his father. In 1696 he published two sets of *Sonatas a violino, viola*.

viola da gamla, e cembalo. Mattheson, in his *Life of Handel*, tells us, that "he and Handel travelled together to Lubec, upon there being a vacancy in an organist's place, and in the *waggon*, composed several double fugues, *da monte not da penna.*" Buxtehude was then at Lubec, and an admirable player on the organ; however, Handel's powers on that instrument astonished even those who were accustomed to hear that great performer.

BUXTEHUDE, in *Geography*, a town of Germany, in the circle of Lower Saxony, and duchy of Bremen, seated on the Este, which fills the ditches. The fortifications have been razed: 16 miles W.S.W. of Hamburg.

BUXTON. JEDEDIAH, in *Biography*, a person deserving to be recorded on account of his singular memory and powers of calculation, was the son of a school-master at Elmeton, a small village near Chesterfield, in Derbyshire, and born, probably, in 1704 or 1705. His education, notwithstanding the profession of his father, was so much neglected that he was never taught to read or write. His whole attention seems to have been absorbed by the different denominations and relative proportions of numbers to such a degree that he took hardly any notice of external objects, except with respect to their numbers. When any interval of time was mentioned to him, he immediately gave the amount of it in minutes; and he assigned also the number of hair-breaths in any distance that chanced to be spoken of, although no question was proposed to him. To such a degree was he capable of abstraction and of fixing his attention, that no noise discomposed him, and that no incidental question or occurrence could divert his thoughts, or occasion any confusion, so as to prevent his renewing and pursuing his calculation, which he performed by mere memory, without the aid of pen or paper. It would be endless to recite particular instances of his powers of computation, and of the methods he used for solving the most operose and intricate questions relating to numbers. By merely striding over a piece of land he could tell the contents of it as accurately as if he had measured it by the chain. His constant application to figures prevented his making the smallest acquisition in any other branch of knowledge; nor did his ideas seem to be extended beyond matters of mere calculation. In 1754 he visited London, and was introduced to the Royal Society, before which he gave several satisfactory evidences of his peculiar talents for computation. In this visit his curiosity was excited by a strong desire to see the king and royal family, but in this he was disappointed. At the play-house he seemed to be altogether uninterested by the splendour of the scenery or the action of the performers; and during the dances his attention was engaged in reckoning the number of steps. After a fine piece of music, he declared that the innumerable sounds produced by the instruments perplexed him beyond measure, but he counted the words uttered by Mr. Garrick in the whole course of the entertainment, and affirmed that in this he had perfectly succeeded. He was married and had several children. He subsisted by labour, and remained contented in obscurity; and prolonged his life to the age of about 70 years. Biog. Dict.

BUXTON, in *Geography*, a large handsome village of Derbyshire, in England, is celebrated for its mineral waters, the fame of which occasions it to be much frequented by valetudinarians, and many other persons, who resort hither for health or pleasure. It is situated in two parishes, but the principal part forms a chapelry to Bakewell. Buxton lies in an extensive hollow, with bleak elevated tracts of moor land completely surrounding it. Several plantations have, however, been made of late years on the adjacent

hills, and some land cultivated. The late Dr. Gale, as appears from a manuscript of his quoted in Gough's Additions to the Britannia, placed the Aquis of Ravennas at Buxton; though he had previously conjectured it to be at Aidon, in Northumberland. That its warm springs were known to the Romans, is evident from various concurring circumstances. Several ancient roads concentrate at this spot, particularly one called the Bath-way, or Bathomgate, which commences at Brough, a Roman station, near Hope, and was traced by the late Mr. Pegge; and another, that came from Manchester, and is known in different parts of its course by the appellations of High-street, Street-fields, Street-lane, Old-gate, &c. Specimens of Roman workmanship have also been discovered here at different times. Bishop Gibson mentions a Roman wall "cemented with red Roman plaster, close by St. Anne's well, where are the ruins of the ancient bath." This wall was taken down in the year 1709, when Sir Thomas Delves of Cheshire, in memory of a cure he had received from the waters, erected a stone alcove over the well. Some capacious leaden cisterns, and different articles, apparently Roman, were found in digging the foundation. The shape and dimensions of the ancient bath, which was about six yards from the present bath-room, were clearly discovered when the building of the Crescent commenced in the year 1781. Its form appeared to be an oblong square; it measured from east to west 30 feet, and 15 in a contrary direction. The spring was situated at the west end; and at the east might be perceived a flood-gate, by which the water was let out. The wall was built with limestone, covered on the outside with a strong cement; the floor consisted of lime mixed with coarse sand, saturated with blood. Near one end a cavity was formed in the floor resembling the figure of a boat, extending circularly in length almost from one side wall to the other; its breadth was about two yards; and its depth below the level of the floor, at the deepest part of the curvature, about eighteen inches; the water was conveyed into this room by a leaden pipe. Though the very early use of the Buxton waters is apparent from the above circumstances, we have no record of their being in use in the middle ages, or of their having obtained any high reputation till the sixteenth century, when Dr. Jones gave them celebrity by a treatise on their beneficial qualities. About this time the earl of Shrewsbury erected a house for the reception of visitants, on the site of the building now called *The Hall*, part of which belonged to the old fabric. This hall becoming insufficient to accommodate the increasing number of visitors, most part of it was taken down in 1670, when a new enlarged edifice was erected on the spot by William, third earl of Devonshire. This building, which has been frequently improved, is still the principal hotel for the reception of company. Within it are the baths, adjoining, but in distinct apartments, five in number; the gentlemen's, the ladies', the poor's, and two private. The springs have been calculated to throw up about sixty gallons of water every minute. The time requisite to fill the baths is two hours and fifty minutes. The water is usually drank at St. Anne's well, a modern, but elegant little building in the antique style, where it is conveyed into a white marble basin, from the original spring, through a narrow grit-stone channel. This well is regarded as one of the seven wonders of the Peak; chiefly from the circumstance that both hot and cold spring water may be obtained within twelve inches of each other, from a double pump, situated on the opposite side of the building to that which contains the basin. The principal ornament of Buxton is its *Crescent*, a magnificent range of building, which was erected

erected by the duke of Devonshire within the last twenty years, from the design and under the superintendence of Mr. Carr, the architect. It consists of three stories; the lowest rustic, forming a beautiful colonnade, which extends the whole length of front, and is seven feet wide within the pillars and eleven feet high. The divisions between the windows above, are formed by Ionic pilasters, which extend to an elegant balustrade that skirts the whole front, the span of which is 257 feet. The Crescent is built with grit-stone obtained near the spot, and faced with fine free-stone, procured from a quarry about two miles distant. Near the back of the Crescent are the *stables*, an extensive pile, which was also constructed at the charge of his grace of Devonshire, who is said to have expended 120,000. in completing the whole. The poor who resort to Buxton, on bringing a certificate from the minister of their parish, and medical attendant, vouching for their being proper objects of charity, are admitted to partake of the benefit of a fund formed by collecting one shilling from every visitor who stays here more than a day. This is appropriated to the purchase of necessary medicines, and supplying fourteen indigent persons with six shillings weekly for one month: they are also permitted to bathe gratis. Buxton season generally commences in June, and concludes in October. In these months assemblies are held three days in the week, and a small theatre is opened on the other three days.

Buxton contains about 100 houses, chiefly of stone; the inhabitants, generally resident, are about 400. The visitors in the bathing season are uncertain, but are estimated at 700 annually, who are the principal support of the inhabitants. Several shops for the manufacture and sale of ornaments of fluor spar and alabaster are established in this village. The place where the crystals, denominated Buxton diamonds, are found, is about two miles south-west from the village: it is a waste uneven piece of land, several acres in extent, and called the *Diamond Hill*.

Between one and two miles westward of Buxton, in the vast mass of lime-stone, which ranges in this part of the county, is a fissure, or cavern, called POOLE'S HOLE, from an ancient tradition, that an outlaw, named Poole, once made it his residence. This being considered a great natural curiosity, we shall be rather particular in our description of it. Nothing grand nor picturesque marks the entrance into this cavity, neither does its interior present any of the magnificence which so eminently distinguishes the Peak cavern at Castleton. It opens with a crevice so low and contracted that the curious visitant is obliged to proceed with caution in a stooping posture nearly twenty-five yards, when the passage widens into a spacious vacuity, from whose roof depends a quantity of stalactite, produced by the droppings of water impregnated with calcareous matter. Part of this substance adheres to the roof, and gradually forms those pendant spiral masses called stalactites, or (locally) *water-icicles*; another portion drops with the water to the ground, and attaching itself to the floor is there deposited, and becomes the *stalagmite*, a lumpy mass of the same matter. One of the former, of immense size, called the *Plitch of Bacon*, occurs about the middle of the cavern, which here becomes very narrow; but, after a short space, spreads again to a greater width, and continues large and lofty, till we reach another surprisingly large mass of stalactite, to which the name of *Mary Queen of Scots' Pillar* is attached, from the tradition of that queen having visited this cavern and advanced thus far into its recesses. As this pillar cannot be passed without some difficulty, few people venture beyond it; and, indeed, the remaining part of the cavern offers few objects to repay the fatigue of exploring

it. The money given by visitants is divided among ten aged women who reside here, and act as guides by the permission of the duke of Devonshire, to whom the ground belongs. The extent of the cavern does not exceed three hundred yards.

The stone in this neighbourhood, though of several kinds, is mostly applied to the making of lime, many hundred tons of which are here burnt annually. The workmen and their families, like the Troglodytes of old, reside in *caves*; for any other name would be ill adapted to describe their habitations, which are scooped out of the hillocks or small mounds, formed with the refuse of the lime-kilns. The crust of these heaps of rubbish having been consolidated by time and the weather, is now impervious to the rain; and being left of sufficient thickness, forms a substantial roof. Even habitation contains two or three rooms; but few have any other light than is admitted through the chimney and door-way.

About three miles from Buxton and two from Chapel-in-the-Prith, in a pasture field, is a natural curiosity, called "The Marvel Stones," of which Mr. Bray gives a particular description in his Tour through Derbyshire, and to which probably Dr. Stukely alluded, when he mentions having heard of what appeared to him a druidical work near Hope. Near the northern extremity of an eminence called *Combe-Mess*, three miles from Buxton, are some ancient military works, consisting of two deep trenches, which run parallel to each other to an extent of about two hundred yards.

Buxton is situated 163 miles N.W. from London. Warner's Northern Tour, vol. i. Pilkington's View of the present State of Derbyshire, 2 vols. 8vo. 1789.

Buxton Water. The native warm springs that have given so much celebrity to this town are very numerous, and afford a great abundance of water for every purpose both of bathing and domestic supply.

Buxton water is perfectly clear and colourless, entirely void of smell and taste, nor has it any quality, besides its temperature, which distinguishes it from the purest of the numerous springs with which all mountainous countries usually abound. The heat is very uniformly 82° in all seasons and circumstances, taken in the stone reservoir which first receives it, and hence, though to the touch this water is positively cold, or rather cool, it is entitled to be considered as a warm spring, being uniformly of a much higher temperature than common springs. In St. Anne's well, the original and principal reservoir, a quantity of thin steam is constantly given out from the water which hovers over its surface and contributes to keep up the heat during the bathing.

Along with the water, which rises up through the crevices of the floor of the well, a considerable number of air-bubbles are constantly seen to rise at the same time, and passing through the water break at its surface. These may readily be collected by immersing a bottle and funnel full of water in an inverted position and intercepting them in their passage upwards. Dr. Pearson was the first chemist who ascertained the nature of this gas, and he found it to consist almost entirely of azotic gas mixed with a small portion of atmospherical air, and not carbonic acid gas as had been conjectured by preceding observers. A small portion of the same gas also is found in combination with the water, which is readily separable by boiling. The water then yields about a sixty-fourth part of its bulk of this air.

The analysis of the water exhibits a few saline substances, but in very minute proportion and perfectly insignificant; for, in fact, it is by its purity and warmth that this natural spring is distinguished. By Dr. Pearson's experiments a gallon

gallon of the water yielded on evaporation only 15 grains of residuum, of which $1\frac{3}{4}$ grain was estimated to be muriat of soda, $2\frac{1}{2}$ to be sulphat of lime, and $10\frac{1}{2}$ to be carbonat of lime held in solution by a slight excess of carbonic acid.

The water of Buxton is employed largely both for external and internal use. Its uniformity of temperature and the great abundance of the supply give to Buxton uncommon advantages as a tepid bath. A slight shock of cold is felt on the first immersion, which is immediately succeeded by a very agreeable glow over the whole body; and it is to be observed that the shock is so slight, owing to the small difference between the heat of the water and that of the body, as to be borne without inconvenience by very delicate and irritable habits, in whom the rougher operation of the cold bath or immersion in the sea often occasions permanent head-ach, sickness, languor, catarrh, and other inconveniences.

There is not, however, the least reason to suppose any thing peculiar, or any occult salutary qualities in the Buxton bath, more than in any other pure water heated to 82° and confined in a stone reservoir so as to retain the same temperature during the whole time of bathing. Therefore all the regulations and medical directions for its use may be entirely referred to the article BATHING.

Buxton water is also taken internally by invalids, and many important virtues have been attributed to it, thus used. That it contains nothing deleterious may be safely pronounced, both from the evidence of chemical analysis, and (what is more to the point) from the well-known fact that most of the water used at the principal hotels for making tea and other common purposes is derived from the same source. Therefore, whatever stress may be laid on its supposed inflammatory tendency in certain cases, it cannot be doubted but that to the rest of the world it is a pure, salutary, innocent beverage.

Like other warm pure waters it is highly advantageous in many painful complaints of the kidneys and bladder and urinary passages; like them it powerfully relieves many of the most distressing dyspeptic symptoms, and like them it shews no decided action on the bowels, its use being sometimes attended with diarrhoea, sometimes with the opposite state, which last generally demands the assistance of active purgatives.

The cases for which Buxton is resorted to are mostly chronic, such as gout, rheumatism, derangement of the biliary and digestive organs, disease of the urinary passages, and the like, and it is no small additional recommendation to the invalid to be abundantly furnished with every thing that can contribute to convenience, comfort, and amusement.

BUXTON, in *Geography*, a township of America, in the county of York and district of Maine, seated on Saco river; 8 miles north-westerly from Pepperel borough, at the mouth of the river, and 118 miles N.E. from Boston; containing 1938 inhabitants.

BUXTORF, JOHN, in *Biography*, an eminent Hebrew scholar, was born at Camen in Westphalia, in 1564. As to his religious persuasion, he was a Calvinist; and having settled at Basil, he was appointed by the magistrates professor of the Hebrew and Chaldee languages, which he taught with great reputation till his death in 1629. In order to perfect himself in these languages, he obtained the assistance of many learned Jews, and thus acquired a predilection in favour of rabbinical learning. His works, in the department of literature to which he was devoted, were numerous, learned, and useful. These are as follow; viz. "Lexicon Chaldaicum, Thalmudicum, et Rabbinicum," Basil. for

1639; a small "Hebrew and Chaldaic Dictionary," composed of words from the Bible only, 12mo.; "Thesaurus Linguae Hebraicae," 2 vols. 8vo.; a small "Hebrew Grammar," much esteemed; the Leyden edition of which was revised by Leusden; a large "Hebrew Bible, with the Rabbinical and Chaldaic Paraphrases, the Massora, Tiberias, &c." 4 vols. fol. Basil. 1618 and 1619; "Synagoge Judaica," a collection of Jewish modes and ceremonies, intended to expose the Jews, but abounding too much with puerilities intermixed with a mass of learning; "Institutio Epistolae Hebraicae," a collection of Hebrew letters; "Concordantiae Hebraicae," 8vo. 1632; "Bibliotheca Rabbinica," with a treatise "De Abbreviaturis Hebraeorum." Nouv. Dict. Hist.

BUXTORF, JOHN, son of the preceding, was born at Basil in 1599, and directing his attention to studies similar to those of his father, he became professor of the oriental languages in his native city. Besides translations of some of the rabbinical writings, such as the Moreh Nevochim of Maimonides, and the book called Colphi, he published "A Chaldaic and Syriac Lexicon," 4to. 1621; and having adopted his father's sentiments with regard to the Hebrew vowel points, he defended them against Ludovicus Capellus in a book entitled, "Tractatus de Punctorum Vocalium et Accentuum in Libris Veteris Testamenti Hebraicis Origine, Antiquitate et Autoritate," Basil, 1648; and afterwards in a more considerable work, entitled, "Anti-critica, seu Vindiciae Veritatis Hebraicae adversus Ludovici Capelli Criticam, quam vocat Sacram," Basil, 1653. He published likewise "Dissertations on the Old and New Testament;" "Exercitationes Philologico-criticae;" "Florilegium Hebraicum;" and other works. He died at Basil in 1664.

There are two other Buxtorfs, John-James and John, successively professors in the same chair at Basil, and both writers on subjects of literature. In general, the school of the Buxtorfs has been reproached, notwithstanding its acknowledged learning, with too great predilection for the rabbinical doctrines; and their decisions with regard to the authority of the Hebrew points have been gradually losing ground, and have now comparatively few advocates, after having been very prevalent through Germany and other Protestant countries. Nouv. Dict. Hist.

BUXUS, in *Botany*, box (a corruption of $\pi\upsilon\chi\omicron\varsigma$, the Greek name in Theophrastus for the same plant, so called $\delta\iota\alpha\ \tau\omicron\ \pi\iota\kappa\upsilon\upsilon\upsilon\ \tau\eta\ \xi\upsilon\lambda\omicron\varsigma$, on account of the density of its wood). Linn. gen. 1053. Schreb. 1420. Juss. 388. Vent. 3. 491. Gært. 630. Clus. and order, *monocia tetrandria*. Nat. ord. *Tricocca*, Linn. *Euphorbia*, Juss. and Vent.

* Male flowers prominent from the buds. Gen. Ch. *Cal.* perianth three-leaved; leaves roundish, obtuse, concave, spreading. *Cor.* petals two, roundish, concave, similar to those of the calyx but larger. *Stam.* filaments four, awl-shaped, erect, expanding, rather longer than the calyx; anthers erect, twin. *Pistl.* rudiment of a germ without style or stigma.

* Female flowers from the same bud generally single, surrounded by eight or ten males. *Cal.* perianth four-leaved, similar to those of the male. *Cor.* petals three, similar to those of the male. *Pistl.* germ roundish, obtusely three-cornered; styles three, short, permanent; stigmas obtuse, hispid. Linn. *Peric.* capsule globular, very smooth, glossy, coriaceous, three-grained, before it opens three-beaked, three valved; valves two-horned; grains of a paper-like substance, two-valved, opening elastically. *Seeds* two in each cell, ovate, attenuated upwards, triangularly compressed, obliquely truncate at the summit, somewhat spongy, smooth. Gært.

Eff. Ch. Male. *Cal.* three-leaved; petals two, rudiment of

of a germ. Female. *Cal.* four-leaved. *Pet.* three; styles three; capsule three-beaked, three-celled; seeds two in each cell.

Species, 1. *B. balearica*, La Marck. "A tree; leaves oblong-ovate, an inch and half long: stamens very long." Branches straight, four-cornered. Leaves opposite, on short decurrent petioles, entire, smooth, shining, coriaceous. Flowers in large bunches; anthers linear. A native of Majorca, &c. Cultivated in the royal garden at Paris, but is tender, and does not endure severe frosts. 2. *B. arborescens* (Sempervirens, Linn.). "Leaves ovate-oblong, attenuated towards the summit; anthers ovate; stem arborescent." La Marck. A shrubby tree, from twelve to sixteen feet high. Stem twined, branched. Leaves opposite, permanent, very entire, emarginate, shining, often reddish in winter. Flowers in small or moderate bunches; filaments not more than the sixth of an inch long. There is a variety with narrow leaves which, as well as the next species, is said by Miller to be specifically distinct. Its wood is of a close grain, very hard and heavy, and on that account is much used by the turner, engraver, carver, mathematical instrument maker, comb, and pipe, or flute maker, and a variety of other artisans. A native of moist parts of Europe, from Britain southward. It is found abundantly in the south of France, Savoy, and Italy, and in the temperate parts of Asia and America. In England it has given name to Box-hill in Surrey, Boxwell in Gloucestershire, and Boxley in Kent, all which are mentioned by Ray as producing it; but on account of the value of the wood, the quantity is now much diminished. Mr. Woodward has more recently observed it on the chalk hills near Dunstable. 3. *B. suffruticosa*, dwarf box. "Leaves small, obovate; stem a low under shrub." La Marck agrees with Miller in treating this as a distinct species, though nearly related to the preceding. When suffered to grow freely, it never rises to a greater height than about three feet, and grows in thick, much branched tufts. Its leaves also are small, and rather ovate or roundish oval, with a white line on their back, more strongly marked than in the preceding species. It grows wild in many parts of France, by the road sides, about villages, and in stony waste places. It is singular that it does not flower when cultivated in England, and was never seen in that state by Mr. Miller, though encouraged to grow many years in the greatest luxuriance. La Marck does not mention this circumstance, nor, indeed can it be supposed to be thus barren in France, where it is said to be truly indigenous. 4. *B. myrtifolia*, myrtle-leaved box. "Leaves small, oblong, rather narrow; stem a low under shrub." La Marck. It resembles the preceding in its size, but differs both in habit and foliage, not forming a thick tuft or bush, but having an elongated stem like a tree, with open branches; its leaves are rather narrow, with scarcely any appearance of a white line on their surface. A small branch in flower, communicated to La Marck, had no female flowers. Native place not known. Encyc. Methodique. Box was formerly employed as a medicine in various diseases, but in Ray's time was grown into disuse on account of its offensive smell; and before his time even its medical virtues began to be called in question. Dr. Withering, however, has recently recommended it; observing, that an empyreumatic oil distilled from its shavings is often used as a topical application for the piles; that it frequently relieves the tooth-ach, and has been given internally in epilepsies, and that the powdered leaves destroy worms.

Propagation and Culture. The arborescent box was much admired by our ancestors on account of its being easily clipped into the shape of animals, and other fantastic appearances. It was in equal request with the Romans for the same purpose. The younger Pliny, in particular, gives a

florid description of the pleasure grounds at one of his country seats, in which, among other curious devices, the letters of his own name, and of other words, were orderly expressed in rows of thorn box. These extravagancies have now given way to a juster taste in ornamental gardening; but box is still cultivated in our nurseries as a beautiful evergreen; and, left to its natural growth, is a pleasing addition to the shrubbery. It has the additional recommendation of thriving under the thickest shade, and is able to withstand the severest weather of our climate. The dwarf box is used to divide the beds from the walks of flower-gardens; and though it has been condemned as affording shelter for noxious insects, the same objection will lie, in some degree, against every other kind of vegetable bordering; but supposing it to be peculiarly liable to this inconvenience, the evil is considerably counterbalanced by its closeness and durability. It may be propagated by cuttings, layers, and seed. The cuttings should be planted, about the time of the autumnal rains, at the distance of four inches from each other; they should be a foot long, and rather more than half of the length should be covered by the soil. A slip of the last year's growth, stripped from the wood, is an excellent set. The cuttings or slips may stand three years, and should then be transplanted into the nursery in moist weather, any time between August and April. The layers should be earthed between Michaelmas and March. This, as professor Martyn observes, is one of its natural methods of propagation, for when it breaks down by its own weight, or by a fall of snow, it sends out fibres soon after it has come into contact with the ground. The seed should be sown, as soon as it is ripe, on a light loam or sand in a shady border, and regularly watered. Some will come up the next spring, but some will lie in the ground till the next season. They should then have the same treatment as the cuttings. This is said to be the only method in which large trees can be raised. The best time for removing the tree is October. Martyn's Miller.

BUY, in *Geography*, a town of France, in the department of the Saône and Loire, and chief place of a canton in the district of Chalons-sur-Saône, and 8 miles S.W. of it. The place contains 1602, and the canton 14,085, inhabitants; the territory includes 277½ kilometres and 31 communes.

BUY DE MORNAS, CLAUDE, in *Biography*, was born at Lyons and died at Paris in 1783. He is principally known as the author of an instructive and useful Atlas of Geography and History, Paris, 1762 and 1770, 4 vols. 4to. He also published a Cosmography, on the same plan, in 1770.

BUY, in *Geography*. See BUIS.

BUYING, the act of making a purchase, or of acquiring the property of a thing for a certain price.

Buying stands opposed to selling, and differs from borrowing or hiring, as in the former the property of the thing is alienated for perpetuity, which in the latter is not.

By the civil law, persons are allowed to buy hope, *specu pretio emere*, that is, to purchase the event or expectation of any thing: e. gr. the fish or birds a person shall catch, or the money he shall win in gaming.

There are divers species of buying in use among traders; as buying on one's own account, opposed to buying on commission; buying for ready money, which is when the purchaser pays in actual specie on the spot; buying on credit, or for a time certain, is when the payment is not to be presently made, but, in lieu thereof, an obligation given by the buyer for payment at a time future; buying on delivery, is when the goods purchased are only to be delivered at a certain future time.

BUYING the refusal, is giving money for the right or liberty of purchasing a thing at a fixed price, in a certain time to come; chiefly used in dealing for shares in stock. This is sometimes also called by a cant name, *buying the bear*.

BUYING of titles. See MAINTENANCE.

BUYING the Small-pox. See SMALL-POX, *Inoculation of*.

BUYTRAGO, in *Geography*, a small town of Spain, in New Castile, on the confines of Old Castile, in front of which the mountain-stream Lozoya winds along a deep rocky bed: while, on the other side, the town, with its towers and steeples, leans romantically against a steep ascent in a recess among the mountains, that separates the two Castiles. These mountains are rich in minerals; and the environs of this city, which is episcopal, are famous for the wood which they furnish. It is 36 miles N. of Madrid, and 18 E. of Se-govia.

BUYTRON, a town of Spain, in Andalusia; 27 miles N. W. of Seville.

BUZANÇAIS, a town of France, in the department of the Indre, and chief place of a canton in the district of Chateauroux, 11 miles W.N.W. of it. N. lat. $46^{\circ} 38'$. E. long. $1^{\circ} 29'$. The town contains 3199, and the canton 11,150, inhabitants; the territory includes $422\frac{1}{2}$ kilometres and 13 communes.

BUZANCY, a town of France, in the department of Ardennes, and chief place of a canton in the district of Vouziers, 2 leagues N. of Grandpré. The town contains 774, and the canton 8275, inhabitants; the territory includes 265 kilometres and 24 communes.

BUZARA, in *Ancient Geography*, a mountain in the eastern part of the interior of Africa. Ptolemy.

BUZARAS, a town of Africa, in Mauritania Cæsariensis.

BUZAW. See BURZO.

BUZERI, a people of Asia, in Cappadocia, on the west of the Euxine.

BUZES, a people of Africa, in Marmarica.

BUZET, in *Geography*, a small town of France, in the department of the Upper Garonne, $4\frac{1}{2}$ leagues N.E. of Toulouse. N. lat. $43^{\circ} 47'$. E. long. $1^{\circ} 45'$.

BUZIKINA, a town of Siberia, 220 miles E. of Eniseisk.

BUZIM, a town of Siberia, on the Tchulim, 80 miles N.N.E. of Tomsk.

BUZULEITSK. See BUSULUTSK.

BUZWARAH. See BEZOARA.

BUZY, a town of France, in the department of the Meuse, and district of Verdun, 13 miles E. of it.

BUZZARD, in *Ornithology*, the trivial name of several species of the falcon tribe, as, for instance, the common buzzard, *falco buteo*, greater buzzard, *falco gallinarius*, American buzzard, *falco borealis*, honey buzzard, *falco apivorus*, Java buzzard, *falco Javanicus*, &c.

BUZZARD, American, of Latham, *red-tailed falcon* of Arctic Zoology, is the *FALCO borealis*; the cere and legs are pale yellow; the body is brown above and white below, the tail is of a pale rust colour, having a transverse dusky or black narrow bar near the end. It inhabits North America, particularly Carolina. Its size is about that of the common buzzard.

BUZZARD, Honey. See APIVORUS.

BUZZARD, Moor, *falco aruginosus*, the *milvus aruginosus* of Aldrovand and Ray, and the *busard* of Buffon, has the cere greenish, the body brownish-grey, the crown of the head, chin, axillæ, arm-pits, or space below the root of the wings, and legs, yellow. It inhabits Europe, building its nest in marshy places, and subsisting on aquatic birds, fish, and rabbits.

BUZZARD's Bay, in *Geography*, a bay of America, in the state of Massachusetts, lying between $41^{\circ} 25'$ and $41^{\circ} 42'$ N. lat. and between $70^{\circ} 38'$ and $71^{\circ} 10'$ W. long. This and Barnstable bay on the north-east form the peninsula, whose extremity is called cape Cod. It runs into the land about 30 miles N.E. by N. and its mean breadth is about 7 miles.

BUZZARDET, in *Ornithology*, the whitish falcon, *Fulco albidus*.

BYAREM, in *Geography*, a town of Hindoostan, in the country of the Nizam, 89 miles N.E. of Hyderabad, and 60 E. of Warangole.

BYBASSUS, in *Ancient Geography*, a maritime town of Asia Minor, in Caria, probably situated in the country called by Pliny *Bubassus*.

BYBE, a country of Thrace.—Also, a town of Italy, on the confines of Peucetia. Steph. Byz.

BYBERRY, in *Geography*, a township of America, in the county of Philadelphia, and state of Pennsylvania; containing 579 inhabitants.

BYBLIS, in *Ancient Geography*, a mountain of Asia Minor, before the town of Miletus.

BYBLOS, or **BYBLUS**, a maritime town of Phœnicia, situate between Berytus and Botrys, 18 miles S. from Tripoli according to the Itinerary of Antonine. The ancient inhabitants of this town served in all the maritime expeditions of Tyre, and as they excelled in all arts relating to wood, they were employed in building Solomon's temple at Jerusalem, 1 Kings chap. v. At this time they were subject to the Tyrians; but when Phœnicia was reduced under the dominion of the Persians, they had their own kings. According to Arrian (de Exped. Alex.) their ships formed a part of the fleet of Darius; but when Alexander had entered Phœnicia and made himself master of Byblus, they deserted Darius and united their naval force with that of Alexander. Under the successors of Alexander, Byblus sometimes belonged to Egypt and sometimes to Syria. Strabo informs us (l. r6. vol. ii. p. 755.), that Pompey rescued them from the oppressive tyranny of one of their sovereigns by cutting off his head. From him we learn, that it was seated on an eminence at a small distance from the sea, and that it was the royal residence of Cinyras, and that it was the seat of the famous superstition practised in its temples in memory of Adonis. See ADONIS. The river Adonis flowed from the adjacent mountains, and passing by Byblus, discharged itself into the sea about two leagues S. of the town. This river, called Ibrahim and Obrahim Bassa, has the only bridge to be seen, that of Tripoli excepted, from thence to Antioch. It consists of a single arch, 50 feet wide and upwards of 30 high, of a very light architecture, and appears to have been a work of the Arabs. Byblus is now known by the name of Djebail or Gibyle, and is the most considerable town in that district of the pachalic of Tripoli, denominated Kesrouan, and extending from Nahr-el-keib, by Lebanon, as far as Tripoli. It has not, however, above 6000 inhabitants. Its ancient port resembles that of Latakia or Laodicea, but is in a worse state, scarcely any traces of it remaining. Volney's Travels in Egypt and Syria, vol. ii. p. 176.

BYBLOS, a fortified place of Egypt, seated on the Nile. Steph. Byz.

BYCE, **BUGES**, or **SACRA PALUS**, in *Geography*, a lake of Cherfonesus Taurica, in European Sarmatia, to the west of the *Palus Meotis*, from which it is separated by an isthmus. It is mentioned by Ptolemy, Pliny, and Strabo, who assigns to it a circuit of 4000 stadia.

BYDEAS-KIRCHE, a town of Sweden, in West Both-nia, near Umea.

BYEFIELD, a parish of Newbury, in Essex county, and state

State of Massachusetts, North America, having a quarry of limestone, in which is found asbestos, and, in its vicinity, beautifully variegated marble. A flourishing woollen manufactory is also established in this place, together with machinery for cutting nails. Dummer academy is in this parish.

BYGLAND, a lake of Norway, in the diocese of Christianland, and district of Raabygdslagat, formed by the river Otterae, on the west side of Byglefield, and precipitating itself at the waterfall of Fennie, in the parish of Esje.

BYHORS, an island of the East Indies, lying west of Borneo.

BYK, a river of European Turkey, which runs into the Dniester, 6 miles N.W. of Bender.

BY-LAWS, those private ordinances of subordinate communities, by which their affairs are governed and regulated; the rights of the individuals composing them defined; and wrongs relative to their joint concerns, prohibited and punished.

The word is formed from the Saxon *by*, habitation, will, and *laxa*, q. d. *lex villæ*, or *town-law*.—They are also called *birlaw*, *byrlaw*, and *burlaw*, *bilager*, or *bellagines*. Such is the custom in Kent of deciding controversies among neighbours about boundaries, by the seneschals, or bailiffs.

In Scotland, those are called *laws of burlaw*, or *byrlaw*, which are made and determined by neighbours, elected by common consent in burlaw-courts; wherein cognizance is taken of complaints betwixt neighbour and neighbour.—The men thus chosen as judges or arbitrators are called *burlaw-men*, or *byrlaw-men*.

Every body of men united by common interests, and having affairs of common concern, must necessarily have some general rules for the regulation of their conduct with respect to them. Without these nothing like unity or concurrence of action could possibly exist, whatever were the objects of the association. These regulations may be divided into two classes, with regard to the nature of the body to which they relate. Societies which are formed merely by the voluntary association of their members must have their rules or by-laws, as well as those communities which have a known description, and are recognized as forming part of the general constitution of the country: the former, however, receive no aid from the general law of the land in the enforcement of obedience to their rules, and have no ultimate remedy for their infraction but the expulsion of the disobedient member; whereas, the general law will enforce obedience to the by-laws of the latter, when in themselves legal and reasonable, and duly made on a subject within the jurisdiction of the legislating body. Thus, the inhabitants of a parish or town not incorporated may make a by-law for the repair of the church or of a highway, or concerning any thing within their district of which the public weal requires the regulation, and in such case the majority shall bind the whole. 5 Co. 63, a. Hob. 212. 3 Salk. 76. The tenants in a leet, or the tenants of a manor, may make a by-law relative to any thing which concerns the common interest; as, in the latter case, to regulate the exercise of their rights of common. Mo. 75. 579. 584. 1 Rol. Abr. 366. Hob. 212.

From what has been already said, it will naturally be inferred, that this power, which is, under some circumstances, conceded even to such bodies as are not incorporated, must, *a fortiori*, belong to such as are; the very existence of whose rights depends on that of the body itself, and does not arise, as in the former case, from those of the members considered as individuals. This right of legislation belongs originally, unless it be otherwise specified in the charter of incorporation, to the body at large; but they may afterwards delegate it to a select body, who then become the representatives of the whole, and may exercise this authority as extensively as

the community itself might have done. *Rex v. Spencer, Burr. 1837.* In many instances, however, this power of making by-laws has been originally vested in a select body by the same charter by which the corporation itself was created, and in this case it seems that the body at large does not possess it. *Rex v. Head, Burr. 2521.* The king may, if he pleases, at the time of creating a new corporation aggregate, enact a code of by-laws by which it shall be governed, as may also the founder of an eleemosynary corporation, each having a right to stipulate on what terms alone the creature of his bounty shall be endowed with existence; but neither the one nor the other can afterwards, without express reservation of such right or the consent of the body, change or alter such code; nor will such by-laws, as to their general legality or operation, have any other force or effect than they would have had if enacted by the corporation itself. *Skin. 513. Hob. 210.*

With regard to the *substance* of a by-law, it is not only necessary that it should not militate against the express provisions of the law of the realm; but it must also be reasonable and consistent with its general principles, which reasonableness and legality are to be determined by the judges of the superior courts, whenever its validity shall come in question before them. To state the various possible cases in which a by-law would be void, would be therefore to enumerate all those provisions, and the principles and maxims on which they are founded. We shall, however, mention a few of the most general cases in which ordinances of this kind have been holden to be invalid. A by-law cannot direct the forfeiture of goods, 8 Co. 125, a; or the levying of money on any subject, except in those cases in which a burthen is to be borne by a particular society of which he is a member; as in that already mentioned, of assessing parishioners or townsmen, for the repair of a church or highway. *Jeffrey's Case, 5 Co. 66, a.* Nor can it operate *ex post facto*. 1 Keb. 733. Or alter a constitution given by the crown. *Rex v. Breton & an. Burr. 2260.* It must not operate in restraint of trade. *Harrison v. Godman, Burr. 12. Hesketh v. Braddock, Burr. 1847. 1 Roll. Abr. 363;* though it may regulate it and prohibit fraud. 5 Co. 52, b. Nor can it direct a penalty to be sued for in a court in which the jurors must necessarily be interested as members of the corporation. *Burr. 1855.*

As to the power of a by-law to bind those who are not members of the legislating body, there seems to be a distinction between those corporations which are invested with a local jurisdiction, and those which, being established for purposes with which locality has no connection, have only a jurisdiction over their own internal concerns. When the corporate body has a jurisdiction over a certain territory, a by-law made by them for the public good, and whose object is general, without being limited to people of any particular description, binds every body coming within the limits of the jurisdiction, whether strangers or members of the corporate body; for every man, says Holt, who comes within the local jurisdiction of a corporation must take notice of their by-laws at his peril. *Skin. 35.*

This right of making by-laws for their own government, not contrary to the law of the land, was allowed by the law of the twelve tables at Rome. But no trading company is, with us, allowed to make by-laws, which may affect the king's prerogative, or the common profit of the people, under penalty of 40l. unless they be approved by the chancellor, treasurer, and chief justices, or the judges of assize in their circuits; and even though they be so approved, still, if contrary to law, they are void. *Stat. 9 Hen. VII. c. 7. 11 Rep. 54.*

BYLAZORA, in *Ancient Geography*, a town of Europe,

in Pæonia, advantageously situated on the confines of Macedonia and Dardania. It was taken by Philip, and is mentioned by Livy. Polybius.

BYLOT'S BAY, in *Geography*. See BAFFIN'S bay.

BYLTÆ, in *Ancient Geography*, a Scythian nation bordering on the west of Imaus, according to Ptolemy, and corresponding to BALTISTAN or LITTLE THIBET, which see.

BYMASUS, a town of Greece, in Pæonia. Steph. Byz.

BYNG, GEORGE, in *Biography*, lord viscount Torrington, an eminent naval officer, descended from an ancient family in Kent, was born in 1663. At the age of 15 he entered into the sea-service; but quitted it in three years, for the purpose of serving under general Kirk, governor of Tangier, who advanced him from the station of a cadet, first to that of an ensign, and then to a lieutenancy. In 1684, he returned to the naval department; and in the following year, he was in great danger of losing his life by engaging and boarding a Zingarian pirate; which sunk with him, so that he was taken out of the sea in a wounded state, and almost expiring. In 1688, being on board the fleet that opposed the landing of the prince of Orange, he was confidentially employed in negotiating its surrender to the prince's party. Soon after he was raised to the post of captain, and served under admirals Rooke and Russell in the Channel and Mediterranean. In 1702, he had the command of a third rate at the taking and burning of the French fleet at Vigo; and in the following year he was made a rear-admiral, and served with sir Cloudesly Shovel in the Mediterranean, by whom he was deputed to negotiate a peace with the Algerines. In 1704, he commanded the squadron that attacked and cannonaded the garrison of Gibraltar, and induced a capitulation; and he so much distinguished himself in the battle of Malaga, that, as a recompense of his services, he was knighted by queen Anne. In 1706, he was dispatched with a squadron of 20 ships of war for the relief of Barcelona, and he performed various important services on the coasts of Spain and Portugal during that and the following year. On his return home he was signally preserved from shipwreck, when sir Cloudesly Shovel, under whom he served, was lost on the rocks, called the "Bishop and his Clerks." In 1708, he was advanced to the rank of admiral of the blue, and commanded a squadron that was employed to prevent an invasion of Scotland by the pretender, by means of a French army from Dunkirk. He pursued the French fleet to the Scots coast, and obliged it to return without landing its troops. Soon after his arrival in London, he was appointed to the command of a fleet destined for a descent on the coast of France, and in the same year he had the honour of conducting the queen of Portugal to Lisbon, where he received a commission appointing him admiral of the white, and a very valuable present from her majesty of her picture set in diamonds. In 1709, he commanded a squadron in the Mediterranean; and on his return he was made a lord of the admiralty. But disapproving the measures of administration towards the close of the queen's reign, he was removed. However, on the accession of George I. he was reinstated in his office, and created a baronet. In 1717, when an invasion of Great Britain was projected by Charles XII. of Sweden, sir George was sent to the Baltic with a fleet, which acted in concert with the Danes, and remained there till the Swedes had abandoned their design. In the following year, the Spaniards landed an army in Sicily, and sir George Byng was deputed with a fleet to counteract their operations. This was conducted in a manner that redounded very highly to his reputation and to the honour of the British flag. Upon his arrival in the bay of Naples, he found that the Spaniards

had made themselves masters of the town of Messina, and were engaged in the siege of the citadel. The English were obliged, by their treaties with the emperor, to defend the Sicilians; but as England and Spain were not at war, the admiral attempted to negotiate with the Spanish commander a cessation of hostilities; his efforts, however, were ineffectual, and he proceeded, according to his instructions, to make use of force. Having descried the Spanish fleet, consisting of 27 sail of ships of the line and frigates, he commenced the attack; and in the running fight which ensued, took seven Spanish ships, the admiral's being one of them; and several more were afterwards captured and destroyed by a detachment under captain Walton, who, in the laconic style of an officer, who valued himself more in performing than in describing a gallant action, informs the admiral, "We have taken and destroyed all the Spanish ships and vessels which were upon the coast, the number as per margin." The damage sustained by the English fleet, which, indeed, was of somewhat superior force, was very inconsiderable. The Spaniards complained of being taken by surprise, and when they had no apprehension of hostilities. The conduct of sir George Byng, however, who executed the orders with which he had been entrusted, was not censurable; and the action was very important to the state of political affairs at the period in which it occurred. The admiral remained in the Mediterranean, assisting the German troops to recover Sicily, and preventing the escape of the Spanish troops, till all affairs were settled, and the court of Spain had acceded to the quadruple alliance. The talents displayed by the admiral on this occasion, both as a negotiator and as a commander, were such as to ensure the confidence of all parties. Upon his return, his services were rewarded with the office of treasurer of the navy, and the rank of rear-admiral of Great Britain; and in 1721, he was raised to an English peerage by the title of viscount Torrington and baron Byng of Southill, Bedfordshire. He was also created a knight of the bath in 1725. On the accession of George II. he was placed at the head of the admiralty, in which station he died of an asthma, in January, 1733, in the 70th year of his age. He had several children, one of whom was the unfortunate admiral John Byng, executed upon a rigorous sentence, for defect of duty, in 1757. Biog. Brit.

BYNNI, in *Ichthyology*, a species of CYPRINUS, distinguished by having thirteen rays in the dorsal fin, the third of which is thick and horny; tail linear, bifid; beards or cirri, four. Forsk. A fish of a silvery colour, and oblong oval form, that is very common in the Nile. The length is about one cubit: the flesh excellent.

BYRAM. See BAIRAM.

BYRAN, in *Geography*, a river of North America, forming part of the western boundary of Connecticut, and falling into Long Island sound, opposite to Captain's Islands.

BYRAN, a town in America, in Charles county, Maryland, about 9 miles N.E. from Port Tobacco, and 24 S.E. from the Federal city.

BYRD FORD, lies on the eastern bank of Monongahela river, on the south side of the mouth of Red-stone Creek; 35 miles S. from Pittsburg, and about 39 N.W. from Ohiopyle Falls. Near this spot stands the compact part of the town of Brownsville. N. lat. 39° 58'. W. long. 81° 12'.

BYROM, JOHN, in *Biography*, a poetical writer, and inventor of a new short hand, was born at Kerfal near Manchester, in 1691; and having finished his course of grammar learning at Merchant Taylors' school in London, was admitted a pensioner of Trinity college in the university of Cambridge, in 1708. To logic and philosophy he directed only that degree of attention which was necessary to qualify him

him for his degrees; but his predominant inclination was to poetry; and in this way, the first public specimen appeared in his beautiful pastoral, "Colin to Phœbe," printed in the 5th volume of the *Spectator*, No. 603; the two letters on dreams in the same volume, 586 and 593, are also ascribed to him. Mr. Byrom, having taken both his degrees in arts, was chosen fellow of his college in 1714, and by the sweetness of his temper and the sobriety of his manners, recommended himself to the particular notice of Dr. Bentley, the master. His fellowship however terminated in 1716, on account of his not having entered into holy orders; and leaving college, he went abroad and resided for some time at Montpellier for the recovery of his health. In France he became acquainted with Father Malebranche's Search after Truth, and some pieces of Mad. Antoinette Bourignon; and he returned home prepossessed in favour of the visionary philosophy of the former, and the enthusiastic extravagance of the latter: indeed, towards the close of his life he seems, by some of his poems, to have been attached to the mysticism of Jacob Boehmen. Whilst he was deliberating what course of life to pursue, his mind became more unsettled in consequence of his passion for an amiable cousin, who encouraged his addresses, and whom at length he married against the consent of her parents. This connection involved him in difficulties; and as he obtained no assistance from her father, who was in affluent circumstances, he was reduced to the necessity of seeking support by teaching short hand, according to a new method which he had invented at Cambridge. He began at Manchester, and leaving his wife with her relations at that place, he removed to London, where he prosecuted his instructions in that art, deriving from them for several years a competent subsistence. In this art he was a competitor with Weiton, who challenged him to a trial of skill. In this contest he gained a decisive victory; and in consequence of it, he was encouraged by a great number of pupils, several of whom were persons of rank and quality; and he occasionally read a lecture upon the history and utility of short hand, which, being interspersed with various strokes of wit that were natural to him, was very entertaining. His winter months were devoted to this employment in London, and he spent the summer season with his family at Manchester. In March 1724, he was chosen a fellow of the Royal Society. At length the family estate at Kerfal devolved upon him by the death of his elder brother, without issue. By this accession of fortune he was enabled to enjoy, without those interruptions which his former employment had occasioned, the conjugal felicity to which his own disposition was adapted, and to which the faithful and affectionate attachment of his wife very eminently contributed. During the latter part of his life, he almost wholly devoted himself to the composition of various pieces in verse, some of which are witty and humorous; and others, the most numerous, are on serious subjects. He was so accustomed to the language of poetry, that his dissertations on learned and critical questions were written in verse. These were collected in September, 1773, and printed at Manchester in two volumes, 12mo. Mr. Byrom closed an innocent and inoffensive life with resignation and cheerfulness at Manchester in September, 1763, in the 72d year of his age. Some time before his death, he is said to have committed several of his lighter pieces to the flames; and these were of such a nature that they deserve the character expressed in a distich of Ovid, adopted as the motto of Mr. Waller's works:

"Non ego mordaci distinxit carmine quemquam;
Nulla venenato est litera mixta joco."

By the great truths of Christianity his mind had been so much impressed in his early years, that he derived his chief pleasure from employing his pen on religious subjects. Mr.

Pegge, (*Archeol.* vol. v. p. 12,—32.) has thus delineated his character: "My late worthy friend, Mr. Byrom, whose memory I shall always revere, was undoubtedly a man of parts and learning, but rather too fond sometimes of a paradox. Amongst his other qualifications, he had a particular knack at verification, and has accordingly delivered his sentiments on this subject (viz. the History of St. George) as well as on all others, in a metrical garb; for, I presume, we can scarcely call it a poetical one." *Biog. Brit.*

BYRON'S BAY, in *Geography*, lies on the north-east coast of Labrador.

BYRON'S *island*, a low flat island in the Pacific ocean, about 21 miles in length. S. lat. 1° 18'. E. long. 171°.

BYRON'S *strait*, a narrow sea which separates New Ireland from New Hanover.

BYRRHUS, in *Entomology*, a genus of coleopterous insects having the antennæ clavated and the club perfoliated: palpi, or feelers, equal and somewhat clavated; and both the jaw and lip bifid.

The species of this genus are *gigas*, *pilula*, *ater*, *dorsalis*, *varius*, *æneus*, *nitidus*, *fasciatus*, and *virescens*.

BYSCHIZ, in *Geography*, a town in Bohemia in the circle of Boleslaw; 6 miles E. of Melnik.

BYSSUS, in *Botany*, (*Byssos*, Gr. said by Julius Pollux to be a species of flax, brought from India into Egypt: but Pausanias and Philostratus describe it as the produce of a tree, supposed by Dillenius to be the now well known woolly substance in which the seeds of gossypium, or the cotton tree, are enveloped. Dillenius seems to be the first among the moderns who revived the name and applied it to a tribe of plants till then either neglected or confounded with the fungi and lichens. It appeared in his edition of Ray's *Synopsis*, 1724, and afterwards more fully in his *Historia Muscorum*, 1741; but had in the mean time been adopted by Micheli in his *Nova Genera*, 1729.) Linn. gen. 1208. Schreb. 1673. Juss. 6. Class and order, *cryptogamia algae*. Nat. ord. *Algae*, Jussieu. Gen. Ch. "Fibres simple, uniform, like fine down. Fructification unknown." The genus as it was formed by Dillenius included species, some of which have the appearance of very minute dull, others of fine wool; it is accordingly divided by Linnaeus into two distinct sections. Haller was of opinion that the powdery Byssi are properly lichens: Dr. Withering, in the third edition of his *Botanical Arrangements*, has actually placed them in that genus; and Dr. Smith was once inclined to entertain the same idea, (see *English Botany*, p. 192.) but on further consideration he has adopted Acharius's new genus *lepraria* for all the species that have no shields, and appear to be propagated by their powdery part. (See *Eng. Bot.* p. 1349.) Supported by such respectable authority we have made the necessary alteration in the generic character, and shall insert in the present article only such as consist of real filaments.

Species 1. *B. septica*, Linn. *Syrk. Nat.* vol. 3. p. 235. "Hair-like, very soft, parallel, very easily broken, pale." Flaky Snow Byssus; Dill. *Musc. tab.* 1. fig. 9. It consists of unbranched threads so tender and light that the breath will disperse it, and when handled seems to dissolve into water from the moisture attached to it. Found in damp cellars and vaults, most luxuriantly on bins or wooden shelves where wine has been spilt, hanging down in form of a jelly bag, to the length of a foot or more. Withering. 2. *B. flos aque*, Linn. *Sp. Pl.* "Threads feathered, swimming on water." Naturalists are divided in opinion concerning this substance. Linnaeus seems to have founded his specific character on the observations of Bergius. Dillenius, by whom it was first mentioned in a botanical point of view, in his edition of Ray's *Synopsis*, compares it to paper, and says, that in spring it covers stagnant waters with a very thin and even crust, not like

like a conferva, consisting of threads, nor of any perceptible downy matter, but merely of a thin green lamina. Linnæus in his *Flora Lapponica*, published thirteen years afterwards, notices a green farinaceous Byssus intermingled with water, which Dillenius, in his *Historia Muscorum*, quotes as a synonym of his green paper Byssus, observing that this plant also at first consists of a powdery matter which afterwards unites itself into a membranaceous substance, and when dry becomes white; it is the aquatic membranaceous Byssus of the *Flora Lapponica*, which Linnæus himself in the *Species Plantarum* makes a variety of *B. flos aquæ*. Weir, in his *Cryptogamia*, asserts that it is not a real plant, but only unorganised vegetable matter, produced by the dissolution of putrefied plants. Dr. Withering, on the other hand, believed that it will prove a conferva; for observing a pond in the state of flowering, as the country people term it, he examined some of the water, but the particles floating in it were so minute, that even with the assistance of a very good microscope he could not satisfy himself as to their figure or structure. Two or three weeks later in the spring, he found threads not jointed nor branched, either straight or coiled up like a cork-screw. Some of this water kept in a glass jar, after two or three weeks more, let its contents subside, and then it began to appear like a conferva. The threads soon became much larger and assumed a jointed appearance. La Marck describes it from actual observation as consisting of short, feathered, extremely fine threads, forming a soft green crust on the surface of the water. 3. *B. cancellata*, Linn. "Threads exactly and universally latticed. *Ledern. Micro.* tab. 72. Found in fresh still waters, swimming like a kind of mucor or mould of a yellowish green colour. 4. *B. phosphorea*, Linn. "Downy, of a violet colour, and growing on rotten wood." Dill. tab. 1. fig. 6. Consisting at first of very fine short upright down; afterwards pressed close to the wood, cloathing it like a thin membrane or crust, taking a deeper violet colour. 5. *B. velutina*, Linn. "Filamentous; green; filaments branched." Dill. tab. 1. fig. 14. Found on trees, rocks, and the surface of the ground in shady places, which it covers with a very fine short silky down, like velvet, of a beautiful green colour. 6. *B. aurea*, Linn. "Filaments simple or branched, closely matted together, powdery, orange-coloured." Dr. Smith, Dill. tab. 1. fig. 16. Eng. Bot. 712. Fibres very fine, thick-set, erect. Found on calcareous rocks and banks, particularly in Derbyshire, and sometimes on damp limestone buildings. It often uniformly covers a space of many inches in diameter, and looks like a fine piece of orange-coloured cloth or velvet, but the surface is sometimes more tufted and broken, and it frequently grows in a straggling manner, scattered over mosses. It loses its beautiful golden colour in five or six weeks after it is gathered, and then becomes of a permanent greenish grey. Dr. Smith. 7. *B. nigra*, Hud. "Filaments branched, matted, powdery, black." Dr. Smith. Dill. 1. 18. Eng. Bot. 702. First sent to Dillenius by Dr. Richardson from the west-riding of Yorkshire. It has since been often found on shady overhanging rocks in the alpine parts of England, Scotland, and Wales. It forms patches of various sizes, perfectly black, and may easily be scraped from the stone. When gathered, it strongly resembles a piece of felt scraped from a hat, both in texture and colour. It consists of a mat of fine, soft, but elastic, branched filaments, often covered with an equally black, footy powder, which is probably the seed, though it has not been observed to be produced at any particular season exclusively. Dr. Smith. 8. *B. purpurea*, Lightfoot; (*Rubra* Hudf. 2d ed.) "Filaments erect, simple or branched, purplish." Dr. Smith. Eng. Bot. 192. Filaments scarcely longer than the breadth of a hair, thick-set, in broad uniform patches. When much moistened

these filaments become clotted together in clusters, and in that moist state exhale a kind of sweet scent, agreeing in this respect with the Byssus *Iolithus* of Linnæus, which is however really a crustaceous lichen. Dr. Smith. Found by the Rev. Hugh Davies on the micaceous rocks of Anglesea, and by Mr. Lightfoot on the base of Abbot Mackinnon's tomb in Y-comb-hill. 9. *B. fulva*, Hudf. "Filaments branched, tawny." Dill. tab. 1. fig. 17. Filaments longer, more rigid and more loosely disposed than those of *B. aurea*. It retains its colour when dry. On putrid wood. 10. *B. barbata*, Hudf. (*B. aurantiaca*, La Marck, *fulva*, With.) "Filaments upright, branched, bundled, with annual interruptions, tawny, with smooth, swelled, deeper-coloured tips." Dr. Smith. Dill. tab. 1. fig. 19. With. Bot. Ar. tab. 18. fig. 5. Eng. Bot. 701. It forms perennial, thick, tawny-coloured tufts, from one to two inches high. The growth of each year is marked by a swelling and a darker colour in each principal filament or stem. Young plants consist of a simple filament, regularly and beautifully feathered at the summit. In fine specimens sent by the right honourable lady Elizabeth Noel to Dr. Withering and Dr. Smith, the swelled tips were remarkably conspicuous, and as her ladyship with great probability supposed, contained the fructification. These tips are smooth, semi-transparent, and of a rich saffron colour. In Dr. Withering's specimens, when examined in the microscope, they were observed to be filled with granules, and to be hispid with bristle-shaped tubes, pointing upwards. In Dr. Smith's specimens, which he conjectures were in a less advanced state, they had not the same appearance. On moist rotten wood. 11. *B. candida*, Hudf. "Filaments much branched; branches fasciculated, white." Dill. in Ray's Syn. tab. 23. as it grew on an old beam in a cellar. Dill. Hist. tab. 1. A. on an oak leaf; B. on the half-rotten sole of an old shoe. From a broadish, mucilaginous, villous base, spring various slender branches, spreading more in breadth than in height, elegantly divided and subdivided, and ending sometimes in numerous capillary fibres, but generally in surfaces a little expanded without any determinate number or figure. Substance pure white, livid, or yellowish, pressed close to the substance on which it grows. Dill. 12. *B. cryptarum*, Linn. "Capillary, perennial, ash-coloured, adhering strong to the rock on which it grows." Dill. 1. 20. Filaments very tender, soft, greenish ash-coloured, an inch long, loosely disposed, so firmly attached as to be scarcely pulled off by the fingers. Linn. Filaments simple, dull white, brittle, diverging in a crowded manner from a centre, an inch and half long, and the thickness of a human hair. Dill.

Byssus, or *Byssum*, a fine sort of thready matter, produced in India, Egypt, and about Elis in Achaia, of which the richest apparel was anciently made, especially that worn by the priests both Jewish and Egyptian.

In reality, the ancients seem to have applied the name indifferently to any kind of matter that was spun and wove finer than wool: so that it is probable there were divers sorts of byssus. It is certain, that Aristotle gave the name byssus to the hair or silken threads of the pinna marina; whether it were on account of its resemblance to the byssus of which cloths were made, or whether it were that this was the true byssus itself. What countenances this latter opinion is, that the byssus of the pinna marina may be spun, and consequently there is little doubt but that in ages when silk was scarce, it might be used in the cloaths of great men. Add, that this byssus, though grossly spun, appears much finer and more beautiful than wool, and comes not much short of silk. Stockings and other such manufactures are still made of it, which would be more valuable if silk were less

less common. To spin this byssus, they leave it some days in a cellar to moisten and grow soft: after this they comb it to get out the impurities, and, lastly, spin it as they do silk. Gefner, Hist. Anim. l. 4. c. 6. Acad. des Sc. Ann. 1712, M. p. 204: Others think that the byssus signifies a kind of very fine flax, which grew in Egypt or Judæa. Bochart. Phaleg. l. iii. c. 4. Others again are of opinion that it is cotton, or a mixture of linen and cotton. The probability of its being cotton is strengthened by the description given of the byssus by Pollux, which cannot be applied to any thing but cotton. This writer says (l. vii. c. 17), that this material came from a kind of nut which grew in Egypt, and also in India; that they opened the nut, extracted the substance, spun it, and wove it for garments. Philostratus (de Vit. Apollon. l. ii. c. 13.) describes it much in the same manner. These characteristics agree very well with cotton. Arrian, Tertullian, and Mela, concur in representing the garments worn by the Indians as consisting of flax or wool, which was produced by the trees.

It is found in a kind of brown nut, which grows on a small shrub. Besides it seems evident from the analogy of languages, that the word used by Moses in describing Joseph's garment (Gen. xli. 42.) must mean cotton. This is the opinion of some of the most learned interpreters and commentators. We learn farther from profane authors, that robes of cotton were very ancient in Egypt, and that they were worn only by persons of the greatest distinction. Plin. H. N. l. xix. § 2. It is no less certain that robes of linen were also used in very ancient times; and it appears from the testimony of Moses, that flax was cultivated in Egypt from time immemorial. Exod. xi. 31. Deut. xxii. 11. Hence some have supposed that the ancient byssus was either a very fine sort of cotton, or a mixture of linen and cotton. Foster "de Byssu Antiquorum." Lond. 1776, 8vo. This ingenious writer, in an elaborate dissertation on the subject, cites a variety of passages from ancient authors, from which he concludes that the byssus was a kind of flax, if it may be so called, which was obtained from plants and trees in India, Arabia, and Egypt, denominated by the barbarians "Gossipion," and corresponding to the modern cotton. He adds, that the ancients were acquainted with two species of cotton trees, the "bombax" and "gossypium," both belonging to the Linnæan class of *monadelphæ polyandria*. The byssus of which Pliny speaks (l. xix. c. 1.) and which he extols for its softness and whiteness, was the gossypium, or white cotton; and that of which Philostratus speaks (ubi supra), the colour of which was red, *ῥυβρὸν γένος*, was obtained from "bombax." Osbeck, in his "Travels" (vol. I. p. 383.) informs us, that the true flax was unknown in India and in Egypt, and yet in both these countries the same vegetables were cultivated and the same arts practised. We often read, however, of flax (*linum*) in works pertaining to the Egyptians, as composing the vestures of the priests and others, particularly when they celebrated the mysteries of Isis. What this substance was is explained by Pliny, when he says that garments of cotton were much valued by the Egyptian priests, "Vestes indæ (Xylina) sacerdotibus gratissimæ." The "vestes xylina" were synonymous with the "vestes byssina." Moreover, Plutarch (in Iside, and Herodotus, l. ii. c. 86) informs us, that the religion of the Egyptians enjoined their wrapping up dead bodies in stuffs woven with byssus. That this byssus was our cotton is evident from the authorities to which Mr. R. Foster refers; and it may be also inferred from the fillets which were bound round their mummies. Authors usually distinguish two sorts of byssus, that of Elis, and that of Judea, which was the finest. Of this latter were the priestly ornaments made. Bon-

frerius notes, that there must have been two sorts of byssus, one finer than the ordinary, by reason there are two Hebrew words used in Scripture to denote byssus, one of which is always used in speaking of the habit of the priests, and the other of that of the Levites. See Luke xvi. 19.

BYSSUS *montanus*. See *AMIANTHUS*.

BYSTRICZA, in *Geography*, a town of Poland, in the palatinate of Volhynia; 80 miles N.E. of Lucko.

BYSTROPOGON, in *Botany*, (from *βυσ*, *obturo*, and *πογος*, *barba*; the mouth being closed by a sort of beard.) l'Herit. Sert. Angl. t. 22, 23. Juss. 449. Vent. 2. 334. Willd. 1101. Bosc Nouveau Dict. Clafs and order, *didynamia gymnospermia*. Nat. Ord. *Verticillate*, Linn. *Labiate*, Juss.

Gen. Ch. *Cal.* one-leafed, generally with five awns, closed by a beard at the opening. *Cor.* one-petalled, ringent; upper lip bifid; lower three-lobed; middle lobe the largest. *Stam.* filaments four, distant; anthers incumbent. *Pist.* germ superior, four-parted; style awl-shaped; stigma simple or bifid. *Peric.* none. *Calyx* closed with a beard, and containing the seeds. *Seeds* four.

Eff. Char. *Cal.* bearded. *Cor.* upper lip bifid; lower three-lobed. *Stamens* distant.

Species. 1. *B. pedunculatum*, l'Herit. (*nepeta pectinata*, Linn.) "Panicles compact; flowers directed one way; leaves ovate." Root perennial. Stem five or six feet high, four-cornered, even; branches in pairs; each pair at right angles with the next, scarcely fragrant. Leaves petioled, heart-shaped, veined, naked, serrated. Spikes terminal, interrupted, scarcely foliaceous, in peduncled whorls. Bractes bristle-shaped, numerous, the length of the flowers. Calyx five-parted, bristle-shaped. Corolla yellow, scarcely the length of the calyx; border five-cleft; four segments equal, acute, spreading; the fifth, or lip purplish, rather round. (Such is the description of the corolla in Willdenow, with which that of professor Martyn in Miller agrees; but if any regard is to be paid to the essential generic character, two of the equal segments constitute the upper lip, and the other two, with the intermediate larger segment, belong to the lower lip.) Style purplish. Stigma simple. A native of Jamaica and Peru. 2. *B. sudafolium*, l'Herit. "Panicles very loose; peduncles in whorls, filiform; leaves heart-shaped." A native of Peru; discovered by Dombey. 3. *B. suaveolens*, l'Herit. (*Ballota suaveolens*, Linn. *Melissa Jamaicana*, Pluk. tab. 306. f. 3. *Spicata*, Plum. tab. 163. f. 1. *Mentastrium maximum*, Sloane, tab. 102. f. 2. *Melissophyllum hirsutum*, Browne, tab. 18. f. 3.) "Peduncles axillary, solitary; calyxes truncate, awned; leaves heart-shaped." Root annual. Stem upright, shrubby at the bottom, branched, hirsute. Leaves opposite, roundish, crenate, nerved, villous; petioles long, slender, lax. Peduncles axillary, three or five-flowered. Flowers approximating, blue; calyx ten-streaked, villous, viscid; teeth awned, upright, villous; tube of the corolla narrower at the base; filaments, from the bottom of the tube, standing up above the opening of the corolla, pubescent; anthers blackish. Germ ovate; style shorter than the stamens; stigma simple, blunt. Seeds two, seldom four, naked, ovate, black, slightly compressed. A native of South America and the West Indies. It is called by the Portuguese *erva cidreira*, from its smelling like a citron; in Jamaica, *spikenard*, from its pleasant smell. It is one of the most grateful cephalics and alexipharmics; and may be used in disorders of the nerves and viscera, where such warm medicines are required. Martyn from Swartz, Sloane, and Browne. 4. *B. plumosum*, l'Herit. (*Mentha plumosa*, Linn. Sup.) "Panicles dichotomous; calyxes feathered; leaves ovate, somewhat serrated, tomentose beneath." Panicles terminal and axillary, several times dichotomous, deriving a round

round form from their divaricated, little branches, hairy. *Calyxes* flat, stellate; rays awl-shaped, very hairy, spreading. *Corolla* small; receptacle villous. A native of the Canary Islands, where it was found by Masson. 5. *B. origanifolium*, l'Herit. "Panicles dichotomous; calyxes feathered; leaves ovate, very entire, very white beneath." Found also by Masson. This, and the preceding, to which it is nearly allied, connect the first three species with the two succeeding, l'Herit. 6. *B. Canariense*, l'Herit. (*Mentha Canariensis*, Linn. Sp. Pl. Pluk. t. 307. f. 2. *Heliotropium*, Canar. Comm. Hort. t. 65.) "Peduncles dichotomous; flowers capitate; leaves ovate, crenate, rather villous beneath." Root perennial. Stem woody, three or four feet high, much branched. Leaves on long petioles, hairy, and ash-coloured on their under side. Peduncles lateral, pretty long, each sustaining four roundish heads, dividing by pairs, and spreading from each other. Flowers white. A native of the Canary Islands and Madeira. It was cultivated in 1714, by the dukes of Beaufort, and has been called by the English gardeners *Madam Maintenon*. 7. *B. punctatum*, l'Herit. "Peduncles dichotomous; flowers capitate; leaves ovate, toothed, smooth, finely dotted." Segments of the calyx not awl-shaped as in all the other species. Native of Madeira; introduced into England in 1775, by sir Joseph Banks, bart.

BYSTRZICA, in *Geography*, a town of Lithuania, in the palatinate of Wilna; 24 miles N.E. of Wilna.

BYSZOW, a town of the duchy of Courland; 42 miles S.S.W. of Goldingen.

BYTESCH, a town of Moravia, in the circle of Brunn; 17 miles W. N. W. of Brunn.

BYTIN, a town of Lithuania, in the palatinate of Novogrodek; 40 miles S. S. W. of Novogrodek.

BYTTNERA, in *Botany*. See BÜTTNERA.

BYZACIUM, or BIZACIUM, in *Ancient Geography*, one of the two provinces into which Africa Propria was divided: the other being Zeugitania, or the *Regio ZEUGITANA*. Shaw, in his geographical description of the kingdom of Tunis, with which Africa Propria nearly corresponds, divides it into the *Summer* and *Winter* circuits; the former being comprehended under the denomination of Zeugitania, and the latter under that of Byzacium. This province, or at least the sea-coast of it, seems to have been the "Emporia" of Livy and Polybius, so called on account of the number of its ports appropriated to the commerce of grain. It was bounded on the north by the proconsular province; on the east by the Mediterranean sea and the river Triton; on the south by a part of Libya; and on the west by Numidia. Its capital city was *Adrumetum*. It was inhabited, according to Pliny (l. x. c. 4.) and Strabo (l. xvii. p. 1192.) by the Libyphœnicians, that is, by a mixture of Aborigines, or native Africans, and Carthaginians. Pliny asserts that it was about 250 Roman miles in circumference, and that the soil was so fertile as to produce an hundred fold. With regard to its extent, Dr. Shaw observes (Travels, p. 72), that if we bound Byzacium to the N. and S. with the parallels of Adrumetum and Tacape, and to the W. with Suffetula, one of the western cities of it, we shall have a circuit of at least 500 Roman miles. Its limits, however, are not easily defined with precision, because the ancients have passed over the interior part of it bordering upon Libya, in a very slight manner, and have very much mistaken the course, magnitude, and source of the river Triton. However, Byzacium appears not to have differed much in extent and situation from the present winter circuit of the Tuniseans. As to its fertility, Dr. Shaw observes, that it falls vastly short of the character attributed to it by the ancients. The parts which are adja-

cent to the sea-coast are generally of a dry sandy nature with no great depth of soil in the belt of them; and they are planted, for the most part, with olive-trees, which flourish in great perfection: neither is the inland country in a much better condition.

BYZANT. See BESANT.

BYZANTINA blatta. See BLATTA.

BYZANTINE *Historians*, in *Literary History*, a denomination distinguishing those Greek writers, who flourished from the time of Constantine the Great, in the beginning of the 4th century, who transferred the seat of empire from Rome to Constantinople (Byzantium) A.D. 328, till the year 1453, when the eastern empire terminated on occasion of the capture of Constantinople by Mahomed II. Of the Greek writers, to whom this appellation is peculiarly appropriated, the principal are the following, viz. Zosimus, Zonaras, Nicetas Choniates, Nicephorus Gregoras, Chalcocondyles, Syncellus, Theophanes, Leo Grammaticus, Cedrenus, Glycas, Constantine Manchas, Agathius, Theophylact, Genesius, Constantine Porphyrogenetta, Anna Comnena, Phranza, Cinnamus or Sinnamon, George Acropolita, George Pachymer, Jo. Cantacuzenus, G. Codinus, M. Ducas, and Procopius. The whole series of Byzantine writers comprised in 36 volumes, fol. has gradually issued (A.D. 1648, &c.) from the royal press of the Louvre, with some collateral aid from Rome and Leipsic; but the last edition, or that of Venice in 28 vols. fol. A.D. 1729, &c. though cheaper and more copious, is not less inferior in correctness than in magnificence to that of Paris. The merits of the French editors are various: but the value of Anna Comnena, Cinnamus, &c. is enhanced by the historical notes of Charles du Fresne du Cange. Fab. Bib. Græc. l. v. c. 5. tom. vi. p. 229, &c.

BYZANTINE *MS.*, in *Biblical History*, a Greek MS. containing the four Gospels, collated by Wettstein and noted 86 in the first part of his N. T. Its age is not ascertained; it was purchased by Alexius Comnenus II., in 1183; and preserved at Presburg.

BYZANTIUM, in *Ancient Geography*, now known by the name of *Constantinople*, and called by the Turks *Stamboul*, or *Istanbul*, a Turkish corruption of *εις την πολιν*, a city of Thrace, situated in a promontory nearly of a triangular form. The obtuse point of the unequal triangle, which represents the figure of Constantinople in its present extent, advances towards the east, and the shores of Asia, meeting and repelling the waves of the Thracian Bosphorus. The northern side of the city is bounded by the harbour; and the southern is washed by the Propontis, or sea of Marmara. The basis of the triangle is opposed to the west, and terminates the continent of Europe. On the point of the promontory stood the citadel. The walls of the city were built of large square stones, so jointed as apparently to form only a single block; they were much loftier on the land's side than towards the water, being naturally defended by the waves, and in some places by the rocks, on which they were built, and which project into the sea. This city, besides a gymnasium, and several kinds of public edifices, possessed all the conveniences which a rich and numerous people were able to procure. They assembled in a forum, spacious enough to contain a small army ranged in order of battle: and there they confirmed or rejected the decrees of their senate. The territory of Byzantium produced abundance of grain and fruits; but it was exposed to the frequent incursions of the Thracians, who inhabited the adjoining villages. The harbour supplied a vast quantity of fish in autumn, when they descended from the Euxine into the lower seas, and also in the spring, on their return to the Pontus. This fishery, and the curing of the fish, furnished large

BYZANTIUM.

large sums to the revenues of the city, which was crowded also with merchants, and supported by an active and flourishing commerce. Its port, sheltered on every side from tempests, attracted thither the vessels of all the Grecian nations; and its situation at the head of the strait enabled it to stop, or subject to heavy duties, the foreign merchants who traded in the Euxine, and to furnish the nations who drew from it their subsistence. Hence arose the constant endeavours of the Athenians and Lacedæmonians to engage this city in their interests.

Byzantium was founded, according to Eusebius (in Chron.) about the third year of the 30th olympiad, while Tullus Hostilius reigned at Rome. But Diodorus Siculus (l. v.) asserts, that the foundations of this city were laid in the time of the Argonauts, about 1263 years before Christ, by one Byzas, who then reigned in the neighbouring country, and from whose name the city was called Byzantium.

This Byzas, if we may credit Eustathius (in Dionys. v. 804.) arrived in Thrace a little before the Argonauts came into those seas, and settled there with a colony of Megareans. Others say, that the navigator Byzas, who was styled the son of Neptune, founded the city 656 years before the Christian æra: and that his followers were drawn from Argos and Megara. See Scaliger's *Animadv. ad Euseb.* p. 81. Du-Cange *Constantinopolis*, l. i. p. i. cap. 15, 16. Some ancient medals of Byzantium, which have reached our times, bear the name and head of Byzas, with the prow of a ship on the reverse, probably of that ship which brought him into Thrace.

Velleius Paterculus (l. ii. c. 15.) ascribes the glory of founding this great metropolis to the Milesians; and Ammianus Marcellinus (l. xxii. c. 8.) to the inhabitants of Attica. Justin (l. ix. c. i.) says, that it was built by Pausanias king of Lacedæmon; but in this he must have been mistaken, since it is certain, that Pausanias, the commander of the Lacedæmonian fleet, took it (about the year B.C. 476.) from the Persians, who had made themselves masters of it before the king of Lacedæmon had ever been in Asia. (Thucyd. l. iii. Herodot. l. iv.) Pausanias might probably have rebuilt and fortified it, whilst he continued in possession of it, and carried on a secret conspiracy with the Persians. It underwent many revolutions, having been sometimes subject to the Persians, sometimes to the Lacedæmonians, and also to the Athenians, who took possession of it about the year B.C. 407. About the year 340 B.C. Philip of Macedon laid siege to this city; but was compelled to raise it, and to retreat, by Phocion, the Athenian general. Its situation was justly considered by the ancients as the most pleasant, and also the most convenient, for trade, of any in the world; and it is therefore no wonder, that the possession of it should be an object of various and successive contests. After many vicissitudes, Vespasian, A.D. 71, reduced Greece, which Nero had declared free, and likewise Lycia, Rhodus, Byzantium, Samos, Thrace, and Cilicia, to Roman provinces, alleging, that they were no longer capable of liberty, since they only made use of it to undo themselves by their intestine divisions. In the contest between Niger and the emperor Severus, the former placed a numerous garrison in Byzantium, and the latter, instead of pursuing his enemy and besieging him in this strong city, detached a large body of troops to Cyzicus, near which a battle ensued between them and the numerous army of Æmilianus, which terminated in a defeat of this general, and obliged Niger to quit Byzantium, A.D. 194. Upon this Severus invested the place abandoned by his enemy, and commenced a siege, which lasted three years. The bloody battle of Issus decided this contest; and the head of Niger was sent by Severus to his army, encamped before Byzantium, and exhibited to the besieged on the

point of a spear; and from Byzantium it was sent to Rome, as the token and trophy of Severus's victory. Such were the strength of this city, its advantageous situation for defence, and the obstinacy of the besieged, that it was not subdued without many assaults and many sallies, which render the capture of it one of the most extraordinary events in military history. On the side of the sea it was guarded by a harbour into which the current set with such violence, that those who attempted to approach the city in this way were obliged to pass under its walls. Although the walls were not high, the sea itself, and its rocks, were a sufficient barrier. On the land side, care had been taken to fortify it with high and thick walls, built of hewn stones fastened together with cramps of iron; and the whole circuit was flanked with towers built in such manner and at such distances, that they defended one another. Before and during the siege, the Byzantines had provided themselves with various machines of war, some of which hurled large beams and stones upon the besiegers on their approach, and others threw at them showers of darts and smaller stones to a greater distance. Strong iron hooks fastened to chains were sunk at the foot of the wall, and dragged up whatever they laid hold of. These machines were mostly constructed by one Priscus, a Bithynian, and a famous engineer; who, after the surrender of the place, was sentenced to death by the generals of Severus, but obtained his pardon of the emperor, in the prospect of deriving from his talents future services. The entrance of the harbour of Byzantium was barred by a chain, and upon the piers, which advanced on each side into the sea, were built towers for preventing the approach of an enemy. This harbour contained 500 small vessels, most of which were armed with pointed prows of iron; and some of them had two rudders, one at each end of the ship, and a double complement of men; by which means they could at a moment's warning, and without tacking about, either advance upon the enemy or fall back, as occasion required. Dion Cassius informs us, that the Byzantines successfully practised a stratagem for taking some of the enemy's ships, whilst they lay at anchor at some distance from the shore. They employed divers, who, swimming under water, cut the cable, and drove into the body of the ship a strong nail fastened to a rope, the other end of which was in one of their own vessels. This last, being put in motion, dragged the other after it, and it thus appeared to move without oars or wind. As the besieged lost many of their ships, they built others of the timber of their houses, and the women cut off their hair in order to furnish materials for ropes. When their supply of darts and common stones failed, they made use of the stones of the walls of their theatres, which they demolished; nor did they spare the statues, even of brass, which adorned their city. Such was their distress by famine, that they were reduced to the necessity of soaking thongs of leather, in order to derive some nourishment from them, and at length of devouring one another. In this situation of extreme indigence and misery, some of the most robust and vigorous took advantage of a storm to embark on board of their ships and to seek a supply of food for their fellow citizens, or to perish in the attempt. Having overloaded their ships, the Romans attacked them in their return; and either overfet or sunk them all, so that not a single vessel escaped. The Byzantines, thus deprived of their only hope, opened their gates to the besiegers, and surrendered at discretion. The conquerors shewed them no mercy; but massacred all the foldiers, magistrates, and commanders; and by order of the emperor, who exulted with his foldiers on the capture of the city, the estates of its inhabitants were confiscated; the city was deprived of its privileges, and even of its title of city,

and was reduced to the condition of a mere village; so that it was subjected together with its territory to the jurisdiction of the Perinthians, who insolently abused their power. Its fortifications were totally dismantled; and thus Severus deprived the empire of one of its strongest bulwarks, which kept all Thrace in awe, and commanded Asia and the Euxine sea. "I saw it," says Dion Cassius, "in such a state of ruin and desolation as would have made any one think it had been conquered, not by Romana, but by barbarians." The emperor, at the request of his infant son, Caracalla, mitigated some part of its punishment, rebuilt a considerable part of it, calling it "Antonia" from the surname of Antonius, assumed by his son: but never restored it to its ancient privileges, nor reversed the order by which it was subjected to the Perinthians; for we find by ecclesiastical history, that till the time when Constantine rebuilt Byzantium, and gave it his name, the bishop of this city acknowledged the bishop of Perinthus, or Heraclea, for his metropolitan. In the year 262, the tyrant Gallienus exercised cruel vengeance on Byzantium, for reasons which are not particularly specified; but the Byzantines having some ground for mistrusting him, at first shut their gates against him; but afterwards admitting him upon his promise of moderation and clemency, he basely broke his word, and caused both the garrison and inhabitants to be massacred; so that at the time when Trebellius Pollio wrote, there was not an ancient family in Byzantium, except such whose accidental absence, occasioned either by business or pleasure, or by their being employed in the armies, had preserved some remains. On occasion of the war between Licinius and Maximin, Byzantium was besieged and taken by the latter; but it was soon after recovered by Licinius. But in 324 Licinius was defeated by Constantine the Great, first at Adrianople and then at Chalcedon: and the cities of Byzantium and Chalcedon opened their gates to the conqueror. In the year 330, Constantine resolved to enlarge the ancient city of Byzantium, and to make it the second, if not the first, city of the Roman empire. Accordingly he began by extending its walls from sea to sea; and while some of the workmen were employed in rearing them, others were employed in raising a great number of stately buildings, and, among the rest, a palace equal in magnificence and extent to that of Rome. As he designed to fix his own court there, and was desirous that the succeeding emperors should follow his example, and honour his new city with their ordinary residence, he spared neither cost nor labour to render it both beautiful and convenient. With this view, he built a capitol and amphitheatre, formed a circus maximus, several forums, porticos, and public baths; and divided the whole city into 14 regions, securing the inhabitants by many wholesome laws, and granting them great privileges and immunities. By these means, Byzantium became, in a short time, one of the most flourishing and populous cities of the empire; whole families flocking thither from all parts, especially from Pontus, Thrace, and Asia. Constantine published an edict, importing that such as had lands in those countries should not be able to dispose of them, nor even leave them at their deaths to their heirs, unless they had a house in his new city. The common people were enticed thither from the most distant provinces, and even from Rome itself, by the emperor's donations, and the great quantity of corn, oil, and wheat, which was daily distributed among them. But however desirous the emperor was to see his new city filled with people, yet he did not choose it should be inhabited by any but Christians, and therefore he ordered all the idols to be pulled down, and their temples to be consecrated to the true God. He built, besides, an incredible number

of churches, and caused crosses to be erected in all the square and public places. When most of the buildings were finished, the emperor on the 11th of May, in the year 330, the 25th of his reign, caused this city, by a very solemn dedication, to be consecrated, according to Cedrenus, to the Virgin Mary; but, according to Eusebius, to the God of Martyrs. It was on this occasion, that Constantine styled the new city after his own name, "Constantinople," or the city of Constantine, and likewise "second," or as others will have it, "New Rome." At the same time he put it on an equality with ancient Rome, granting it the same rights, immunities, and privileges, that were enjoyed by that metropolis. He established a senate, and other magistrates, with a power and authority equal to that of the Roman senate, and declared "New Rome" the metropolis of the east, as "Old Rome" was of the west. Constantine having accomplished this great work, according to some in five, according to others in two years, fixed his residence in the new city, and never more returned to Rome. The removal of the imperial seat from Rome to Constantinople happened in the year of the Christian era 330, the 25th of Constantine's reign, and 1128 after the foundation of Rome. *Anc. Urb. Hist.* vols. xiii. xiv. *Crevier's Roman Empire*, vols. viii. ix. x. *Gibbon's Rom. Emp.* vol. iii. p. 1, &c. See CONSTANTINOPLE.

BYZIA, VIZÁ, Visé, in *Geography*, a mean town of Turkey in Europe, in Romania, which was anciently the residence of the kings of Thrace, and which has still a Greek bishop. It is situated in a sangiakship of the same name, which extends eastward from the foot of mount Hæmus to the sea of Marmara. See BIZYA.

BYZO. See BIZU.

BYZONE. See BIZONE.

BZOVIVS, or BZOWSKI, ABRAHAM, in *Biography*, an industrious and voluminous writer, was born in Poland in 1567, and having studied at Cracow, entered into the order of Dominicans. He afterwards read lectures in philosophy at Milan, and in divinity at Bologna. On his return to Poland, he taught and preached with great applause, and became principal of a college belonging to his order; to the aggrandizement of which he very much contributed, by the erecting of churches and convents, by furnishing their libraries, and by reforming their constitutions. On his settlement at Rome, he became librarian to the duke of Bracciano; and having compiled "An Abridgment of Ecclesiastical History," taken chiefly from the annals of Baronius, he was induced to engage in the continuation of that work, and with this view lodgings were assigned to him by the pope in the Vatican. This work commencing in 1198, where Baronius had left off, was continued to his own times, and comprised in 12 volumes, folio, of which 9 have been printed: viz. 8 at Cologne, from 1616 to 1630, and the 9th at Rome in 1672. With a spirit similar to that of his predecessor he arrogates plenary power to the papal see, and manifests the zeal of a credulous and partial advocate rather than the fidelity of an historian. By his abuse of the emperor Lewis of Bavaria, he excited the indignation and remonstrances of the duke of Bavaria, a descendant of the same house, who obliged him to make a public retraction. He also offended the Franciscans, by his reproaches of Scotus, the "subtle doctor," and by other acts of hostility; and he likewise gave great offence to the Jesuits. His work is, upon the whole, little esteemed. Bzovius wrote 3 volumes of the lives of the popes, and a great number of other works, which are completely sunk into oblivion. Having quitted the Vatican, he retired to the Dominican convent of Minerva, and died there in 1637. *Gen. Dict.*

C.

C

C A A

C, The third letter, or second consonant of the alphabet, has two sounds, one like *k*, as in the word call; and the other like *s*, as in *Cæsar*. It has the former sound before *a*, *o*, *u*, and a consonant; and the latter before *e*, *i*, and *y*. It might be omitted, says Dr. Johnson, in the language without loss, since one of its sounds might be supplied by *s*, and the other by *k*, but that it preserves to the eye the etymology of words, as *face* from *facies*, *captive* from *captivus*. C, having no determinate sound, according to English orthography, never ends a word. C is formed, according to Scaliger, from the \times of the Greeks, by retrenching the stem or upright line; though others derive it from the \beth of the Hebrews, which has in effect the same form; allowing only for this, that the Hebrews, reading backwards, and the Latins, &c. forwards, each have turned the letter their own way. However, the C not being the same as to sound with the Hebrew *caph*; and it being certain the Romans did not borrow their letters immediately from the Hebrews, or other Orientals, but from the Greeks; the derivation from the Greek \times is the more probable. Add, that F. Montfaucon, in his *Palæographia*, gives us some forms of the Greek \times , which come very near that of our C; this, for instance, C: and Suidas calls the C, the Roman kappa. The second sound of C resembles that of the Greek Σ ; and many instances occur of ancient inscriptions, in which Σ has the same form with our C. Gruter, vol. i. p. 71. vol. iii. p. 1020.

All grammarians agree, that the Romans pronounced their Q like our C, and their C like our K. F. Mabillon adds, that Charles the Great was the first who wrote his name with a C; whereas all his predecessors of the same name wrote it with a K: and the same difference is observed in their coins. In Latin MSS. the C is often substituted for Q, as *estidie* for *quotidie*, &c. and the use of C for K was very common among the Latins. By the negligence of copyists C is often put in the room of P in ancient MSS.; on some ancient medals of Sicily, particularly those of Gela, C occupies the place of P, as *CEAION* for *PEAION*: and the Romans for a long time retained it in the room of G.

C was also a numeral letter among the *Romans*, signifying an hundred: according to the verse,

“Non plus quam centum C litera fertur habere.”

Some add, that a dash over it, made it signify an hundred thousand. CC denoted 200,000, and CCC 300,000, &c. In the *Fasti* and *Calendars* C denoted the day on which it was allowed to assemble the *Comitia*.

C is also an abbreviation.

In proper names, C was used for Caius; as C. Cæsar, &c. Their lawyers used it single for *Codice* or *Consule*, and double, CC, for *Consulibus*. On some marbles a C reversed, C^{r} , denoted *Gaius*.

C was also used in their courts, as a letter of condemna-

tion, and stood for *condemno*; in opposition to A, which signified *absolvo*. On this account the letter C was called “*Litera tristis*.” Cicero pro Milone, c. 6.

C, in *Music*, is the name of the second space in the base, the third space in the treble, and of every line on which the tenor or C clef is placed.

In the guido scale or gammut, the C in the second space in the base is called C fa-ut; its octave above, on the sixth line, C sol-fa-ut, as is the C in the third space in the treble, its octave.

C sometimes, in *Ital. Music*, stands for *canto*, as C 1, canto primo. It stands likewise, when placed at the clef, for common time, and, with a line through it, thus $\text{C}^{\text{—}}$, for cut time, or a quicker kind of movement.

In music of the 15th and 16th centuries, in specifying the time or moods, as they were then called, when triple time, which then was styled *perfect*, and common time *imperfect*, the laws of prolation were very complicated and difficult to comprehend. An \bigcirc , or complete circle, implied perfect time, when, without a point, a long C was equal to three breves; a breve to three semi-breves, &c. and a $\text{C}^{\text{—}}$, or semi-circle, implied imperfect or binary time, which Morley calls “prolation of the less.” See MOODS, PROLATION, and TIME-TABLE.

When at the clef a concealed canon (*canone chiuso*) had two different marks for time placed over each other, it implied, that one of the parts sung the notes as they were written, and the other doubled all their lengths, the upper part leads off the canon.

C B, when placed in a score over the *viola*, or tenor part, implies *Col Basso*, with the base.

The French regard *ut* as the representative of C, the first note of their gammut; but Guido, the Italian, and the English always look upon G on the first line in the base, as the first note in the gammut, or scale of music. See HEXACHORD, PROPRIETY, and SOLMISATION.

In Gregorian notes on a staff of three lines only, C implies the tenor or C clef.

C. Album, in *Entomology*. See C. ALBUM.

C. Aureum. See C. AUREUM.

CAA-APIA, in *Botany*, the Brazilian name for the *Dorstenia Brasiliensis* of La Marek, first described by Marggrave and Piso, and since found by Commerçon, both in Brazil and Magellan.

CAAB, or CAE BEN ZOHAR, in *Biography*, an eminent Arabian poet, was at first a Jewish rabbin; and when Mahomet made war on the tribes which had embraced Judaism, wrote some severe satirical verses against him. But, on Mahomet's subsequent success, he was proselyted, and presented

him with a copy of verses in his praise; upon which he was pardoned and received into favour. The impostor conferred on him the honour of his mantle, which was afterwards purchased at a great price by the caliph Moavias from his heirs. Caab is said to have had a large share in the composition of the Koran. He died in the first year of the Hegira, A.D. 622. D'Herbelot.

CAABA, a square stone edifice in the temple of Mecca, supposed to have been built by Abraham and his son Ishmael; being the part principally revered by the Mahometans, and to which they always direct themselves in prayer. See *KEBLA*.

The word is Arabic, *caaba*, and *caabah*, a denomination which some will have given to this building, on account of its height, which surpasses that of the other buildings in Mecca; but others with more probability, derive the name from the quadrangular form of this structure.

This edifice is indisputably so ancient, that its original use and the name of its builder are lost in a cloud of idle traditions. The Mahometans affirm, that it is almost coeval with the world, and they pretend, that Adam, after his expulsion from paradise, supplicated divine permission to erect a building like what he had seen there, called "Beit al Mamâr," or the frequented house, and "Al Dorâh," towards which he might direct his prayers, and which he might compass, as the angels do the celestial one. Upon which God let down a representation of that house in curtains of light, and set it in Mecca, perpendicularly under its original, ordering the patriarch to turn towards it when he prayed, and to compass it by way of devotion. After Adam's death, they say, his son Seth built a house in the same form, of stones and clay, which, being destroyed by the deluge, was rebuilt by Abraham and Ishmael, at the command of God, in the place where the former had stood, and after the same model; directions for this purpose having been given them by revelation. Independently of these fabulous traditions, it is not improbable that it was erected by some of the patriarchs descended from Ishmael; but whether it was built as a place of divine worship, as a fortress, as a sepulchre, or as a monument of the treaty between the old possessors of Arabia and the sons of Kedar, it is impossible to ascertain. Reland supposes that it was the mansion of some ancient patriarch, and on that account revered by his posterity. At length it came to be considered as a building appropriated to the service of the Pagan Arab divinities; but that it was not originally a temple seems to appear from these circumstances, that the door was not placed in the middle of the structure, and that, for many ages, there was no divine worship performed in it, though the Pagan Arabs frequently went in procession round it. It is most probable, however, that the Caaba was primarily designed for religious purposes; and it is certain, that it was held in the highest veneration long before the birth of Mahomet. Having undergone several reparations, it was, a few years after his birth, rebuilt by the tribe of Koreish, who had acquired the custody of it either by fraud or force, on the same foundation; afterwards repaired by Abdallah Ebn Zobeir, the caliph of Mecca, and again rebuilt by Yusuf, surnamed Al Hejâj, in the 74th year of the Hegira, with some alterations, in the form in which it now remains.

The length of the Caaba, from north to south, is 24 cubits, its breadth, from east to west, 23 cubits, and its height 27 cubits. The door, which is on the east side, is raised about 4 cubits from the ground, and the floor is level with the bottom of the door. In the corner next this door is the "black stone" so celebrated amongst the Mahometans. This stone is set in silver, and fixed in the south-east corner of the building, or that which looks towards Basra, about 2 cubits and one-third, or seven spans, from the ground. The Moslems

pretend, that it was one of the precious stones of paradise, and that it fell down to the earth with Adam, and being taken up again, or otherwise preserved at the deluge, the angel Gabriel afterwards brought it back to Abraham, when he was building the Caaba. It was at first whiter than milk, but became black by the sins of mankind, or rather by the touches and kisses of so many people; the surface only being black, and the interior parts remaining still white. The Hindoos (see Asiatic Researches, vol. iv. p. 37r.) maintain, that this black stone was no other than the "linga," or "phallus" of Maha-deva, an ancient divinity; and that when the Caaba was rebuilt by Mahomet, (as they affirm it to have been,) it was placed in the wall, out of contempt; but the newly converted pilgrims could not give up the worship of the black-stone; and sinister portents forced the ministers of the new religion to connive at it. Indeed, stones were worshipped not only in Arabia, particularly at Mecca, but were distinguished by the appellation of *βαίτυλα*, (see *BÆTYLOS*), in Syria and Greece. It is also affirmed, that the black-stone was the object of an idolatrous worship from the most remote times. However this be, the black-stone is held in very high estimation by the Mahometans, and is kissed by the pilgrims with great devotion, being called by some "the right hand of God on earth." When the Karimatians profaned the temple of Mecca, and took away this stone, neither love nor money would induce them to restore it, though the inhabitants of Mecca offered no less than 5000 pieces of gold for it. However, after having kept it 22 years, and finding that they could not prevail with the pilgrims to abandon Mecca, they sent it back, with some contemptuous expressions, of their own accord. In the temple of Mecca is also the stone in Abraham's place, on which they pretend he stood when he built the Caaba, and bearing the traces of his footsteps; this is enclosed in an iron chest, and the Koran enjoins prayers to be offered before it. On the east side of the Caaba is the well Zemzem, which is covered with a small building or cupola, and the water of which bears the reputation of curing many bodily diseases, and even of washing away moral pollution and guilt. This water is much revered, as it is supposed to issue from the spring which supplied Ishmael when his mother Hagar wandered with him in the desert, and is not only drank by the pilgrims on the spot, but conveyed in bottles to most parts of the Mahometan dominions. There is also a white stone, said to be the sepulchre of Ishmael, which is very ancient, and which was held in considerable repute among the Pagan Arabs. It is situated on the north side of the Caaba, within a semicircular enclosure, 50 cubits long, and receives the rain-water that falls off the Caaba by a spout, formerly of wood, but now of gold. The Caaba has a double roof, supported within by three octangular pillars of aloes wood, between which are suspended, on a bar of iron, some silver lamps. The outside is covered with rich black damask, adorned with an embroidered band of gold, which is changed every year, and which is provided by the Turkish emperors. At some distance the Caaba is surrounded, but not entirely, by a circular inclosure of pillars joined towards the bottom by a low balustrade, and towards the top by bars of silver. Without this inner enclosure, on the south, north, and west side of the Caaba, are three buildings, which are the oratories, or places where three of the orthodox sects assemble to perform their devotion; and towards the south-east stand the edifice which covers the well Zemzem, the treasury, and the cupola of Al Abbas. All these buildings are enclosed, at a considerable distance by a magnificent piazza, or square colonnade, resembling the Royal Exchange of London, but much larger, covered with small domes and cupolas, from the four corners of which rise as many minarets or steeples, with double galleries,

galleries, and adorned with gilded spires and crescents, as are the cupolas which cover the piazza and other buildings. Between the pillars of both inclosures hang a great number of lamps, which are constantly lighted at night. The first foundations of this outward inclosure were laid by Omar, the second caliph, who built no more than a low wall, to prevent the court of the Caaba, before open, from being encroached on by private buildings; but the structure has been since raised, by the liberality of many succeeding princes and great men, to its present lustre. The precincts of Mecca, to the distance of 10 miles from the Caaba, are considered as sacred, so that in these it is not lawful to attack an enemy, or even to hunt or fowl, or cut a branch from a tree; and they have long ago enjoyed the rights of sanctuary. The ceremonies prescribed to the pilgrims on their arrival at Mecca, consist chiefly in processions round the Caaba, running between the mounts Safa and Merwa, making the station on mount Arafat, slaying the victims, and shaving their heads in the valley of Minâ.

In compassing the Caaba, which they do seven times, beginning at the corner where the black-stone is fixed, they move with a quick pace the three first times of perambulating it, and make a more quick progress during the four last circuits; in conformity, as they say, to the instructions of Mahomet, who directed his followers thus to shew themselves strong and active to cut off the hopes of the infidels, who had given out, that the immoderate heats of Medina had rendered them weak. As often as they pass the black-stone, they either kiss it, or touch it with their hand, and kiss that. At the close of the ceremonies, the pilgrims slay their victims in the valley of Minâ; and these must be sheep, goats, kine, or camels; part of these are eaten by themselves and their friends, and the rest distributed to the poor. Having concluded their sacrifices, they shave their heads and cut their nails, burying both in the consecrated ground, and then visit the Caaba to take their final leave of the sacred building.

These ceremonies, as the Mahometans allow, were observed by the Pagan Arabs many ages before the appearance of their prophet; and were confirmed by Mahomet, with some few alterations. He ordered, that when they compassed the Caaba, they should be clothed, whereas, before his time, they performed this piece of devotion naked. Each tribe either found or introduced into the Caaba their domestic worship: the temple was adorned, or defiled, with 360 idols of men, eagles, lions, and antelopes; and most conspicuous was the statue of Hebal, of red agate, holding in his hand seven arrows, without heads or feathers, the instruments and symbols of profane divination. But Mahomet destroyed these idols, sanctified the Caaba, and made it the chief place of resort and worship for all devout believers. With regard to the procession round the Caaba, Reland (De Rel. Mah. p. 123.) observes, that the Romans had a ceremony of this kind in their worship: as they were ordered by Numa (see Plutarch on Numa) to use a circular motion in the adoration of the gods, either to represent the orbicular motion of the world, or the perfecting the whole office of prayer to that God who is maker of the universe, or else in allusion to the Egyptian wheels, which were hieroglyphics of the instability of human fortune. D'Herbelot. Bib. Or. Sale's Prel. Disc. to the Koran, p. 114. 122.

CAAMINI, in *Botany*, a name given by the Spaniards and others to the finest sort of the Paraguay tea. It is the leaves of a shrub which grows on the mountains of Maracaya, and is used in Chili and Peru as the tea is with us. The mountains, where the trees which produce this valuable leaf grow naturally, are far from the inhabited parts of Paraguay; but the people of the place know so

well the value and use of it, that they constantly furnish themselves with great quantities of it from the spot. They used to go out on these expeditions many thousands together, and their country was left to the insults of their enemies in the mean time, and many of them perished with the fatigue.

To remedy these inconveniences, they have of late planted the trees about their habitations; but the leaves of these cultivated trees have not the fine flavour or the virtues of the wild ones. The king of Spain has permitted the Indians of Paraguay to bring to the town of Santfoy, twelve thousand robes of the leaves of this tree every year: but they are not able to procure so much of the wild leaves annually; about half the quantity is the utmost they bring of this; the other half is made up of the leaves of the trees in their own plantations, and this sells at a lower price, and is called *pabos*. The robe is about five and twenty pounds weight; the general price is four piales for the robe, and the money is always divided equally among the people of the colony.

CAANA, in *Geography*. See KENNÉ.

CAANTJE of Verkenkop, in *Ichthyology*, the ACHARAUNA of Marcgrave, Willughby, Ray, &c. and the CHÆTODON NIGRICANS of Gmelin, which see.

CAAOPIA, in *Botany*, the Brazilian name of *Hypericum bacciferum*.

CAAPEBA. See CISSAMPELUS.

CAB, or KAB, denotes a Hebrew measure of capacity, equal to the sixth part of the seah, or an eighteenth of the ephah. Arbuthnot's Tab. Anc. Coins, &c. n. 14. and 15.

The cab of wine contained two English pints; the cab of corn, 2½ pints corn measure.

We also find mention of the cab as a dry measure, in Grecian and Roman writers: some make it equal to the Grecian choenix, and assert it to be the quantity of what a labourer eats per day, as assigned by Cato.

CABACOS, in *Geography*, a market town of Portugal, in Estremadura, 4 leagues from Espinal, and 4 from Thomar, situate on a plain in a pleasant country near the river Nabaõ, and almost encompassed by hills, which consist partly of sand-stone and partly of lime-stone. This town formerly belonged to the knights-templars, after the destruction of which it was transferred to that of Christ. The plain on which it stands is almost entirely covered with olive-trees, and in its vicinity are cork-trees.

CABAIGUAN, a town of the island of Cuba, 35 miles S.E. of Villa del Principe.

CABAL, a name given to a sort of drink made of dried raisins. The manner in which the Portuguese make cabal is this; they take out the stones of about twenty pounds of raisins, and then bruising the raisins a little, they put them into a barrel of white wine, in the month of January or February, and let them stand till about Easter. It is then very clear and rich, luscious and palatable to the taste. It is recommended to stop coughs, and give strength to the stomach. It is worth while to try the experiment with the same proportion of raisins to the same quantity of our English cyder, which would probably prove a fine drink. Phil. Trans. N° 157.

CABAL, in *English History*, an appropriate appellation, distinguishing the infamous ministry of Charles II. and formed of the initial letters of their names, viz. Clifford, Ashley, Buckingham, Arlington, and Lauderdale. Lord Clifford was an undisguised papist; the earl of Arlington, a concealed one; Buckingham was a debauchee, and reputed an atheist; Shaftsbury (lord Ashley) was a man of acknowledged genius,

but,

but, according to Burnet, a deist; though he possessed great knowledge of men and things, he frequently changed sides as his interest directed; and Lauderdale was a man of learning, and from having been almost a republican, was become a tool of the prerogative, and disposed to concur in the most desperate councils; with scarcely any traces of religion remaining, though he called himself a presbyterian, and manifested to the last an aversion to king Charles I. These were the men to whom Charles entrusted the conduct of his affairs; and who plunged the remaining part of his reign into difficulties, which almost proved fatal to his government. By their counsel and concurrence the king and duke of York were encouraged in their designs of introducing popery and arbitrary power; in order to which, a secret treaty was concluded with France; the triple alliance was broken; and a new war declared with the Dutch for destroying their commonwealth; and by this means the king had a plausible pretence for keeping up a standing army, which might serve to secure him in the exercise of an absolute authority over his subjects, to set aside the use of parliaments, and to settle the Roman catholic religion in the three kingdoms. At length, however, parliament interposed, A.D. 1674. Clifford, indeed, was dead; Shaftsbury had made his peace with the country party, and Buckingham was desirous of imitating his example; and Lauderdale and Arlington were exposed to all the effects of national resentment. Articles of impeachment were drawn up against the latter, which, however, were never prosecuted; and the former declined daily in the favour of the king, and became contemptible to the people. Thus ended the power of a junto, that seemed to have formed a plan for overturning the constitution, and establishing upon its ruins unlimited monarchy.

CABALA *vein*, in *Natural History*, a name given by our Sussex miners to one kind of the iron ore commonly wrought in that country. It is a stony ore, of a brownish colour, with a blush of red, which is more or less conspicuous in different parts of the same masses. It is usually found in thin strata, lying not far from the surface, and is not very rich in iron, but it runs very readily in the fire.

CABALACA, or **XABALA**, in *Ancient Geography*, a town of Albania, according to Pliny and Ptolemy.

CABALARIA, in *Botany*. Flor. Peruv. pl. 30. Class and order, *polygamia diaxia*. Gen. Char. Cal. small, persisting, campanulate, with five deep, oval divisions. Cor. wheel-shaped: tube very short; border divided into five oval segments. Stam. anthers five, inserted at the base of the segments of the corolla. Pist. stigma nearly sessile, five-sided; germ superior, nearly round. Peric. drupe globular, one-seeded, with five oblong points. Male and hermaphrodite flowers on separate plants; the former differ from the latter only in having abortive pistils.

Eight species are described in the Flora Peruvienfis. They are all shrubs, and are nearly allied to the genus *Sideroxylum*. Jussieu has separated one of them from the rest, and formed for it a distinct genus which he calls *mangilla*.

CABALI, in *Ancient Geography*, a people of Africa, in Libya, situate in the interior of the country of the *Auschise*, according to Herodotus; who represents them as very numerous, and extending along the coasts of the sea towards the territory of Barca, and as adopting customs and habits similar to those of the inhabitants of the country adjacent to Cyrene.

CABALIA, a country of Asia Minor, in Lycia, in

which were the towns of Oenoanda, Balbura, and Bubon, according to Pliny and Ptolemy.

CABALISTE, in *Commerce*, a term used at Thoulouse, and in the whole province of Languedoc; and signifying a merchant who does not trade in his own name, but is concerned in the trade of another merchant in chief. See *ANONYMOUS partnership*.

CABALLARIA, in *Middle Age Writers*, lands held by the tenure of furnishing a horseman, with suitable equipage in time of war, or when the lord had occasion for him.

CABALLEROS, or **CAVALLEROS**, in *Commerce*, are Spanish wools, of which there is a considerable trade at Bayonne in France.

CABALLI, among *Mystic Philosophers*, denote the shades or aërial bodies of men who died any sudden or violent death, before the expiration of their predestinated term of life. The *caballi*, called also *cabales* or *cobales*, are supposed to wander as goblins or ghosts over the face of the earth, till their destined term is accomplished; being doomed to live out the time as spirits, which they ought to have spent in the flesh.

CABALLINE, **CABALLINUS**, from the Greek καβαλλος, a horse, something relating to, or partaking of, the nature and qualities of a horse.

CABALLINE Aloes. See **ALOES**.

CABALLINUM, *Cabillonum* (Cæsar), *Cabyllinum* (Strabo), *Cabilio* (Peutinger), *Cabellio* (Anton. Itin.), *Caballodunum* (Not. Imper.), and *Cabillo* (Ammian. Marcell.), in *Ancient Geography*, *Chalons-sur-Saone*, a town which belonged to the Ædui, where Cæsar established magazines, and between which and Augustodunum he formed a communication by a road. The emperor Constantine assembled his army in this place.

CABALLINUS Fons, a fountain of Greece, in Boeotia, near mount Helicon. It is the *Hippocrene* of the poets.

CABALLUS, **FRANCIS**, in *Biography*, born at Brescia in Italy towards the end of the 15th century, was several years a distinguished teacher of medicine in the university of Padua, where he died, at an advanced age, in the year 1540. The work by which he distinguished himself is entitled "*Libellus de Animalium Theriacum Ingredientibus*." It was first published with the *Opera Medica* of Montagnana, fol. 1497, Venice, and has been frequently reprinted, and shews the author to advantage, as intimately acquainted with the ancient writers. Haller. Bib. Med. Eloy. Dict. Hist.

CABALLUS Equus, in *Zoology*, the common horse, with solid hoofs, a long flowing mane, and tail universally covered with long hairs. See **HORSE**.

CABALSUM, in *Ancient Geography*, a town of Egypt. Antonin. Itin.

CABANA, a place of Gedrosia, mentioned in the Periplus of Nearchus, and supposed to be the *Canana* of Ptolemy.

CABANDENI, a country of Asia, in Susiana.

CABANE, in *Geography*, a town of South America, in the country of Brasil, and government of St. Paul.

CABANES, **LES**, a town of France, in the department of the Tarn; 4 leagues N.W. of Alby.—Also, a town of France, in the department of the Arriège, and chief place of a canton in the district of Foix, 2 leagues S.E. of Tarascon. The town contains 430, and the canton 5,586, inhabitants; the territory includes 340 kilometres and 25 communes.

CABANODURUM, in *Ancient Geography*, a town of Norica, on the Danube. Ptolemy.

CABARET, or *Petite linotte*, of Buffon, in *Ornithology*, the

the mountain linnet of the British Zoology, and the *Fringilla montium* of Gmelin, &c.

CABARITA, in *Geography*, a small island near the north coast of Jamaica. N. lat. $18^{\circ} 24'$. W. long. $76^{\circ} 40'$.

CABARITTA, a river on the south side of the island of Jamaica, which runs into the sea about $1\frac{1}{2}$ mile W. from Savanna la Mer.

CABAROS, or **TITIAN**, the most western of the islands of Hieres, E. of Toulon, on the coast of France, in the Mediterranean.

CABARRAS, a new county of America, in the district of Salisbury, North Carolina; containing 506 inhabitants, of whom 659 are slaves: the court-house being 439 miles from Washington.

CABASA, in *Ancient Geography*, an episcopal town of Egypt, in the Delta, and the capital of the nome called *Cabafites*.

CABASILAS, **NILUS**, in *Biography*, a Greek, archbishop of Thessalonica, flourished in the 14th century, and wrote two treatises against the Latins. The design of the first treatise is to shew, that the division between the Greek and Latin churches is owing to the popes' having refused to submit the decision of controverted questions to an oecumenical council, and arrogating the decision to themselves; and the second relates to the supremacy of the pope, and attempts to prove that though he holds his episcopacy of Rome from St. Peter, he is indebted for his primacy to laws, councils, and princes; it also denies the pope's infallibility, and his jurisdiction over other patriarchs. These treatises which are clear, methodical, and learned, were first printed in Greek at London, without date; in Greek and Latin at Basil in 1544; at Frankfort in 1555; at Hainault, with the notes of Salmasius, in 1608; and at Amsterdam in 1645. This prelate was also the author of a large work on the procession of the Holy Spirit. Du-Pin. Mosheim.

CABASILAS, **NICHOLAS**, nephew of the former, and his successor as archbishop of Thessalonica, was employed in negotiations by the emperor Cantacuzenus. In opposition to the Latins, he composed an accusation against them, and a work "On the Procession of the Holy Spirit." He also wrote "An Exposition of the Liturgy," in which he delivers the doctrine of the Greek church concerning the mass; and which was printed in Latin at Venice in 1545, and at Antwerp in 1560; and in Greek and Latin in the "Bibliotheca Patrum," Paris, 1624. In the same "Bibliotheca," is also included his "Life of Jesus Christ," translated into Latin, and separately printed at Ingolstadt, in 1604. A translation of his work "Against Usury" is also contained in the "Bibliotheca." In the sciences of mathematics and astronomy, he is said to have surpassed all his contemporaries. With respect to his character as a writer he resembled his uncle. Du-Pin. Mosheim.

CABASSOLE, **PHILIP DU**, a friend and frequent correspondent of Petrarch, was born at Cavaillon in Provence, and became bishop of that city in 1344. As chancellor to Sanche, queen of Sicily, he, conjointly with her, governed that kingdom during the minority of her grand daughter Joan. In 1366, he was nominated patriarch of Jerusalem, and was appointed by Urban V., cardinal and vicar-general of the diocese of Avignon. During the residence of the popes in this city, he was entrusted by Gregory XI. with the superintendence of the estates of the church in Italy. He was also bishop of Sabina. He died in 1372. A work "De Nugis Curialium," and two books "Of the Life and Miracles of St. Mary Magdalen," are ascribed to Cabassole. Du-Pin.

CABASSUS, or **CABESSUS**, (Homer *Iliad*. l. xiii.

v. 363.) in *Ancient Geography*, a town of Asia, in Armenia Minor. Steph. Byz. and Strabo place it in Cappadocia. Hellanicus refers it to Lycia.

CABASSUT, **JOHN**, in *Biography*, a priest of the oratory, was born at Aix in 1604, and became director to cardinal Grimaldi, whom he accompanied to Rome, and by whom he was persuaded to publish several works. He was an indefatigable student, and condescending in his advice to all who applied to him with cases of conscience. He was professor of canon law at Avignon, and died at Aix in 1685. His works are, "Juris Canonici Theoria et Praxis," Lyons, 1660, often reprinted, and improved by the notes of Gibert; in a folio edition, printed at Poitiers in 1738; "Notitia ecclesiastica Consiliorum Canonum, veterumque Ecclesiarum Rituum," 1670, fol.: "A Treatise on Usury;" and decisions on various questions under the title of "Horræ subcessivæ." Moreri.

CABATANUS, in *Ancient Geography*, a town of Arabia Felix, in the territory of the Chatramotitæ. Strabo.

CABAY, a name given by the Indians and inhabitants of Ceylon and Arracan to garments made of silk or cotton ornamented with gold, worn by the principal persons of the country.

CABBAGE, in *Botany*. See *BRASSICA rapa*.

CABBAGE, in *Agriculture*, the name of a well known esculent plant, of which there are several varieties cultivated by the farmer, as winter and spring food for different sorts of live stock. It is a sort of culture that is of much consequence on all the stiff heavy soils which are too moist and strong for the successful practice of turnip husbandry. And another circumstance that adds to its importance is the little danger that attends the crop, and the largeness of the quantity of food that is produced: as it has been found to be considerably more in proportion to the space of ground that is occupied, than that of turnips. Mr. Young has observed that cabbages "flourish to very great profit on all good soils, and have the particular property of enabling the farmers of clays and wet loams, to winter more cattle than those of lighter lands can effect, by means of that excellent root, the turnip. The great evil of clay farms used to be," says he, "the want of green winter food, which confined their stocks to hay alone, and, consequently, prevented their reaping those extended articles of profit, that arise from numerous heads of cattle; and, besides the immediate benefit from the cattle, they lost also the opportunity of raising large quantities of dung, which never can be effected so well as by keeping cattle. But all these evils are by the cabbage culture remedied, and the clay farmers put in possession, in many respects, of an equality with the turnip ones. If the difference between a summer fallow-year on clay and a turnip-fallow on light land be considered, the importance of this discovery will, he contends, be sufficiently clear. Thirty shillings for an acre expence of the first, are not an exaggerated calculation; but all is saved on the turnip land, perhaps with profit: and the barley that follows the turnips is probably nearly as good as that which succeeds the summer fallow clay. Supposing the following clover and wheat equal to both, according to soil, still there remains a superiority in the article manure; for all that is raised by the consumption of the turnip crop is so much superior to the clay soil. But reverse the medal: suppose cabbages to be introduced on the clay, and the scene is changed. That crop will exceed the turnips, yield more profit, and enable the farmer to make more manure. For these reasons, the recommendation of cabbages appears to be extremely well founded, and, consequently, those farmers who possess the proper soils, cannot determine too soon to enter on the cultivation of them. But there is another circumstance

CABBAGE.

circumstance attending some sorts of cabbages, which make them highly eligible on all farms, which is, their lasting for sheep feed longer in the spring. *Ruta бага*, turnip cabbage, cabbage turnip, and green borecole, are in perfection in April, and last even to May, the most pinching period of the year. Turnips will do no such thing; consequently, those farmers who possess turnip soils, should on no account slight the culture of cabbages for this purpose."

In regard to the preparation of the land, the author of "Practical Agriculture" advises, that "as the roots of the plants run deep, and stand in need of a large proportion of nourishment, a considerable degree of pulverisation should be effected, and the soil be well loosened to a considerable depth. These effects, he conceives, may be produced in the most perfect manner, by repeated deep ploughings, and exposing as large a surface as possible to the action of the frosts during the winter season, by laying the land up into pretty high ridges. Three ploughings are mostly found sufficient for this purpose; but the number should always vary according to the nature and state of the land. When this sort of crop succeeds wheat, barley, oats, or beans, the land is generally ploughed up in the autumn by a pretty deep furrow, and formed into ridges of about three feet in width; in this state, it may continue till the spring, when it should be well broken down by harrowing in different directions. It is then to be ploughed again, but with somewhat less depth than before. After this, as near as possible to the time of planting, the ground may again be well harrowed over, and a suitable proportion of good stable manure applied, as from fifteen to twenty-three horse cart loads to the acre; or where composts are made use of, from twenty to thirty, and immediately turned into, or inclosed in the middle of the ridges. After this is accomplished, the land becomes ready for the reception of the plants. In some districts, however, a practice prevails, of spreading the manure upon the land, and turning it in with the first ploughing. In this way the ground is supposed to be prevented from becoming too open by the action of the manure, and the danger of the plants being injured in drouthy seasons prevented. It is obvious, however, he thinks, that in this mode, much of the benefit to be derived from the manure must be lost by its remaining so long incorporated with the soil before the plants are put in, and that the great advantage of having it in its most active and concentrated state, immediately below the roots of the plants, must be wanting." It is stated in the "View of the State of Agriculture in Mid Lothian," that "in the vicinity of Edinburgh, in preparing for this crop, the ground is ploughed in November, and again in April following, and well reduced by harrowing, &c. It is then laid out in three feet drills, thirty carts of dung per acre being laid in the drills, which are then split with the plough covering the dung, and then rolled lengthways, after which, the plants are put in." And the author of the "Agricultural Survey" of the county of Kent conceives that "the tillage necessary for cabbage is to plough the land in the winter six or seven inches deep, and to cross-plough it in the spring in a dry season, and then after manuring with a good covering of rotten dung, before planting in June, to plough it again, turning over a furrow ten inches wide for planting upon." But in Suffolk, according to the account of the secretary to the board of agriculture, "the land is prepared by four ploughings: the last of which buries an ample quantity of dung, and forms the land a second time on three feet ridges to be planted upon."

Dr. Dickson, in his "System of Practical Agriculture," observes, that "in the field culture of cabbages, several dif-

ferent sorts are capable of being employed, but that those varieties that are most useful as cattle food, and the most capable of withstanding the severity of the winters in this northern climate, are the Scotch, the drumhead, the American, and the open green cabbage, or spring kale. The first, when of the true firm flat topped kind, has been found to be wholly incapable of being injured by frosts, except in some cases a few of the outside leaves. The second sort, or true drum-head, is likewise extremely hardy, and more close in its texture than many other varieties, being of course very heavy in proportion to its size. It admits of being planted closer than the large American cabbage, which in particular situations is an advantage. This sort is known in some districts by the name of the fallow loaf cabbage, but it would seem to differ from it in some respects. As this kind is not found sufficiently hardy to bear the effects of very severe frosts, a mixed stock is frequently employed, which is produced by planting it and the common red cabbage together, and after the seed pods are formed, cutting the latter, and leaving the former for seed. This mixed kind, which is of a deep green colour veined with purple, besides retaining the size of the drum-head, possesses the hardness of the red cabbage. The third, or American kind, has not only a large size, but continues good to a late period in the spring. The last or kale sort is perfectly hardy, and capable of being converted to use as a cattle and sheep food at the latter end of April, or beginning of May, when other sorts of green food are extremely scarce, and difficult to be procured. But, besides these, the varieties known by the titles of the flat, Dutch, the Yorkshire, the Savoy, and several others, may, he says, be made use of where the climate is more mild."

The same writer also adds, that "the chief advantage of planting large sized cabbages in the field is that of their being capable of being fet out at such distances as to readily admit of their being cleaned and kept in order by the plough, without any loss being sustained in the quantity of the produce. Where the soil is not of great staple, and the expence of hand labour reasonable, the smaller sorts may, he thinks, be made use of with advantage."

Mr. Young, however, fears that "the great American cabbage, which, thirty years ago was to be had, and which came to 50 or 60, and even 80lb. weight is lost at present. And the great cattle cabbage, the great Scotch, the drum-head, the Dutch, and other sorts are not distinct varieties. A farmer should, he thinks, at first get the best stock he can, and then trust only to the seed he raises himself. At present he is inclined to believe, that the best sort to be procured is the large red cabbage. It comes to a good size, and is harder than most others."

In procuring seed for raising young cabbage plants, great care should be taken, that it be obtained from the most perfect plants of the different kinds, and such as have seeded without any other variety of the same tribe blowing near them, as it is, perhaps, only in this method that they are capable of being kept of a true kind. It may, therefore, in this view, be of great advantage to have the plants, intended to stand for seed, planted out by themselves in a piece of ground at a distance from the others, and well protected from birds. When seed of this sort is purchased, such as is new should always be preferred, as it not only vegetates much quicker, but is more to be depended upon for a proper supply of plants. In dry seasons, steeping the seed in water, or some other liquid, may also be of utility. The beds on which the seed is sown should be of a good rich quality, well prepared by digging, and the application of manure; as where the soil is poor and not sufficiently enriched

riched, the plants are apt to be weak and stunted in their growth, as well as much injured by weeds. Much injury also frequently arises to young cabbage plants from the seed being sown too thick; care should therefore be taken to have them properly thinned out whenever they come up in too thick a manner. One ounce or an ounce and a half of good seed may in general be sufficient for sowing a bed fourteen or fifteen feet long, and five or six in width, or for raising two or three thousand good plants; in which proportion, half a pound will afford more plants than are sufficient for planting an acre of ground. Mr. Young advises three ounces of seed to each square perch well raked in, and then a peck of foot sown over each foot of ground; and that when it is intended to cultivate these crops on a large scale, an acre of land should be inclosed for the purpose, kept well manured, and the seed drilled in at nine inches, for the convenience of weeding and hoeing.

In respect to the periods of putting the seed into the ground, they must depend much upon the intentions of the cultivator: where the produce is to be consumed during the winter months, as in December, January, or February, the seed should be sown in July the preceding year, and the plants be put out in March, April, and May, the following year; but if intended for consumption in March, April, or May, the seed should be put in about the latter end of February or beginning of March, in the former year, and the plants be set out in the first or second week in July in the same year. By continuing to sow with regularity in the months of February, May, and July, or August, successive crops of young healthy plants may be secured, and the round of cabbage husbandry be effectually preserved. These periods of sowing and planting out should, however, be attended to with considerable exactness, in order to secure good and certain crops, and the seed-beds be well protected from birds. But that the cultivator may not be disappointed in the number of plants, it may be useful to sow a little seed at different times, at the distance of a few days from these periods, always choosing as moist a time as possible for the purpose. And by hastening or protracting the time of transplanting, or setting out the crops, the growth of the plants may be so managed as to have them ready for use either more early or later, according as circumstances may require. The author of *Practical Agriculture* observes, that, "in both the spring and autumn plantings it is, however, the best practice to be sufficiently early, as in the former case the plants will have the great advantage of the spring showers, and be in less danger from the heat of the summer season; and in the latter, more fully established in the soil before the winter sets in, as the growth of the plant after September cannot in any degree be depended upon in field culture. Besides, from the length of time which is requisite for their attaining their full size, it must always be advantageous to have them set out early. They seldom arrive at their full growth in less than four months, where they grow in the most perfect manner. By sowing very early in the spring, and setting the plants out as expeditiously as possible, both full and forward crops may often be obtained. There is, however, in general, an advantage in the autumn plants, that though they be more liable to be injured in the winter by slugs, and other causes, they are in a state to be planted out very early in the spring, while those of the spring sowings can seldom be set out till the summer is much advanced." In this culture different methods have been attempted, such as setting the plants to stand the winter in the field, and letting them remain in the seed-bed to be put out in the spring; the former is most advisable in mild winters and sheltered situations, as the

crops will be much more forward; but in exposed situations the latter may be adopted with more success. By sowing in May and June, forward crops of large cabbages may be procured the ensuing year, and coleworts for the following spring; but in this last intention they should be planted closer together than usual. In this way the loss of weight, and danger of cabbage crops in the winter months, are fully obviated. On the whole, the sooner the autumnal plants are put out in the field after the frosts are over, the better; and the spring plants should be placed out as soon as possible after them, as before the end of April. It is the custom of some nice cultivators to prick the plants out from the seed-beds, while very young, into other beds; and the practice is certainly very advantageous, not only in checking their too forward growth, but in rendering them more fit for planting out and less liable to run to seed when transplanted into the field. The expence and trouble of this operation are, however, too great, where the cabbage culture is conducted on an extensive scale, to admit of its being generally performed.

Another practice, adopted by the late Mr. Bakewell, and since employed by other cultivators, by which the inconvenience of waiting for a suitable moist time for setting out the plants, and the danger of their not succeeding under other circumstances, are avoided, is that of drilling the seed in where the plants are to remain at the proper seasons, as April, May, or June, and the following month. But the first is the most general in this mode of culture. The crops, in this system of management, should be put in after turnips, potatoes, beans, peas, tares, or others of the hoeing or cleaning kinds: the land being ploughed in ridges three or four feet in width in the latter cases, before the winter frosts, and before the time of drilling the seed, manure to the extent of from twenty to thirty cubical yards to the acre, according to circumstances, introduced by reverting the former ridges. After having remained in this state, secure from rain, a week or fortnight, when the soils are stiff, harrowing should be performed, but under other circumstances the roller to which the drill is fixed will level them sufficiently, as they should not be reduced too greatly. In performing the business, the Northumberland drill is to be attached to a roller eight feet in length for four feet ridges, and six feet, where they are three, by means of a chain, hooks, and staples. The roller thus covers the ridge that is drilling and that which is to be drilled by the next turn. Proceeding constantly in this way, the seed will be effectually covered by four pieces of Jack chain about two feet in length, which are fixed to the centre of the drill behind, and drawn after it, and deposited to the proper depth of about half an inch by weighing on or loading the drill. When the plants appear, if a surge of foot be drilled over them to the extent of ten or twelve bushels the acre, Mr. Young thinks it will be of great advantage in protecting them from the attacks of the fly. This, he supposes, may be very conveniently done by one hopper and a round of cups similar to those of Cook's drill, but larger, fixed to such a frame as that of the Northumberland drill.

There can be little doubt but that this method will be highly advantageous, as saving much labour and preventing the plants from being checked in their growth by transplanting, when the soils are sufficiently fine and mellow: but under other circumstances it cannot probably be wholly depended upon.

In planting out crops of this sort, care should be taken to have the business performed as soon as possible after the land has been well saturated with rain; as in this case the plants much sooner establish themselves in the soil, and

CABBAGE.

fewer vacancies are left, by their decay, to be afterwards filled. The plants are likewise much more readily raised from the seed-bed, and with much less injury to the roots, which is a matter of importance. The work is performed upon the land in a flat state, and also when raised into ridges by means of the plough; but the latter method is the more general, and ought probably to be preferred wherever the soil is much inclined to the retention of moisture. On the lighter and more dry soils the flat surface may, however, be more proper and useful, as preserving a due degree of moisture more effectually, especially in dry seasons.

In regard to the distance of planting, it must depend in a great measure upon the strength and goodness of the soil, and the natural size of the variety of cabbage that is employed; but in general it should be such as that the ground between them may be cultivated and kept clean by the plough, and yet admit of bearing a full crop. It is evident that where the plants stand thin they will attain a larger size, while in close planting there will be a greater number of plants upon the land, which may compensate for the disadvantage in the want of size. It seems probable that both cabbages and turnips may be set out too thin, as the increase of size is not always equal to that of number. It is the practice in some districts, where this culture is well performed, to set them out regularly at the distance of three feet each way, as in this method the plough in cleaning and earthing up the crops, can be conducted both in longitudinal and cross direction, and of course the soil between the plants be not only stirred in the most effectual manner, but the earth most completely laid up to the roots of the plants, and their growth more fully promoted. Where the larger varieties of cabbage are employed, and the land is sufficiently strong, this may of course in general be the most advantageous distance; but where the smaller varieties are made use of, and the ground is of a less strong and rich quality, two feet and a half may be a more proper distance. Other cultivators follow a different practice, some preferring four feet by two feet and a half, while others advise only two feet by twenty inches, or even 18 inches. In these latter distances the cabbages are, however, under the necessity of being hand-hoed between the plants in the rows, the intervals only being cleaned by the plough. The culture cannot of course be by any means so perfectly performed; the soil in the former method being wholly removed, except the small portions immediately about the roots of the plants, while in these much of it will remain untouched, and be not only left in a more foul condition for succeeding crops, but less beneficial in promoting the growth of the cabbages. The experiments and observations of Mr. Baker, in the cultivation of cabbages in the field, led him to recommend the following as the most suitable distances for the different varieties which he employed.

<i>Varieties.</i>	<i>Seasons.</i>	<i>Distances.</i>
Long-sided cabbage,	Winterplants,	2ft. by 4, or 18 in. by 4ft.
Flat Dutch cabbage,	ditto	ditto ditto.
Scotch cabbage,	ditto	ditto ditto.
Flat Dutch cabbage,	Spring plants;	18 inches by 4 feet.
Scotch cabbage,	ditto	ditto ditto.
Turnip cabbage,	ditto	1 foot by ditto.

The nature of the soils on which they are cultivated is not, however, described.

For all the larger sorts of cabbages on the different sorts of strong rich soils, the most advantageous distances may be three feet each way, and on the more light soils two feet and a half. But for the smaller sorts, two feet each

way on the strong soils, and eighteen or twenty inches on such as are light. Whatever distances may be thought the most advantageous, it is observed by a late writer, that it will constantly be necessary to attend to the manner of setting them out, the size of the plants, and the mode of taking them up from the seed-beds, as much depends upon these operations being properly performed. In setting the plants out in the ridge method, it is necessary to have them placed in lines as regularly as possible, according to the distances employed, along the middle or crown of the ridges, immediately upon the part in which the manure has been inclosed; as by having this accomplished in an accurate manner, they not only admit of being cultivated betwixt with more ease and convenience, but derive the utmost possible advantage from the manure, and at the same time, from its being more concentrated, require a smaller proportion to be employed. The size of the plants is likewise a circumstance of consequence, as the large stout plants not only take root with more certainty, but are less exposed to danger from slugs and other causes. In removing the plants from the seed or other bed, for the purpose of being planted out, it is also of much utility to have their roots as little broken or otherwise injured as possible. Moist or rainy weather is the most suitable for this operation; but in dry seasons it may be easily accomplished after the plants in the beds have been well watered. The number of plants that are employed must obviously be different, according to the distances at which they are planted; but from five to seven thousand are generally sufficient for an acre of land. In setting the young plants out into the ground, it is necessary to see that the labourers fix them well in the soil, by applying the mould so firmly round their roots by means of the dibble, that they cannot easily be drawn out by taking hold of their uppermost leaves. The plants are mostly dropped at proper distances by women and children, and the dibblers follow, having a stick for marking the distances with in an exact manner. In this way an ordinary labourer will plant a quarter of an acre or more in a day, and an expert gardener nearly as much more. In the course of a fortnight or three weeks after the first setting out of the plants, it will be requisite to fill up all the vacancies that have been produced by the failure of particular plants: in performing which a moist time, if it be possible, should be fixed upon."

In respect to the expence of planting out and the other necessary operations in crops of this sort, it must be liable to vary greatly, according to the circumstances of the soil, and the situation in respect to labourers. In Suffolk, according to the writer of the corrected report of the agriculture of that district, it is in general about three shillings the acre, but in other places frequently a little higher, the whole charge of an acre being estimated in this way:

<i>Expence of cabbage culture on one acre.</i>			
	<i>£.</i>	<i>s.</i>	<i>d.</i>
Charges for rent	-	0	10 0
Tythes	-	0	1 6
Poor rates	-	0	1 3
For ploughing land five times	-	1	0 0
Harrowing twice	-	0	0 6
Manuring	-	2	0 0
Seed-bed and seed, &c.	-	0	1 6
Planting out	-	0	3 0
Filling up deficiencies	-	0	0 6
Hand-hoings	-	0	4 0
Horse-work in hoeing	-	0	4 0
Cutting and cartage, one fourth of a mile,	-	0	15 0
<hr/>			
	<i>£. 5</i>	<i>1</i>	<i>3</i>

CABBAGE.

In this estimate, the whole of the expence of manure is, however, it is observed, charged to the cabbage crop: but the advantage ought properly to be divided, which would lessen the expence considerably. From the increase in the prices of land and labour, which has lately taken place, the expences of this sort of cultivation will at present stand considerably higher.

In the after culture of this sort of crop, much advantage is derived from having the mould or soil frequently stirred and applied to the roots of the plants. It is, indeed, only by a due repetition of these operations, that the plants attain their most perfect size and growth. The business is accomplished by means of ploughs, horses, and hand-hoes. Where the plants are set out in a regular manner at sufficient distances, the work may be performed in the most cheap and effectual way by the use of the horse-hoe, or the common light swing-plough; but, where narrow distances are employed, it can only be well executed by means of the hand-hoe. Sometimes both the horse and the hand-hoe are made use of, as where the crop is planted close in the rows with wide intervals. It is observed, by an useful modern writer, that "the number of hoeings must in general depend upon the state of the land and the nature of the season, but three will in most cases be necessary. The first should be given about three weeks or a month after planting, according to the growth of the plants, and the second at an equal distance of time; the third may be repeated as the necessity of the crop may require, attention being constantly paid to keep the land perfectly clean from weeds, and the earth or mould well loosened and laid up to the plants. In the first operation, it is usual to turn the mould or soil from the plants, but, in the subsequent ones, to apply it up to them, which, where the plants are set regularly in squares at the distance of three feet, may be performed in both directions of the ground, in the most perfect manner. In this way the cultivator not only in a great measure avoids the heavy expence of hand-hoeing, but contributes to the growth of the crop in the most effectual manner."

In executing the work by means of horse labour, some make use of the horse-hoe, others, the double mould-boarded and common hoe-ploughs; and it has been contended by Dr. Anderson, that it may be effected with equal exactness, and in an equally effectual manner, by any common light swing-plough. The author of "Practical Agriculture" observes, "that, after these hoeings have been accomplished, the hand-hoe may be occasionally employed just about the roots of the plants, if there should be necessity. And where the crops are planted out at narrow distances, either wholly or in the rows only, it must altogether, or in a great measure, be depended upon for the after culture of the crops. In these cases two or three hoeings are mostly found necessary. The expence of each hand-hoeing in such crops is, in general, from two shillings to half a crown, or three shillings an acre." And where the crops have been put in, in the drill method, they will require to be thinned out to proper distances in the rows as soon as the plants have attained a few inches growth, being afterwards cleared and moulded up in the same manner as those which are planted out in the common way.

These crops, like many others, are liable to be injured by the attacks of animals of the insect kind, at different periods of their growth. While the plants are young and tender in the seed bed, the *Leath*, or *fly*, often greatly injures or destroys them. They, likewise, occasionally suffer in the seed-bed from the attacks of the caterpillar, produced by the cabbage butterfly (*Papilio Brassicae*), though much less frequently, as this insect makes its appearance, in gene-

ral, too late to do much injury to field crops. Much harm is likewise done to cabbage-plants while young, on their being first planted out, by the slug, but afterwards they are little exposed to its attacks. The depredations of the fly or beetle, as well as the caterpillar, may, in general, be, in a great measure, prevented, by the sowing or dispersing of wood-ashes, soot, or other similar matters, in a powdery state, over the young plants, on the first appearance of the insects among them. But "besides the attacks of insects on the leaves of the plants, cabbages are subject to a disease in the roots, in which they become swelled out and knobby, and the plants weak and of imperfect growth. This vegetable disease has been supposed to be caused by the attacks of grubs below the surface of the ground, and to be chiefly prevalent where the same sort of cabbages are sown and planted on the same spots of ground for several years together."

It has been remarked, that, "where care is taken to plant out the proper hardy sorts of cattle-cabbages, there is little danger of their being injured by the severity of the frosts during the winter months, as seldom more than a few of their large outside leaves have been found to suffer. Many of the hardy varieties of cabbage have, indeed, been found to stand the winter frosts equally, or even better, where there are frequent thaws, than those of the borecole, or kale kinds; but the latter would appear better adapted as a green food, especially for sheep, in the early spring months, as it may be repeatedly eaten down or cut over, and by that means furnish a more full supply of food."

It has been remarked "that, in respect to the quantity of produce that may be derived from an acre of land under a crop of this kind, it must depend in a great degree upon the quality of the soil, the proportion of manure that is employed, the method of culture, the goodness of the plants, and the favourableness of the season, about the time of planting them out." But that "it may probably, in general, be estimated at from twenty to thirty tons. In comparing the produce of cabbage crops with those of turnips in different modes of planting, and on different kinds of soils, it was found, taking the best part of the crops, that, at a medium, an acre of the former, on good land, well managed, produced twenty-five tons, and of the latter fifteen tons. The value of the crops must likewise be affected by various circumstances, as the kinds of live stock by which they are consumed, the manner in which it is accomplished, and the situation of the cultivator with respect to markets; but that in common they may be calculated at from four or five to seven or ten pounds the acre, and in many situations considerably more."

It has been farther observed, in a late work, that "in the application or expenditure of cabbage crops, as they are often liable to a considerable diminution in the quantity or weight of food which they contain, by standing over the winter to the spring months, it may be the best and most economical practice to make use of them late in the autumn, while their leaves are in perfection, in completing the fattening of such neat cattle or sheep as have been brought considerably forward in the pastures during the summer season. In this way there is much less loss sustained than is generally the case where they are suffered to stand for spring feed, by the decay and destruction of the outside leaves and other parts of the plants. In the feeding of milch-cows, at the same period, they may likewise be of very great utility, as supplying a large proportion of green food, whether the whole plant be made use of, or only the more loose green leaves, which may often be removed without much injury to the cabbages. In this method of ap-

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plication they have been shewn to be more beneficial than hay, given in any proportion, when only combined with straw, and that the butter is not in any way injured by them while they are given in a sound state. When employed in this way, without any combination of other sorts of food, as hay or straw, an acre has been found sufficient for four or five cows; and, with straw and a little hay, for seven or eight. In Mr. Young's experiments, detailed in the 16th volume of the "Annals of Agriculture," in feeding the smaller sorts of cows, such as would fatten to about forty-five stones, of fourteen pounds each; in October three milch ones ate 96 pounds each of cabbages, and 10½ lbs. of hay in the day; and in another experiment 39 pounds of cabbages, with 10½ lbs. of hay each, in the day; or in the proportion of two tons 18 cwt. of cabbages and 15 cwt. of hay in six months.

It has been well remarked that, "in this way of consuming cabbage crops, the cows should always be confined to the farm yard, and not suffered to eat them after being scattered on the ground; as in the latter way the farmer must sustain injury both in the treading of his land, and in the loss of a large portion of valuable manure. Besides, it is suspected that such sort of food will go farther, when carefully applied in the yard, than when consumed on the land, as much waste must be unavoidable in the latter method."

And it is farther added that, "in the fattening of neat cattle, an acre of good cabbages may be sufficient for three beasts of from forty to fifty stones each, which have been grazed in the pastures in the summer. A middle sized bullock consumes, in general, of this sort of food in the proportion of about one hundred pounds in twelve hours; but much in this business must constantly depend on the state of the stomach, and the methods of feeding the animals. It would, however, seem probable, that cabbages possess the property of fattening cattle; not only more expeditiously, but in less proportion than turnips; an acre of the former having been found to fatten one in four more than the same extent of the latter crop."

It is likewise stated in the same work, that "in feeding this crop off with sheep, it has been remarked, that such as weigh about twenty pounds the quarter consume in the proportion of from eight to ten pounds in twelve hours, half an acre being nearly sufficient for one hundred sheep, when the crop is good. The cabbages, when run to seed in the spring months, are also consumed with avidity by these animals; but this practice should never be attempted, as much injury must always be sustained by the land. The refuse of cabbage crops may, however, sometimes be usefully applied in the more early spring months, before they begin to run, to the feeding of lambing ewes, as by such means the quantity of milk is much increased, and the lambs of course better supported. "Store hogs are likewise said to be kept upon this vegetable with advantage, and to prefer it to turnips; but on trial with the finer breeds of this sort of animals, it has not been found a beneficial mode of applying such crops, as they constantly rejected both the cabbage and turnips for most other sorts of food, and unless prepared by heat seldom ate them up clean."

It has been remarked, that, "though few experiments have been made in the feeding of horses with this sort of food, it is probable, that, after being chopped, cut, or shaved down by means of a stock or other knife, and blended with some other sort of dry, cut fodder, it might be employed with great advantage both in the saving of other more valuable kinds of food, and in promoting the condition of the animals; as from its containing much saccharine

matter, there can be little doubt of its possessing a highly nutritious quality. In this use the more sweet and delicate sorts of cabbage ought probably to be preferred.

That the application of this sort of cabbage in this way has been scarcely attended to, is fully shewn by the observations of Mr. Marshall, in his account of the midland district, who registers it as extraordinary, that neither in that, nor any other district, an instance had been met with of cabbages being made use of in the way of food for horses."

It is suggested that, "where cabbages are employed for winter and spring consumption, it has been the practice with some cultivators to have them cut or drawn while in full perfection, and piled up in houses for the purpose, or stacked in the open air, being closely covered over by means of straw, broom, or rushes, or any other cheap material; as in this way they are always ready and at hand, when they cannot be procured from the field on account of the wetness of the land, or the effects of frost or snow. The practice is said to be made use of in Germany, with such success, as to keep them in a good state of preservation during the whole of the winter season. From the sweet juicy nature of the vegetable, it is supposed, in this method, liable to be injured, not only by taking on too much heat, but by becoming mouldy. Besides, by keeping in such stacks they, like the turnip, shrink considerably, and are probably much impaired in their quality."

CABBAGE-*krub*, *Anjou* or *Colewort*, in *Botany*. See BRASSICA.

CABBAGE, *Dog's*. See *THELIGONUM CYNOCRAMBE*.

CABBAGE, *Turnip*. See BRASSICA.

CABBAGE, *turnip*, in *Agriculture*, is a plant of the cabbage kind, in which the bulb or apple is of a roundish flat form, appearing principally above the surface of the ground, and as it were an enlargement of the stem of the plant, the leaves that surround it having much resemblance to those of broccoli. It has been occasionally cultivated under the title of *cape cabbage*, and often confounded with the *turnip-rooted cabbage*, by those who have not sufficiently attended to the circumstances by which they are distinguished. It would seem to be the plant cultivated in different parts of Germany under the title of *kablrabi*. The result of the trials made with it in field culture would seem to shew it an useful hardy plant.

The soils most adapted to the growth of this plant are those of the more light and dry kinds, that have some degree of elevation, with respect to situation, and which are in a good state of fertility from previous tillage. The land should be prepared, by ploughing three or four times, in nearly the same manner as for the common turnip; being laid up in the autumn, in order to be rendered fine and mellow. When thus prepared, at the time of planting, it should be ploughed into small two-bout ridges, and a suitable proportion of manure turned in. On the ridges, when flattened by a light roller, the plants are to be put in.

The same method should be pursued in providing the seed as has been advised for cabbages. In this culture it is sometimes sown in beds in the fields, whence the plants are afterwards to be drawn and set out; and in others, in drills or broad-cast, where the plants are to remain, being only thinned out to proper distances by the hoe. Dr. Dickson remarks, in his "Practical Agriculture," that, "the first method is probably, in general, to be preferred, though some cultivators contend that the plants succeed better, when not removed from the places in which they were deposited when sown, and which later experience in cultivating the common cabbage seems to shew to be the case. Where the transplanting method is practised, the seed should be sown

sown sufficiently early to have the plants of a proper size, as about six or seven weeks growth at the time of transplanting. About the middle of March, or beginning of April, may be the most proper periods. The seed, in these cases, should be sown very thin, and the weak plants afterwards thinned out, till they are left at not less than three inches distance from each other. Five or six ounces of seed will, in general, be a proportion sufficient for affording plants for setting out an acre of ground. In the drill method, the same proportion of seed may also in common be sufficient, which should be put in the soil about the beginning or middle of April; but if sown later, as in May or June, it frequently succeeds. In the broadcast mode, from the plants not coming quickly to the hoe, the latter end of March may probably be the most proper period of sowing; the proportion of seed being somewhat increased.

The planting in these crops may be performed either upon the plain surface of the prepared ground, or after it has been thrown up into ridges in the manner first described; but the latter is by much the best method, especially where the land is inclined to moisture. The most eligible time for executing the business is, as in the common cabbage, when the land has had a good shower of rain, the operations of ploughing and setting out the plants proceeding together; but Dr. Dickson observes, that "neither operation should be attempted when the ground is much soaked with rain, as much injury is not only done to the land, but the plants seldom thrive well."

In planting out, different distances are practised; some preferring the distance of two feet from row to row, and eighteen inches apart in the rows, where the soils are good; but in those of inferior quality not more than twelve; while others advise their being planted two and a half or three feet asunder, on two-bout ridges, the plants being placed as nearly as possible in the middle, immediately upon the dung, as recommended in the culture of the common cabbage.

The after culture in the crops must be performed in different ways, according to the methods of sowing or planting that have been practised. When the seed is put in by the hand, the crop can only be kept clean by means of the hand-hoe, which should be applied as frequently as is necessary for the purpose. But in the drill method, as well as where the crops are planted out with broad intervals and narrow distances in rows, it may be convenient to make use of both the plough or horse-hoe, and the hand-hoe, employing the former in stirring and clearing the intervals, and the latter in keeping the ground between the plants clean. When planted on ridges, it is recommended, that as soon as the plants have become firmly established in the soil, and weeds begin to appear, to throw a furrow from each side of them by means of a small plough that is narrow behind, stirring the parts not thus moved by the hand-hoe, and after the decay of the weeds these turned down, but before the plants get too large to return them to their former situation, care being taken, not to cover the hearts of the plants with the earth. These operations may be repeated as frequently as the state of the crop may require. But as this plant forms its bulb above the surface of the ground, the earth or mould should never be laid up so much to the roots of the plants as in the common cabbage, as it may not only prevent the swelling of the bulbs, but cause their destruction. It has been suggested in the work just noticed, that in dry seasons this plant may probably be cultivated with greater advantage than that of the turnip, as not being subject to the destructive attacks of the fly, and being less exposed to danger from other animals that are liable to destroy crops of that sort. When situated close to turnips that have been wholly de-

voured by the fly, it has never been perceived that plants of this kind were in the least touched by it. The bulbs or roots of these plants frequently attain a considerable size where the soils are good, the largest sometimes weighing eight or ten pounds, and are said to be much more hardy than the common turnip, though not so much so as the turnip-rooted cabbage. The quantity of produce on an acre is not probably in general equal to that of the common turnip, though it is very considerable.

The application of this sort of cabbage is chiefly in the feeding of neat cattle and sheep during the autumn or spring months, according as it may be sown more early or late; but the most profitable appropriation of it is probably in the latter season, as from the middle of March, till it is removed from the ground. In this way it may become an useful assistant to crops of the turnip kind. In which use, it possesses a particular advantage, in being formed, as it were, upon a footstalk above the surface of the earth, as it can on that account be more conveniently got at and removed during the time of frost, or when snow is upon the ground, than the common turnip. The proportion of nutritious matter contained in crops of this sort is considerable, and of a rich quality. Cows thrive extremely well on it when given in a proper manner. When fed off by sheep, the best method is that of hurdling, in the manner practised for common turnips. In this mode of application they are said to require little or no hay, even where the intention is to fatten the animals, as they make a greater progress on them than on any other sorts of food, except that of oats. Both cows and sheep have been found to feed upon the sprouts with avidity, after their having blossomed, and been cut and left to wither. But this practice should be cautiously practised, as much injury must constantly be done to the land, by the plants being suffered to run to seed. When the bulbs are shrunk and withered from being cut and packed up in houses, they are said to form a nutritious food for horses, but farther trials are wanting to fully establish the fact. It is observed, in the "Annals of Agriculture," that instead of cutting off the bulbs below the parts where they are formed, in order to preserve them in houses for the above purpose, it is the practice of some cultivators to plough them up wholly, using a common plough, without any coulter, having only a round share with a blunt edge for the purpose. This is passed along under the rows, and performs the work with much ease, and in a very expeditious manner.

CABBAGE, turnip-rooted, in Botany. See BRASSICA.

CABBAGE, turnip-rooted, in Agriculture, a plant of the cabbage kind, which differs principally from the former, in forming its bulb, or protuberance, below the surface of the ground, in having it of an oblong shape, and in the leaves bearing a considerable resemblance to those of the common turnip. It has been introduced into field culture with advantage. The soils best suited to the growth of this sort of crops are those of the more friable loamy kinds, or such as have been formed by the gradual deposition of earthy matters from the overflowings of large rivers, or the sea. But of whatever kind, the parts of them should have been well broken down and reduced by means of tillage, and not be too retentive of moisture. In preparing the ground, it should be brought into a considerable state of pulverization, or fineness, by repeated ploughings and harrowings; and enriched by the application of manure, in the proportion of eight or ten waggons' load to the statute acre, which should be turned in with the last ploughing, in forming the one-bout ridges for receiving the plants. This is sometimes performed by the common plough; but it probably may be executed with more exact-

ness

C A B B A G E.

nets by one with a double mould-board contrived for the purpose.

The seed must be procured from the best and most perfect plants of the kind, in the manner that has been already directed for common cabbage, and be employed while it is perfectly fresh; as such seed as has been kept for some length of time seldom vegetates well, or with much regularity. But where it is necessary to make use of it, the best method is to steep it in water for a few hours before it is put into the ground. The time of sowing must be sooner or later, according to the intention of the cultivator, in respect to the consumption of the crop; but for the summer planting, the best time is generally about the latter end of March or the beginning of April; for which purpose a piece of ground should be prepared, by repeated turning over in the winter, so as to become perfectly fine and free from weeds. This must now be covered by some well reduced farm-yard manure, adding a little fresh horse-dung from the stable. This is then to be turned lightly in, by means of the plough, and a suitable proportion of seed sown over the whole; being covered in by means of a strong rake or light harrow. But where this sort of preparation has not been made, a piece of old grass land, reduced by paring and burning, may, according to Mr. Tugwell, an experienced cultivator, be dressed in a similar manner; or the fulsoil of a winter sheep-fold, the straw, dung, and thin turfy materials having been previously removed. As the plants rise, attention should be paid to the fly, guarding against its attacks by the application of wood-ashes or soot, when it first appears, over the crops. When the plants are found to grow too fast, or advance too high in the stems, before the period of setting them out in the field, so as to attain an improper shape not easily afterwards removed, it may be necessary to draw up the whole of the plants clean on one side of the bed, digging or turning the soil over in the place where they stood, to the depth of four or five inches, with the spade, putting the plants in the trenches in the proportion of forty or fifty in each yard, the roots being covered by the earth taken out of the succeeding trench, and slightly trodden down upon them. In this manner all the plants that require it are to be intrenched; by which their improper growth may not only be checked, but the plants be rendered more fit to be set out in the field. But where the land for the seed-bed has been properly prepared, and is perfectly free from weeds, this process will seldom be found necessary to be employed.

The planting out of this sort of plants may be executed in the same manner as the turnip-cabbage, either upon the plain ploughed surface, or after the land has been raised into ridges. The latter is however to be preferred, especially where the soil is inclined to moisture. They are planted at different distances, according to the goodness of the land: but the most general practice is from two to two and a half or three feet. In the ridge method, it is usual to set them on the middle of the ridges, at the distance of two feet in the rows. The plants should be carefully drawn from the seed-bed towards the latter end of June, for the summer planting, when of the size of good large cabbage plants; and in order that as little injury as possible may be done to the roots, this work should be performed immediately after rain, or after the beds have been well watered. They are then to be made up into small bundles, and distributed by women and children singly along the ridges, or on the plain surface of the land, at proper distances, to be directly put into the soil by the dibblers: in doing which they should be plunged up to the place of the branching out of the leaf stems, the mould or soil being firmly closed about them in the manner advised

in the culture of the common cabbage. It is particularly necessary to attend to this last operation in dry seasons, as the success of the crop in a great measure depends upon it; and at the same time care should be taken that a greater number of plants be not drawn from the seed bed than can be planted out in the same day, and that they be as little as possible exposed to the action of the sun and wind. It is also necessary for a few days to guard against their being pulled up and destroyed by rooks, or other birds, which are apt to attack them.

The after culture of the crops must be carefully attended to in these, as well as in other crops of a similar kind. In about ten days, or a fortnight, when the plants grow well, they will in general require the assistance of the hand-hoe, to clear the ridges and give the plants a slight dressing. And as soon afterwards as may be convenient, the intervals should be cleared either by the common plough, or any other more suitable implement, by passing them twice along each, turning the furrows, where the land is clear, and not too close or compact, up towards the rows, being careful not to earth up the plants to too great a height; but where the contrary is the case, be turned from them, so as to form a ridge in the middle of the interval, the implement being passed within a few inches of the plants in performing the operation. This ridge in dry seasons should be split down, and returned to the row again, in the course of a few days; another hand-hoeing being given as soon afterwards as may be found convenient. This last operation may frequently be unnecessary on the more light and clean descriptions of land; but on the strong and more compact soils it may be had recourse to with advantage, both in respect to the present and future crop.

The quantity of produce in crops of this kind, is frequently found, on good land, to be from 25 to 30 tons on the acre. It is stated, in the ninth volume of the Bath papers, that, in a practice of 20 years, the produce of an acre of this crop was, on an average, invariably found to be equal to the support of 70 sheep for a month, in the most hungry, trying, and difficult part of the year; and this on land then not worth more than 13s. the acre, but which contained between seven and eight thousand plants, averaging above four pounds each in weight. In the Transactions of the Society for the Encouragement of Arts, &c. various accounts are given of the great use of the produce in these crops, as well as of their vast utility as a late spring sheep feed. They have likewise been found beneficial in feeding milch cows, and hogs are very fond of them, sows giving abundance of milk while feeding on them. From this plant being a native of a more cold and northern climate, it of course retains, in some measure, the late habits of the situation from which it was originally brought, and becomes proper for the purpose of feeding live stock, at a later period in the spring, than many other plants to which it has a resemblance. It is seldom before the middle of April that the juice begins to rise, and the plant becomes proper for being fed upon. About this time, however, as is shewn by the bushy appearance of its top, it begins to push forward, and be in a condition to be made use of. When employed before this period, it is said, in the work just noticed, to be comparatively of little advantage; and, in some cases, even injurious to the animals that feed on and consume it. The principal application of crops of this sort is in the feeding of sheep, which are confined upon portions of them by hurdles, in the manner practised for the common turnip. The roots are, however, to be pulled up and prepared by being cut in two by means of an implement of the mattock kind, having a claw on one side nine inches long, with a transverse edge at its end, two inches in width, and on the other a sort of cleaver;

cleaver: with this tool, acting as a lever by means of the handle, the roots are readily taken up, after which any dirt that may adhere to them is shaken off by a blow or two, and the roots split by the cleaver. This enables the sheep to begin in the centre of the roots, and proceed outwards, eating them with more ease, and much more completely, than in any other method. When they are not cut, the hard substance of the rind renders them difficult of being eaten by the animals. One year old sheep, or what are frequently denominated tegs, wethers, and all dry sheep, may in preference be fed on this root; but when ewes and lambs are to be kept upon it, the hurdles must be so contrived as to admit the lambs to pass through them to feed at large, as by this contrivance much benefit will be derived.

Crops of this nature may be found, on the whole, from the hardy and other properties of the plants, to constitute an excellent nutritious food for sheep at those periods in the spring when few other sorts of green food can be procured or depended upon. The culture of it, in proportion to the quantity of sheep that may be kept on the farm, should therefore be carefully attended to by the sheep farmer. Dr. Dickson remarks, that this vegetable has been asserted to be capable of being preserved for some time out of the ground, without its properties being in the least injured; but, as in most other bulbous roots, the best and most economical practice is probably that of employing it in its fresh state. When thus made use of, there can be little doubt of its proving a valuable assistant to the turnip crop, as a late spring feed for sheep or other animals.

CABBAGE-bark tree, in Botany. See *GEOFFROYA inermis*.

CABBAGE-tree. See *ARECA oleracea* and *CACALIA kleinia*.

CABBAGE butterfly, in Entomology, the common English name of *Papilio brassica*.

CABBAGING, among Gardeners, is sometimes used to denote the knitting or gathering of certain pot-herbs into round bunched heads. In which sense the word amounts to the same with what Evelyn calls *poming*, *pommer*; q. d. applying, or growing appletwice. Others call it simply heading or bunching.

To make lettuce cabbage, they transplant it, taking care, during the great heats, to water it; otherwise instead of poming, it runs to seed. To promote the cabbaging of cabbage, those who live on the sea-coast, put sea weed, with a little nitre, under their roots.

Cabbage-plants of the early kind begin to turn in their leaves for cabbaging in May. The Battersea fort cabbage apace when they once begin, and as soon grow hard and burst open; but the sugar-loaf kind is longer before it comes, and is as slow in its cabbaging.

CABBALA, a mysterious kind of science, delivered by revelation to the ancient Jews as they pretend, and transmitted by oral tradition to those of our times; serving for interpretation of the books both of nature and scripture.

The word is also written *Cabala*, *Caballa*, *Kabala*, *Kabala*, *Cabaizfiza*, *Ars Cabala*, and *Gabala*. It is originally Hebrew, קַבָּלָה, *Labbalah*; and properly signifies reception; formed from the verb קָבַל, *lilal*, to receive by tradition, or from father to son, especially in the Chaldee and Rabbinical Hebrew.

Cabbala, then, primarily denotes any sentiment, opinion, usage, or explication of Scripture transmitted from father to son. In this sense, the word cabbala is not only applied to the whole art, but also to each operation performed according to the rules of that art. Thus it is, R. Jac. Ben Afcher, surnamed Baal-Hatturim, is said to have compiled most of the cabbalas invented on the books of Moses before his time.

As to the origin of the cabbala, the Jews relate many marvellous tales. They derive the mysteries contained in it from Adam; and assert, that whilst the first man was in Paradise, the angel Rafael brought him a book from heaven, which contained the doctrines of heavenly wisdom; and that when Adam received this book, angels came down from heaven to learn its contents, but that he refused to admit them to the knowledge of sacred things, entrusted to himself alone; that, after the fall, this book was taken back into heaven; that, after many prayers and tears, God restored it to Adam; and that it passed from Adam to Seth. The Jewish fables further relate, that the book being lost, and the mysteries contained in it almost forgotten, in the degenerate age preceding the flood, they were restored, by special revelation, to Abraham, who transmitted them to writing in the book "Jezirah;" and that the revelation was renewed to Moses, who received a traditionary and mystical, as well as a written and preceptive, law from God. Accordingly, the Jews believe, that God gave to Moses on mount Sinai, not only the law, but also the explication of that law; and that Moses, after his coming down, retiring to his tent, rehearsed to Aaron both the one and the other. When he had done, Aaron standing on the right hand, his sons, Eleazar and Ithamar, were introduced to a second rehearsal: this being over, the seventy elders that composed the sanhedrim were admitted; and lastly, the people, as many as pleased: to all of whom Moses again repeated both the law and explanation, as he received them from God. So that Aaron heard it four times, his sons thrice, the elders twice, and the people once. Now, of the two things which Moses taught them, the laws and the explanation, only the first were committed to writing; which is what we have in Exodus, Leviticus, and Numbers: as to the second, or the explication of those laws, they were contented to impress it well in their memory, to teach it their children; they to theirs, &c. Hence, the first part they call simply the law, or the written law; the second, the oral law, or cabbala. Such is the original notion of the cabbala.

The cabbala being again lost amidst the calamities of the Babylonish captivity, was once more revealed to Esdras; and it is said to have been preserved in Egypt, and transmitted to posterity through the hands of Simeon ben Setach, Elkanah, Akibha, Simeon ben Jochai, and others. The only warrantable inference from these accounts, which bear the obvious marks of fiction, is, that the cabbalistic doctrine obtained early credit among the Jews as a part of their sacred tradition, and was transmitted, under this notion, by the Jews in Egypt to their brethren in Palestine. Under the sanction of ancient names, many fictitious writings were produced, which greatly contributed to the spreading of this mystical system. Among these were "Sepher Happeliah," or the book of wonders; "Sepher Hakkaneh," or the book of the pen; and "Sepher Habbahir," or the book of light. The first unfolds many doctrines said to have been delivered by Elias to the rabbi Elkanah; the second contains mystical commentaries on the divine commands; and the third illustrates the most sublime mysteries. Among the profound doctors, who, besides the study of tradition, cultivated with great industry the cabbalistic philosophy, the most celebrated persons are the rabbis Akibha, who lived soon after the destruction of Jerusalem (See AKIBHA;) and Simeon ben Jochai, who flourished in the second century (See SIMEON BEN JOCHAI). To the former is ascribed the book, entitled "Jezirah," concerning the creation; and to the latter, the book "Sohar," or brightness; and these are the principal sources from which we derive our knowledge of the cabbala. From the third century to the tenth, few traces of the cabbalistic philosophy occur

occur in the writings of the Jews. The probable reason is that these mysteries, which differ materially from the ancient doctrine of the Jewish church, were entrusted only to the initiated under a solemn oath of secrecy; and therefore few persons would venture to commit them to writing. Books that were written would be studiously concealed from public inspection, and their enigmatical language would be a seal upon their meaning which could not be broken by the vulgar hand of an uninitiated Jew. Besides, the Jews were for many centuries deeply involved in controversies concerning their traditionary laws, and if they were possessed of Talmudical erudition, they thought themselves sufficiently learned: not to add that the whole nation was oppressed and harassed by persecution.

That this system of the cabbalistic philosophy, which we may consider as the acroamatic, esoteric, or concealed doctrine of the Jews, by way of contradistinction from the exoteric or popular doctrine, was not of Hebrew origin, we may conclude with a very great degree of probability, from the total dissimilarity of its abstruse and mysterious doctrines, to the simple principles of religion taught in the Mosaic law; and that it was borrowed from the Egyptian schools will sufficiently appear from a comparison of its tenets with those of the oriental and Alexandrian philosophy. (See ALEXANDRIAN.) Many writers have, indeed, imagined that they have found in the cabbalistic dogmas, a near resemblance of the doctrines of Christianity, and they have thought, that the fundamental principles of this mystical system were derived from divine revelation. This opinion, however, may be traced up to a prejudice which originated with the Jews, and passed from them to the Christian fathers, by which they were led to ascribe all pagan wisdom to an Hebrew origin; a notion which very probably took its rise in Egypt, when Pagan tenets first crept in among the Jews. Philo, Josephus, and other learned Jews, in order to flatter their own vanity, and that of their countrymen, industriously propagated this opinion; and the more learned fathers of the Christian church who entertained a high opinion of the Platonic philosophy, hastily adopted it, from an imagination that if they could trace back the most valuable doctrines of Paganism to a Hebrew origin, this could not fail to recommend the Jewish and Christian religions to the attention of the Gentile philosophers. Many learned moderns, relying implicitly upon these authorities, have maintained the same opinion, and have thence been inclined to credit the report of the divine original of the Jewish cabbala. But the opinion is unfounded; and the cabbalistic system is essentially inconsistent with the pure doctrine of divine revelation. The true state of the case seems to be that the Jews, like other oriental nations, from the most remote period, had secret doctrines or mysteries. During the prophetic ages, these, probably, consisted in a simple explanation of those divine truths, which the prophets delivered under the veil of emblems. After this period, when the sects of the Essenes and Therapeutæ were formed in Egypt, foreign tenets and institutions were borrowed from the Egyptians and Greeks, and in the form of allegorical interpretations of the law, were admitted into the Jewish mysteries. These innovations chiefly consisted in certain dogmas concerning God and divine things, at this time received in the Egyptian schools, particularly at Alexandria, where the Platonic and Pythagorean doctrines on these subjects had been blended with the oriental philosophy. The Jewish mysteries, thus enlarged by the accession of Pagan dogmas, were conveyed from Egypt to Palestine, at the time when the Pharisees, who had been driven into Egypt under Hyrcanus, returned, with many other Jews, into their own country. From this time the cabbalistic mysteries continued

to be taught in the Jewish schools, but, at length, they were adulterated by a mixture of Peripatetic doctrines, and other tenets, which sprang up in the middle age. These mysteries were not, probably, reduced to any systematic forms in writing, till after the dispersion of the Jews, when, in consequence of their national calamities, they became apprehensive that those sacred treasures would be corrupted, or lost. In preceding periods, the cabbalistic doctrines underwent various corruptions, particularly from the prevalence of the Aristotelian philosophy. The similarity, or rather the coincidence, of the cabbalistic, Alexandrian, and oriental philosophy, will be sufficiently evinced by briefly stating the common tenets in which these different systems agreed; they are as follow: "All things are derived by emanation from one principle: and this principle is God. From him a substantial power immediately proceeds, which is the image of God, and the source of all subsequent emanations. This second principle sends forth, by the energy of emanation, other natures, which are more or less perfect, according to their different degrees of distance, in the scale of emanation, from the first source of existence, and which constitute different worlds or orders of being, all united to the eternal power from which they proceed. Matter is nothing more than the most remote effect of the emanative energy of the Deity. The material world receives its form from the immediate agency of powers far beneath the first source of being. Evil is the necessary effect of the imperfection of matter. Human souls are distant emanations from Deity, and after they are liberated from their material vehicles, will return, through various stages of purification, to the fountain whence they first proceeded." From this brief view it appears, that the cabbalistic system, which is the offspring of the other two, is a fanatical kind of philosophy, originating in defect of judgment and eccentricity of imagination, and tending to produce a wild and pernicious enthusiasm. For a fuller account of the tenets of the Jewish cabbala, we refer to Brucker's Hist. of Philos. by Enfield, vol. ii. chap. iii.

Dr. Burnet examines into the merits of the several parts of the cabbala, which he finds to be without rational foundation, and not conducing to any real knowledge. But he conjectures, that the most ancient cabbala, before it was confounded and defiled with fables, might contain something of the original of things, and their gradations; particularly, that, before the creation, all things had their being in God; that from him they flowed as emanations; that they will all flow back again into him, when they are destroyed; and that there will succeed other emanations and regenerations, and other destructions and absorptions to all eternity, as they had been from all eternity; that nothing is produced out of nothing; and that the things produced never return to nothing, but always have their subsistence in God. Burn. Archæol. lib. i. cap. 7. Phil. Transf. N^o 201. p. 800.

Among the explications of the law, which are furnished by the cabbala, and which, in reality, are little else but the several interpretations and decisions of the Rabbins on the laws of Moses, some are mystical: consisting of odd abstruse significations given to a word, or even to the letters whereof it is composed: whence, by different combinations, they draw meanings from Scripture, very different from those it seems naturally to import. The art of interpreting Scripture after this manner is called more particularly cabbala: and it is in this last sense the word is more ordinarily used among us. This cabbala, called also artificial cabbala (to distinguish it from the first kind, or simple tradition,) is divided into three sorts. The first, called *gematria*, consists in taking letters as figures, or arithmetical numbers, and explaining

explaining each word by the arithmetical value of the letters whereof it is composed; which is done various ways. The second is called *notarion*; and consists either in taking each letter of a word for an entire diction, or in making one entire diction out of the initial letters of many. The third kind, called *chamurah*, q. d. *changing*, consists in changing and transposing the letters of a word; which is done various ways.

The generality of Jews prefer the cabbala to the Scripture; comparing the former to the sparkling lustre of a precious stone, and the latter to the fainter glimmering of a candle.

The cabbala only differs from *maforah*, as the latter denotes the science of reading the Scripture, the former of interpreting it. Both are supposed to have been handed down from generation to generation by oral tradition only, till at length the readings were fixed by the vowels and accents, as the interpretations were by the *maforah* and *gemara*. Prideaux Conn. p. i. lib. v. p. 506.

The cabbala hitherto spoken of may be called speculative cabbala; in opposition to the following, which may be called practical cabbala.

CABBALA is also applied to the use, or rather abuse, which visionaries and enthusiasts make of Scripture, for discovering futurity, by the study and consideration of the combination of certain words, letters, and numbers, in the Sacred Writings. All the words, terms, magic figures, numbers, letters, charms, &c. used in the Jewish magic, as also in the hermetical science, are comprised under this species of cabbala, which professes to teach the art of curing diseases, and performing other wonders, by means of certain arrangements of sacred letters and words. But it is only the Christians that call it by this name, on account of the resemblance this art bears to the explications of the Jewish cabbala; for the Jews never used the word cabbala in any such sense, but ever with the utmost respect and veneration. It is not, however, the magic of the Jews alone which we call cabbala, but the word is also used for any kind of magic.

CABBALIC art, *Arts cabbalica*, is used by some writers for *ars palestrica*, or the art of wrestling.

CABBALISTIC art. See CABBALA, and CABBALISTS.

CABBALISTS, a sect among the Jews, who follow and practise the cabbala, or interpret Scripture according to the rules of the literal cabbala, above laid down.

The Jews are divided into two general sects; the Caraites, who refuse to receive either tradition, or the Talmud, or any thing but the pure text of Scripture: and the Rabbinites or Talmudists, who, beside this, receive the traditions of the ancients, and follow the talmud.

These latter are again divided into two other sects; pure Rabbinites, who explain the Scripture in its natural sense, by grammar, history, and tradition; and Cabbalists, who, to discover hidden mystical senses, which they suppose God to have couched therein, make use of the cabbala, and the mystical rules and methods above mentioned.

There are visionaries among the Jews, who believe that Jesus Christ wrought his miracles by virtue of the mysteries of the cabbala. Some learned men are of opinion, that Pythagoras and Plato learned the cabbalistic art of the Jews in Egypt; and fancy they see evident footsteps thereof in their philosophy: others, on the contrary, say, it was the philosophy of Pythagoras and Plato that first furnished the Jews with their cabbala. Be this as it will it is certain, that in the first ages of the church, most of the heretics gave into the vain notions of the cabbala: particularly the

Gnostics, Valentinians, and Basilidians. Hence arose the *zōpazai*, and the multitude of talismans, wherewith the cabinets of the virtuosi were stocked.

See a particular account of the cabbalistic art, as practised not only by Jews, but by Heathens and Christians, in Balmage's Hist. of the Jews, book iii. chap. 10—28.

CABBIN. See CABIN.

CABBY island, in *Geography*, lies N. of Holyhead island on the coast of Wales, about two miles from the north point of that island.

CABE, a river of Spain, which uniting with the Velezar, runs into the Minho, a little to the west of Orense in Galicia.

CABEÇA, or CABESSÉ, in *Commerce*; the Portuguese who carry on the trade of silks in the East Indies, distinguish them by the names of *cabeça*, and *barillo*; that is to say, head and belly. The *cabeça* silks are the finest; the *barillo* being from fifteen to twenty *per cent.* inferior to them. The Indian workmen endeavour to mix them together; for which reason the more experienced European merchants, who carry on that trade, take care to open the bales, and to examine the silks. The Dutch distinguish two sorts, viz. the ordinary cabesse, and the "cabeße de mora."

CABEÇA de Tide, in *Geography*, a small town of Portugal, in the province of Alentejo, with a strong castle. N. lat. 39°. W. long. 60° 43'.

CABEÇA, LA, in *Zoology*, a snake of South America in Panama, there called the double-headed snake, from an imagination that it has a head at each extremity, and that from the bite of each it conveys a poison equal in activity to that of the coral or rattle-snake. Its usual length is said to be about half a yard, resembling in figure an earth-worm. Its diameter is about six or eight lines, and its head different from the heads of other snakes, being of the same dimensions with its body. The creature, however, has only one head, which, as it resembles a tail, has occasioned the notion that it has two heads. Its motion is very slow, and its colour variegated with spots of a paler tint.

CABEÇAS, LAS, in *Geography*, a town of Spain, in the province of Andalusia, containing several ruins that indicate its having been formerly a large place; 4 leagues S. of Seville.

CABEÇAS Rubias, a town of Spain, in the country of Seville, on the confines of Portugal; 40 miles N.W. of Seville.

CABEÇAS, a town of the island of Cuba; 130 miles S.W. of Havana.

CABEL ON, a town of Spain, in the province of Leon, seated on a mountain, with a fort on the river Piluerga; 3 leagues N.N.E. from Valladolid.—Also, a town of Spain, in the province of Asturia; 18 miles W.S.W. of St. Andre.

CABEGO, a river of Portugal, which runs into the Lima, 7 miles above Ponte de Lima.

CABEL, or KABEL, ADRIAN VANDER, in *Biography*, a painter of landscape, sea-ports, and cattle, was born at Ryfwick, in 1631, and became a disciple of John Van Goyen, under whose instruction and example he made a rapid progress in his profession, and by whom his name was changed from Vander Touw to Vander Cabel. He copied nature and designed every object before he inserted any in his compositions. His taste in designing animals and figures was formed after that of Calligione; and in landscape his model was the style of Salvator Rosa. His manner is great, and much after the *goût* of the Italian school. The touchings of his trees are excellent; his figures and animals are very correct, and marked with spirit.

Although his different pictures have unequal merit, they are all distinguished by the freedom of his hand, and the fine touch of his pencil. In his colouring he was solicitous to imitate the Caracci and Mola; but the beauty of his design and composition is often injured by too dark and deep tone of colouring. His etchings, of which some few remain, are performed in a slight, free style. He died in 1695. Pilkington and Strutt.

CABELLIO *Cavarum, Cavaillon*, in *Ancient Geography*, a town of Gallia Narbonensis. This was a Roman colony in the time of the triumvir Lepidus, 42 years before the Christian æra. With regard to the construction of the triumphal arch of Cavaillon it is conjectured, that as Pompey had granted the two banks of the Rhone to the inhabitants of Marfeilles, the town of Cavaillon, upon the Durance and near the Rhone, belonged to them. This monument was accordingly erected to commemorate the exploits of Pompey and the Roman armies. The medals of this city were bronze, gold, and silver.

CABELLO *port*, in *Geography*, lies on the north coast of the Spanish main, in N. lat. $10^{\circ} 31'$. W. long. $67^{\circ} 32'$.

CABELON, lies on the coast of Coromandel in India, 7 miles from Conimore N. by E. and 5 leagues from Madras or fort St. George. To the south of Cabelon are the 7 Pagodas, by which the coast is known.

CABENDA, or **CABINDA**, a sea-port town of Africa in the kingdom of Augoy or Goy on the coast of Loango, is situate on the mouth of the river of the same name, about 5 leagues N. of Cape Palmerino. The bay lies very commodious for trade, wooding, and watering, on the sea-shore. Some parts of the adjacent ground are flat and marshy; but it gradually ascends about 3 miles within land and forms a ridge of hills, on the ascent of which is a town, where a stock of wood is always kept for the supply of foreign ships. The town of Cabenda is seated on the round point of the bay, looking towards the west, and the English factory on the south-west of the road, at some distance, N. E. from the town. The Portuguese, Dutch, and other Europeans come to this port for water and provisions. The houses, or rather huts, are built of dirt and reeds. The country round the bay is mostly barren, and the people very lazy. They breed no cattle except some hogs, but they have plenty of poultry. The wild beasts are so numerous in the woods that they destroy all of the tame kind. Civet-cats and parrots are numerous. The coast abounds with oysters; and the natives fish both on the beach and in the bay with drag-nets, having long canes that are fixed at equal distances, instead of corks, to shew when any fish is caught. These nets are made of a peculiar root, which, being beaten, becomes, flexible like hemp. S. lat. 6° E. long. $12^{\circ} 5'$.

CABERASA, in *Ancient Geography*, a town of Asia, in Media. Ptolemy.

CABES, or **GABES**, in *Geography*, a town of Africa, in the kingdom of Tunis, situate on a river near a gulf of the same name. N. lat. $33^{\circ} 40'$ E. long. $10^{\circ} 55'$.

CABESA, a town of the island of Cuba; 55 miles N. of St. Jago.

CABESTA *Gatta*. See *CAT's Head*.

CABESTAN, or **CABESTAING**, **WILLIAM DE**, in *Biography*, a famous Provençal poet of the 13th century, mentioned by Petrarch, who passed the first years of his life in the castle of the lord of Cabestan; and being enamoured of a lady belonging to the house of Baux, wrote verses in her praise, which were popular. The lady, in order to secure his inviolable attachment, administered to

him an herb by way of philtre, which deranged his understanding. He was recovered by an antidote, which converted his love into hatred. In his attendance on Tricline Carbonal, the wife of Raimon de Seillans, he ingratiated himself with her to such a degree as to excite the jealousy of her husband, who privately killed him and barbarously tore out his heart. This he caused to be dressed, and served up to his wife in a dish. After she had partaken of it, she was told what she had eaten, and died of grief. This event occurred about the year 1213. Moreri.

CABESTERRE, in *Geography*, a name given in the Antilles islands, to that part of the island which looks towards the east, and which is always refreshed by the trade-winds, blowing from the north to the east-south-east. The opposite part is called "Basse-terre," being lower and less exposed to the wind, and of course hotter: here the sea is less agitated than in the Cabesterres, and it is consequently better adapted to the anchorage and loading of vessels.

CABESTERRE, or *Le Marigot*, a town of the island of Guadeloupe on the east coast. N. lat. $16^{\circ} 10'$. W. long. $61^{\circ} 44'$.

CABESTES, lies near La Vera Cruz, on the S.W. coast of Campeachy bay in the gulf of Mexico.

CABEZZO, a province of the kingdom of Angola in Africa, joining to Oacco on the north, and to Lubalo on the south, and having the Coanza on the north-east, and Rimba on the south-west. It is populous, and well stored with cattle and other provisions; and it has a mine of iron on a mountain, called the "Iron mountain," which supplies the Portuguese with great quantities of that metal, forged by the natives into a great variety of warlike and other useful implements. The inhabitants are plentifully furnished with water by the Rio Longo, and other smaller rivulets and lakes. Their trees are of a large size, and the bark being slashed with a knife, yields an odoriferous resin, resembling wax in colour and consistency, and reckoned very medicinal. The avenue to the royal palace is decorated by a number of palm-trees that are very large and beautiful.

CABIAI, of Buffon, in *Zoology*, the thick-nosed Tapir of Pennant, the *Sus Hydrochæris* of Linnæus, and *CAVIA CAPYBARA* of Pallas, &c. which see.

CABIDOS, in *Commerce*. See *CAVIDOS*.

CABIGIAK, or **CAPEHAK**, in *Modern History*, a tribe of Oriental Turks. Their origin is thus related. A female belonging to the army of Oghuz-Khan was delivered in the hollow of a tree to which she entered; and the infant was adopted by Oghuz, and called "Cabigiak" or the bark of wood, from the manner of his birth. In process of time his posterity became numerous and extended themselves to the north of the Caspian sea. They have retained the appellation of their ancestor, and their country is denominated in Persia and in Turkish "Descht Kiptchiak." From this country proceeded the armies which first ravaged the dominions possessed in Persia by the Moguls; and they were the first troops which Bajazet the first sultan of the Turks opposed to Tamerlan: but instead of fighting against Tamerlan, they took a part with him and united with the Tartars, whom they regarded as their brethren of one and the same origin. D'Herbelot, Bib. Or.

CABILAH, a tribe of independent and vagabond Arabs, under the conduct of a chief. Some Arabian writers reckon 80 of these tribes. D'Herbelot.

CABILIAU, in *Ichthyology*, a name by which some authors have called the common cod-fish, the *morhua* and *afellus* major of other writers.

CABILLEN, in *Geography*, a town of the duchy of Courland; 10 miles E. of Goldingen.

CABIN, or **CABBIN**, is sometimes used for the huts or cottages of savages, and other poor people.

The habitations of the Indians in Virginia are cabins, about nine or ten feet high, which are made after this manner: they fix poles into the ground, and bring the tops of them one within another, and so tie them together; the outside of these poles they line with bark, to defend them from the injuries of the weather, but they leave a hole in the top, right in the middle of the cabin, for the smoke to go out; round the inside of their cabins they have banks of earth cait up, which serve instead of stools and beds. Phil. Trans. N^o 126.

CABIN, a room or apartment in a ship, where any of the officers usually reside. There are many of these in a large ship; the principal of which is designed for the captain, or commander. In ships of the line, this chamber is furnished with an open gallery in the ship's stern; as also a little gallery on each quarter. The apartments in which the inferior officers and common sailors sleep and mess, are usually called *links*, which see. The bed-places built up for the sailors at the ship's side in merchantmen, are also called cabins.

The word comes from the French *cabane*, Spanish *cabana*, or Italian *capanna*, a little straw hut; and that from the Greek *καβαν*, a stall or manger.

CABIN point, in Geography, a small post-town of America, in Surry county, Virginia, situate on Upper Chipook creek, 26 miles E.S.E. of Petersburg, 87 miles from Portsmouth, and 329 S.S.W. of Philadelphia.

CABINET, or **CABINET**, the most retired place in the finest apartment of a building; set apart for writing, studying, or preserving any thing very precious.

A complete apartment consists of a hail, anti-chamber, chamber, and cabinet; with a gallery on one side.

CABINET is sometimes particularly used for a place at the end of a gallery, wherein are preserved the paintings of the best masters, conveniently ranged, and accompanied with busts, and figures of marble and bronze, with other curiosities. In this sense, cabinet amounts to the same with what is called by Vitruvius, *pinacotheca*. Sometimes there are several rooms destined for this use, which are all together called cabinet, or gallery.

CABINET also denotes a kind of buffet or chest of drawers, partly for the preservation of things of value, and partly as a decoration of a chamber, gallery, or other apartment.

These cabinets are made of oak or of chestnut, of inlaid work or japan, of ebony and of other scarce wood.

In the repository of the Royal Society is a Chinese cabinet, filled with the instruments and simples used by the surgeons of that country. The most remarkable are those which are contrived for scratching, picking, and tickling the ears, in which the Chinese take great pleasure. Phil. Trans. N^o 246. p. 390, seq.

CABINET, in Gardening, is a little insulated building in manner of a summer-house, built in some agreeable form, and open on all sides; serving as a place of retirement, and to take the fresh air under cover.

According to Miller, a cabinet is a kind of saloon, placed at the end or in the middle of a long arbour.

It differs from an arbour, which is long, in form of a gallery, and arched over head; whereas the cabinet is either square, circular, or in cants, making a kind of saloon.

CABINET, in Natural History. This term is applied with some latitude to any small or select collection of natural curiosities, without regarding whether the articles it comprises be contained within a cabinet or not. Thus, for instance, it is not unfrequent with us to speak of cabinets of animals,

cabinets of birds, of fishes, reptiles, and other similar articles, as a mode of expressing such an assemblage of natural history as may not be of sufficient importance to deserve the epithet of a museum. The word cabinet in its usual acceptation with the naturalist is not, therefore, confined solely to the boxes, presses, or chest of drawers, in which articles of curiosity are contained, but implies at once both the repository itself, and the articles arranged in it.

So much depends upon the fancy, taste, or judgment of the collector in the formation, or, as it is sometimes denominated, building, cabinets for the reception of articles of this description, that no explicit directions can be given for this purpose with propriety. The most material object to be considered is the compactness of the drawers and chest, according to the size of the articles to be deposited in them, in order to comprise as much as convenient within the smallest compass in which they can lie without injury to each other, and at the same time be seen and examined with ease.

Cabinets of fossils, shells, and corals have the drawers sometimes divided for this purpose into small compartments, by means of an inner frame work, that lets into the bottom of the drawer; but trays of various sizes made either of card or pasteboard have a much neater appearance, and are preferred by many as being more commodious, and more easily shifted from one part of the drawer to another, as the addition of new acquisitions in any particular tribe or genus may require. Nothing can be more desirable than to have the cabinets well made, that the drawers may slide with perfect ease in their proper recesses in the presses. The drawers should fit so close, when shut up, as to preclude the entrance of dust of any kind. The cabinet itself should be also placed in a dry situation, as there are few articles of natural history that are not affected in a greater or less degree by an excess of damp, or even heat.

The construction of an entomological cabinet depends less on the taste of the collector, in the present day, than the preceding, except so far as relates to the elegance or external embellishment of the cabinet, or the excellence of the workmanship. The drawers are uniformly made shallow, the bottom of each is lined with cork, and the top is covered with glass, through which the insect may be seen without being exposed to the air, or accidents that would arise from their being touched by the incautious spectator.

Cabinets for insects are built of various sizes, from those which contain ten or a dozen drawers to others that include above an hundred. They are usually of mahogany, but it is immaterial whether they be made of mahogany or wainscot; some have them of cedar, but seldom of deal, or any other wood of a soft texture. The drawers may be from fifteen to thirty inches in length, the same, or nearly the same in breadth, and about two or three inches in depth. The cork with which the bottoms are lined must be chosen as free from cracks and holes as possible; it should be also glued into the drawers to prevent its warping, and be filed or cut very level; and after this the irregularities on the surface of the cork should be rubbed down with pumice-stone, till the whole is rendered perfectly smooth, before the paper is pasted over it. The paper should be of a fine smooth and even grain, but neither very stout, nor highly stiffened with size, lest it should turn the points of the pins, when placing the insects in the drawers. The top of every drawer must be covered with a plate of glass, to prevent the admission of dust or air. This plate is usually fitted into a frame of the same size as the drawer, and is made either to slide in a groove, or let in on a rabbet; the latter contrivance is much the best, because in sliding the glass along the groove, if any of the pins happen to stand so high as to touch the frame-work,

the insects will be injured by the jerk, or, as more frequently happens in this case, be broken to pieces. On the contrary, when the frame falls in upon a rabbet, it is of no consequence whether the edge of the frame sinks into the drawer below the level of the heads of the pins on which the insects are placed or not; it is only necessary to observe, that the glass does not press upon the pins, since it is the glass only that can come in contact with them.

Instead of cork for the purpose of lining the bottom of the drawers for insects, it was customary among old collectors to cover the bottom of them with a thin coat or layer of pitch, or green wax, over which the paper was sometimes laid, and upon this the insects were stuck. The disadvantage of this method, although recommended by recent authority, is evident, when we consider how liable both the pitch and wax are to be affected by the state of the weather. An eminent collector, the late Mr. Tunstall, had the whole of his insects disposed on green wax, each insect being placed on a small tablet of it, and the tablets afterwards affixed with a small portion of melted wax to the bottom of the drawers. This cabinet was once removed to a short distance in the country, during the winter season, when, notwithstanding the precaution of fastening the tablets in this manner to the bottom of the drawers, some of them snapped asunder with the cold, and rolling about among the rest occasioned the loss of many valuable insects. In another instance a celebrated collection of insects, stuck on wax in a similar manner, that had been presented to a great public museum, was indiscreetly exposed to the heat of a brisk fire, with a design of warming the wax, that the pins might be more easily withdrawn, for the purpose of removing the insects to another cabinet; but, sad mischance! the wax melting in a much shorter time than was expected, almost every insect in the cabinet sunk into the fluid mass, and was destroyed. Accidents of this kind may operate as a caution to others, and prove, at least, the superior advantage of lining the bottoms of the drawers with cork instead of wax.

Every crevice in the drawers for insects should be carefully closed up. Indeed the entomologist, duly attentive to the preservation of his insects, will conceive no pains nor expense ill bestowed in having his cabinet so well constructed as to render it impossible for the air or dust to penetrate. A small recess should be also made along the inner edge, or side of the drawer, for the admission of a quantity of camphor, about one fourth part of an ounce of which in each drawer will preserve the insects contained in the drawer from the depredations of mites, or any other small insects, for years. It is an erroneous supposition, which many people entertain, that insects cannot be preserved; for it may be safely affirmed from experience, that if they are placed in a close cabinet, as before directed, and the drawers occasionally replenished with fresh camphor every second or third year, or at most every year, insects are not more perishable than almost any other description of natural objects. They may be preserved in this manner without injury or diminution of beauty for ten, twenty, or thirty years; we have seen insects that have been collected at a period more remote still, and which scarcely manifested any symptom of decay.

Some naturalists prefer cajuput oil for scenting the drawers to destroy the mites, and other destructive vermin, with which the insects would otherwise, in time, become infested. Musk is another powerful antidote and preservative: and again the use of bitter aloes is strongly recommended; but upon the whole, we are, for our own part, so fully satisfied of the efficacy of camphor, that we should always consider it preferable for this purpose to any other preservative. It has been thought necessary by some, that

the cork, with which the drawers are lined, should be well impregnated with a solution of corrosive sublimate mercury, in a saturated solution of crude sal-ammoniac in water, (an ounce of which will be sufficient to dissolve twenty scruples of the sublimate). This may be tried, since it has been strongly advised, although we believe the precaution needless. Mr. Drury adopted another plan: he pounded a quantity of crude verdegrease with common bees-wax, and spread a thin layer of it between the bottom and the cork, in those drawers which were designed for the reception of his more delicate insects. We are, however, of opinion, that a solution of alum in water, washed either over the cork or paper of the drawer, would answer the same purpose, and be attended with less trouble. See article ENTOMOLOGY.

CABINET of Medals. See MEDALS.

CABINET is also used in speaking of the more select and secret councils of a prince or administration: thus we say, the secrets, the intrigues of a cabinet. To avoid the inconveniences of a numerous council, the policy of Italy and practice of France have introduced cabinet councils; a remedy worse than the disease. King Charles I. is charged with first establishing this usage in England. Besides his privy council, that prince erected a kind of cabinet council, or *junto*, under the denomination of a council of state; composed of archbishop Laud, the earl of Strafford, and lord Collington, with the secretaries of state. Yet some pretend to find the substance of a cabinet council of much greater antiquity, and even allowed by parliament, who anciently settled a quorum of persons most confided in, without whose presence no arduous matter was to be determined; giving them power to act without consulting the rest of the council. As long since as the 28th of Henry III. a charter passed in affirmance of the ancient rights of the kingdom; which provided that four great men, chosen by common consent, who were to be conservators of the kingdom, among other things, should see to the disposing of monies given by parliament, and appropriated to particular uses; and parliaments were to be summoned as they should advise. But even of these four, any two made a quorum; and generally the chief justice of England and chancellor were of the number of the conservators. Math. Par. 28 Henry III.

In the first of Hen. VI. the parliament provides, that the quorum for the privy council be six or four at least; and that in all weighty considerations, the dukes of Bedford and Gloucester, the king's uncles, should be present; which seems to be erecting a cabinet by law.

CABIRA, afterwards called *Diospolis*, and since *Sebastopolis*, in *Ancient Geography*, a town of Pontus, south-east of Amasia, upon the river Iris. Mithridates built a palace in this city, where he had also a fish-pond, and in its vicinity parks for chase, and, according to Strabo, mines. This city became memorable for the defeat of Mithridates by Lucullus. When Pompey took possession of it, he gave it the name of "Diospolis," and the queen Pythodoris, widow of Polemon, named king of Pontus by Anthony, called it "Sebastis," or "Sebastopolis," i. e. the city of Augustus, in honour of that prince.

CABIRI, in *Antiquity*, certain deities worshipped more especially by the Samothracians, and in the isle of Imbros, and some other parts of Greece.

These Cabiri were originally Syrians or Phœnicians; and we are chiefly indebted to the fragment of Sanchoniathon, recorded by Eusebius in his "Præparatio Evangelica," for the information, scanty and dubious as it is, which has been transmitted concerning them. From him we learn, that they were the sons of Sydyce, and the same with the Dioscuri, Corybantes, and Samothracæ; that they first discovered

tered the art of building ships; that from the time of Cronus (Saturn) their descendants navigated the sea on rafts or vessels of their own construction; and that they landed on mount Casius, where they consecrated a temple. It is also related, that Cronus gave the city of Berytus to Neptune and the Cabiri. Sanchoniathon further says, that these sons of Sydyce were eight in number; but he mentions only one of them by name, viz. Afelepius, who was furnished Eilmunus, from *שמיני*, *Saman*, signifying the eighth. He was the god of health, and restorer of life. Bochart supposes, that this Sydyce was Jupiter: Cumberland in his "Sanchoniatho's Phœnician History," (p. 173, &c.) maintains, that he was Shem, the son of Noah; Shuckford supposes, (Connection, &c. vol. i. p. 213.) that he was Mizraim, the son of Ham, (Gen. x. 6.) or Menes, who settled in Egypt about the 15th year of Nimrod, A.M. 1772, according to him, or 2188 B.C. according to Blair's Tables. According to Pausanias (l. ix. p. 751.) the original Cabiritic divinity was Prometheus. The learned Bryant (Analysis of Anc. Myth. vol. ii. p. 460.) concurs with those who are of opinion, that Sydyce, or Sadie, was the patriarch Noah, and that the name by which he is called, or Sadie, corresponds to the character given of him in the book of Genesis, ch. vi. 9. He was *צדיק*, Sadie, a just man and perfect in his generation. All science, and every useful art were attributed to him; and through his sons they were transmitted to posterity. He supposes that the Cabiri were the same with the Cretes, Corybantes, Telethines, and the Idæi Dactyli of Crete. However, in treating of them, great confusion has arisen from not considering that both the deity and priest were comprehended under the same title. Hence it has happened, that the appellation of Cabiri has been used by the ancients indifferently, to signify the gods in whose honour certain mysteries were instituted, the institutors of these mysteries, and the principal prophets who officiated in them. From the account that has been already given from Sanchoniathon of the origin of the Cabirian deities, it is reasonable to imagine, that they were persons eminently distinguished for their exploits, and for the invention of arts useful to mankind; and that on this account they were deified by the Phœnicians; and we may easily conceive, that the navigators who first passed from Phœnicia into Greece introduced there the worship which they had rendered to the Cabiri, as the inventors of navigation. To this purpose Diodorus Siculus very justly observes, (lib. i. p. 14.) that the Greeks worshipped for their gods some heroes and great men, that had formerly been famous in Egypt, whose lives, or at least short memoirs of them, had been written at first in a plain and simple manner; but succeeding writers embellished the accounts given of them, by intermixing with them various fictions. Diodorus ascribes to the Cabiri the invention of fire, and the art of manufacturing iron. Hence it is, that on a medal of Gordian, and another of Faria Sabina Tranquillina, both struck at Carthage, where the Cabiri were worshipped, we find the figure of a Cabira, on a column, holding a hammer in his right hand. For the same reason, Herodotus (l. iii.) observes, they were represented like Vulcan. We need not wonder, if we consider the various useful arts that were ascribed to these deified persons, that they should be so generally honoured. The Phœnicians, Syrians, Egyptians, Greeks, Cypriots, Phrygians, Etruscans, Latins, Carthaginians, and almost all the ancient Pagans, manifested the most profound veneration for the Cabiric mysteries. The name by which they are called denotes the high estimation in which they were held; for, instead of deriving it, as some have done, from the nymph Cabira, or from mount Cabirus

in Phrygia, its etymology may more probably be sought in the Hebrew, or Phœnician language, in which, the word "Cabir" denotes great and powerful; and accordingly, they are described by Cassius Hermina (see Macrobi. Sat. l. iii. c. 4. p. 376.) as "the great, beneficent, and powerful gods."

We have already observed, that the honours they received seem to have originated with the Phœnicians, and by their navigators the worship of these deities was introduced into the island of Samothrace, where they landed before they passed over to the continent. At Memphis, in Egypt, they had a famous temple, which was held so sacred, according to Herodotus (l. iii. c. 37.), that no person, excepting the priests, was suffered to enter within its walls. In several cities of Syria the worship of these deities prevailed. At Cabira in Pontus, they had one of the most magnificent temples in the world. In Phrygia also, and Cilicia, there are evident traces of the same kind of worship. The Cabiritic rites were also practised at Imbros and Lemnos; and they prevailed likewise in Greece, and particularly at Theba, in Bœotia; and as their chief province related to the sea and shipping, they were more especially implored by mariners for success in their voyages. When the worship of the Cabiri was introduced from Phœnicia, or Egypt, into Greece, it underwent various modifications and changes, as the Greeks were too proud to acknowledge themselves indebted, even for their superstition, to strangers. Accordingly, they altered the names of their gods, and disguised their origin. By some of the Greek writers, they are represented as the sons of Jupiter and Caliope; by others, as the sons of Jupiter and Electra, or of Jupiter and Leda. Some refer Jupiter himself, and Bacchus, to the class of Cabiri; and others say they were the sons of the Sun and Minerva: others pretend that their mother was the nymph Cabira, the daughter of Proteus, and their father, Vulcan; and it is thought, that one of their sons is represented on the medals of Thessalonica, under the name of CABEIPOC, holding in one hand a hammer, such as Vulcan is represented with on the ancient monuments, and dressed, like him, with a cap on the head. The worship of Vulcan and his sons was established in Egypt, in the isles of Lemnos, and in other places, where they were honoured under the name of Cabiri, for having invented corn and the manufacture of it. As for particular names which the Greeks gave to the Cabiri, those which most frequently occur are Castor and Pollux, the sons of Jupiter and Leda. These Grecian gods were represented as Cabirian deities on some of the Greek medals of Marcus Aurelius and Lucius Verus. These were also known by the names of Jason and Dardanus, the sons of Jupiter and Electra; and also by those of Alcon and Eurimedon, the sons of Vulcan and Cabira, to whom is ascribed a son called Camillus, or Cadmillus, i. e. Mercury. According to Cicero, three others, called Tritopæreus, Eubuleus, and Dionysius, were the sons of Jupiter and Proserpine. Musesas, a Phœnician author, has, according to Josephus, mentioned three others; viz. Axieros, said by some to be Ceres, and by others Jupiter; Axiocherfa, or Proserpine; and Axiocherfos, or Pluto.

The nature of the mysteries of the Cabiri, and the rites of which they consisted, are not ascertained. They were disclosed only to the initiated, and penalties were annexed to the crime of divulging them. The mysteries of Ceres Cabiria in Bœotia were the same with those of the Cabiri in Samothrace: and it has been said by Clemens Alexandrinus, in speaking of the worship of these deities among the Etruscans, that they were kept secret under a penalty, on account of the infamy that attended them. The Pelasgi, Samothracians,

mothradians, and others, celebrated them in the night, and, as it is related, with great indecency; and to this circumstance it is owing, that they have transmitted no written account of them to posterity. The "phallus" is said to have been one of their symbols in the Cabirian mysteries of Samothrace. M. de St. Croix in his "Memoirs concerning the sacred Religion of ancient Nations," (Paris, 1784), suggests, that the origin of the use of this symbol was as follows. Cadmillus, the youngest of the Cabiri, having been killed by two of his brothers, who cut off his privities and fled to mount Olympus, where they buried them; this Cabiri's death was commemorated by that symbol, and by many various expressions of grief on the part of the initiated. This author, combining the above relation of Herodotus with a passage in Pausanias, where the mysteries of the Cabiri are said to have been founded on a "present that was made to them by Ceres" concludes, that this "present," which Pausanias did not dare to specify, was no more than the obscure representation of the mutilated parts of Cadmillus; and this, he adds, was the venerable object that was committed to the custody of the Vestals in after-times, as a sacred pledge of the safety of Rome, whither the Samothracian priests, who took refuge in Italy, carried the religious rites and mysteries of the Cabiri. Whether this account be true or not, it is certain that the "phallus" was introduced under one form or name or another into the religious mysteries of ancient nations, and that the celebration of these mysteries was accompanied with many indecorous rites. Under the appellation of Cabiri, the ancients comprehended divinities of each sex, of all ages, of every rank and condition, celestial, terrestrial, maritime, and infernal, to which they appropriated various attributes. To some of the Cabiri, who were the inventors of navigation, they ascribed the discovery of iron; to others, the origin of laws, letters, and writing; and to others again the discovery of various modes of incantation and magic, the medical use of plants, &c. &c. The worship that was paid to them in different places referred more directly or indirectly to those several attributes. Such was the estimation in which these deities were held in the remote ages of antiquity, and afterwards by the Greeks under various appellations, by which they were distinguished, that princes and persons of rank resorted to Samothrace in order to be initiated into their mysteries. Accordingly, we find that Cadmus, Orpheus, Hercules, Castor and Pollux, Ulysses, and other heroes of the Trojan war, Philip the father of Alexander, and many others, made a voyage to this island, probably, under a notion that they might derive succour from the Cabirian deities in tempests and perilous voyages. Such was the veneration in which the Cabiri were held in the island of Samothrace, that it was thought an act of irreverence even to pronounce their names. Those who were admitted to the sacred ceremonies performed in honour of these deities used to assemble in a wood, which became a place of refuge for offenders, and was more respected than even the temple of Delphi or the island of Delos. To this island, Perseus, king of Macedon, fled for refuge, and took up his habitation in a temple of Castor and Pollux, hoping that the Romans would not profane a sanctuary revered by all the nations of the world; and, indeed, the Romans did not make any attempt upon his life or person so long as he continued there. Of all the oaths that were in use among the ancients, that by the gods of Samothrace was deemed the most sacred and inviolable. Those who were found to have falsified this oath, were looked upon as the curse of mankind, and persons devoted to destruction. Of course, these mysteries were highly respected, and care was taken that they should not

be revealed. With this view, the priests had a language peculiar to themselves, which was not understood by the people. The Corybantes were the ministers of these mysteries, not only at Lemnos and Imbros, but through the whole of Phrygia. For a more ample account of the various opinions of the fabulous ages, with regard to the names, origin, number, attributes, mysteries, and worship of the Cabiri, the reader, who is desirous of further information, may consult the writings of Clemens Alexandrinus, and Bochart. See CERES, ELEUSIS, and MYSTERIES. See also CORYBANTES, CURETES, and DIOSCURI.

CABIRI is also used to denote the *Gabri*, or Persian fire-worshippers. Hyde de Rel. Persarum, cap. 29. See GABRES.

CABIRI, in *Ancient Geography*, a people who inhabited the vicinity of mount Ida. Strabo says, that in his time, many supposed them to be the same with the Curetes. See CABIRI, *supra*.

CABIRIA, in *Mythology*, a surname of Ceres, who was the principal Cabirian deity: she had a sacred grove under this name in Boeotia.

CABIRIA, Καβίρια, religious feasts instituted in honour of the gods *Cabiri*. They were celebrated at first at Lemnos, afterwards adopted by the inhabitants of the islands of Samothrace and Imbros, and from thence passed into Greece to Athens, and particularly to Thebes, where they became famous.

These feasts were very ancient, and prior even to the time of Jupiter; who is said to have restored them: they were held by night. Children above a certain age were here consecrated; which consecration was supposed to be a preservative against all dangers of the sea, &c.

The ceremony of consecration called *θερωσις*, or *θερωσιμος*, q. d. *enthronizing*, consisted in placing the initiated youth on a throne, the priests dancing round him: the badges of the initiated were a purple girdle or scarf, and a crown of olive. When a person had committed any murder, the cabiria gave him an asylum.—Meursius is very particular in the proof of each of these points.

CABIRIDES, nymphs, who were the daughters of Vulcan and Cabira.

CABIRUS, in *Ancient Geography*, a mountain of Asia Minor, in Phrygia.—Also, a river of Asia, in the territory of the Suerii, at the mouth of which was good anchorage. Pliny.

CABISTRA, a town of Cappadocia, mentioned by Cicero in his Letters, lib. xv. Epist. 11. ad Senat. & ad Attic. lib. v. Epist. 18.

CABLE, in *Navigation*, a thick, long, three-strand rope, ordinarily of hemp, serving to hold ships firm at anchor, and to tow vessels in large rivers. In Europe, the cables are commonly made of hemp; in Africa, of long straw, or rushes called *bafs*; and in Asia, of a peculiar kind of Indian grass.

The word cable comes from the Hebrew word *chebel*, cord. Du-Cange derives it from the Arabic, *babl*, cord, or *babala*, vincire: Menage, from *capulum*, or *cabulum*; and that from the Greek *καμινος*, or the Latin *camelus*.

The term cable is sometimes also applied to the cordage used to raise masts, by means of cranes, wheels, and other like engines; though in strictness, cable is not to be applied to ropes of less than three inches in circumference. Every cable, of whatever thickness it be, is composed of three strands; each strand of three twilts; and each twilt of a certain number of caburns, or threads of rope yarn, more or less, as the cable is to be thicker or smaller.

Every merchant-vessel, how small soever, has three cables; viz. the main or master-cable, which is that of the chief anchor,

anchor, called the sheet-cable: and the two bowers, best and small. The ordinary length of the great cable is 120 fathoms or braces.

To make a cable; after forming the strands, they use flaves: which they first pass between the strands that they may turn the better, and be interwilted the more regularly together. And to prevent any entangling, a weight is hung at the end of each strand. The cable, being properly twitted, neither too much, so as to become stiff, nor too little, so as to be weakened, is untwitted again three or four turns, that the rest may the better retain its state. The usual allowance for the diminution of length by twitting, is one-third of the whole; so that for a cable of 120 fathoms, the rope-yarn must be 180 fathoms long.

The number of threads which each kind of cable is to be composed of, is always proportioned to its length and thickness; and it is by this number of threads that its weight and value are ascertained. Supposing, then, the lengths to be equal the number of threads and the weights will be as the areas of their bases, or, which comes to the same, as the squares of their circumferences. Having then the weight and number of threads of any one cable, we may easily calculate the following table. See Aubin's Marine Dictionary.)

Circumference.	Threads.	Weight.
3 Inches	48	1.2 Pounds
4	77	3.08
5	121	4.84
6	174	6.96
7	238	9.52
8	311	12.44
9	393	15.72
10	485	19.40
11	593	23.92
12	699	27.96
13	821	32.84
14	952	38.08
15	1093	43.72
16	1244	49.76
17	1404	56.16
18	1575	62.96
19	1754	70.16
20	1943	77.72

Several salutary laws respecting the manufacture of cables have been made in the reign of his present majesty, Geo. III. See 25 Geo. III. c. 56. It has also been enacted, that commanders of vessels belonging to British subjects, having on board foreign made cordage, shall make entry thereof at their arrival into any British port; and the master making default herein, all such foreign cordage as shall be on board shall be forfeited to his majesty; and shall for every such offence forfeit the sum of 20s. for every hundred weight thereof.

In the French manner, the circumference of the largest cable is one twenty-fourth part of the extreme breadth of the ship; or half the breadth in feet will be the circumference in inches. Thus, the circumference of the largest cable of a ship, whose extreme breadth is 2 feet, will be 16 inches. The length of a cable is 120 fathoms, each 5 French feet. The weight of one fathom of cable in French pounds is nearly equal to one-tenth of twice the square of the circumference; and, consequently, the weight of a whole cable will be nearly equal to twenty four times the square of the circumference. The weight of an anchor is half the weight of the cable to which it belongs.

CABLE, *lit the*. See *Bits*.

CABLES, *Bower*, those belonging to the best and small bower anchors, and are named accordingly.

CABLE, *clinch a*, is to run it through the hawse-hole and the ring of the anchor, three or four fathoms in length; then haul the bight up in the head, and pass the end of the cable over the bight, and through the ring between it and its own part; then pass the cable bends, and cross them with strands, well greased, one at the end, and the other about one foot from the end; and be careful not to form the clinch larger than the ring of the anchor.

CABLE, *coil the*, to make it up in a circular or elliptical form, for the convenience of stowing it; each complete round or turn of the cable is called a *fake*, and one range of fakes along-side of each other is called a *tier*. There are generally from five to seven fakes in a tier, and three or four tiers in the whole length of a cable; but this depends on the length of a fake, and the number contained in a tier. Several authors, and particularly M. Mrs. Hutchinson and Gower, have recommended that all cables should be coiled the same way they bit, or the way they run round the windlafs, and their tiers should be on the side opposite to that on which they lead. The best bower, which is in general the working cable, should lead foremost up the hatchway, then the small bower, and, abast all, the sheet, which, being the least wanted, can be made up snug round the fore part of the hatchway, out of the way. Should new cables come immediately from the rope-walk, let them be coiled down into the craft that is to bring them on board the same way they are to be coiled on board. A cable generally kinks from more turns being forced into it by the coiling than it naturally had; the kinks may, however, be avoided, either by coiling the cable against the fun, or with the fun, and the end taken through the coil, and the cable coiled down in the tier the way required. It should be a rule, in coiling cables, never to lay out near the hatchway, but to keep that part of the tier as low as possible, that the bends may have sufficient room to upset. Were all cables first coiled down from the rope-walk against the fun, they would be better adapted to coil on either side of a ship, for a cable coiled against the fun, will more easily reverse, and have less kinks in it than a cable coiled with the fun.

CABLE, *cut the*. When a ship is riding at anchor in an open bay or roadstead in a gale of wind, it many times becomes necessary, for the preservation of the ship and crew, to cut the cable with a hatchet at the hawse-holes or at the bits, when it cannot be purchased, and stand out to sea, under any convenient sail that it may be possible to set. This may be also necessary when compelled to fly from or pursue an enemy. If a ship parted her cable, the insurance would be lost. See *Slip the Cable*.

CABLE, *elastic*. See *Coir*.

CABLE-laid, any rope laid in the same manner as a cable.

CABLE's length, is 120 fathoms, each 6 feet. The distance between two adjacent ships of war, when formed into the line of battle, is appointed to be one or more cables' length, according to circumstances. The method of keeping the ship in its proper position with respect to the one next a head, is to calculate the angle which the whole or any particular portion of the main-mast of that ship would subtend at a proposed distance. Then if the angle observed by a quadrant is the same as that by calculation, the ship is in her proper station; if greater, she is too far a-head, and therefore some sail must be taken in; but if less, the ship is too far astern, and more sail must be set in order to regain her station. If the main top g'lant truck be brought to coincide with a mark, the same height above the water as the observer, this angle is found as follows: from the logarithm

CABLE.

of the given height, its index being increased by 10, subtract the logarithm of the assigned distance, the remainder will be the log. tangent of the required angle. But if there is no fixed mark, and in that case the angle subtended by the distance between the truck and the water is to be observed, the measure of this angle may be found by calculation as follows: from the height of the truck above the water subtract the height of the observer; from the log. of the remainder, its index being increased by 10, subtract the log. of the distance, the remainder will be the log. tangent of an arch; and from the log. of the height of the observer, its index increased by 10, subtract that of the distance, the remainder will be the log. tangent of an arch; the sum of these two arches will be the angle required.

Example. Let the assigned distance between two adjacent ships be one cable's length or 720 feet, the height of the main-top-gallant truck of the ship a-head above the water 190 feet, and the height of the observer's eye 24 feet; required the angle subtended by the mast?

Height truck	190		
Height observer	24		
		log.	1.38021
Difference	166	log.	2.22111
Distance	720	log.	2.85333
			2.87733
Arch	tangent 9.36278	12° 59'	
		1 55	8.52283

Angle required 14 54

See also Dr. Mackay's Navigation, p. 224.

CABLE, link worming of a, is an operation performed for preserving it in rocky and stony ground, or defending it against ice. For this purpose chains are twisted round cables in the following manner. Take three chains, each about 15 fathoms in length, and all of an equal size, and in thickness proportioned to the purpose to which they are adapted. Let these be wound round the cable, so that they may project sufficiently to sustain the greatest part of the friction, one end of them being fastened to the ring of the anchor, and each chain being from thence wormed round its respective hollow or channel of the cable, so as not to prevent its stretching. Fasten the other ends of the chain to the cable. The chains need not be very heavy: but the links should be short, because they will thus be more pliant, and worm more easily. These chains will effectually guard the cable against the chafing of the rocks, and they may be put on in a few minutes, so that it is not necessary to have them fitted on but when they are likely to be serviceable. As the weight of the three chains, even for a large cable, will not exceed 500 pounds, the only remaining difficulty is that which arises from the smallness of the hawse-holes; in order to obviate this, the holes may be enlarged; and with the additional aid of a boy or spare man at the head of the vessel, to cast off the chains as they come up, and hand them in above, every inconvenience will be removed. But if it should require a few minutes more to weigh an anchor so secured than a common one, this can be no argument against a measure that tends to preserve and ensure the safety of the vessel and of the ship's company. In high latitudes, where ice may cut or damage the cables, while riding at anchor, the use of three other chains such as the preceding, but not more than five or six fathoms in length may be recommended. These may be wormed round the cables in the same manner at the surface of the water, and will be an excellent means of guarding them from the pressure of the ice so as to prevent its either wounding them or chafing them quite asunder.

CABLE, heave in the, the order to draw it into the ship by means of the windlafs or capitan.

CABLE, pay away, veer, or give out more, that is to slacken the cable that it may run out of the ship.

CABLE, serve the, is to bind it round with ropes, old canvas, leather, or other materials, to prevent it from being galled or fretted in the hawse by friction. A piece of tanned horse-hide, big enough to be wrapped two or three times round the cable, has been recommended as the best kind of service to prevent it from chafing or fretting in a storm: this service is also easily put on and taken off. The method of putting it on the cable is first to wrap two or three folds of old canvas, the length of the leather-service, which if too stiff to put on dry, requires only to be dipped in water, and beat against any wood, which will make it soft and pliable. Then wrap it as tight as possible upon the old canvas round the cable, tying it tight and smooth on with fennit, or three-yarn nittles, made for that purpose, greasing them and the service very well before veering it into the hawse-hole. It may be observed that all cables should be served against the lay.

CABLE, sheet-anchor, the largest cable belonging to a ship.

CABLE, shot of the. See SHOT.

CABLE, splice a, is to join or connect two pieces of cable, or two cables together, by interweaving their strands. The snuggest and best method of splicing a cable, is to put the ends in twice each way; then to pick out the strands, and worm part of them round the cable, and taper away the rest, which let be snugly marled down. After this, let there be clapped on a good throat, and two end seizings of six thread ratline. The strands of the small bower and stream cables had better be pointed, that these cables may be more briskly spliced in case of necessity.

CABLE, slip the, is to let it run quite out, when there is not time to weigh the anchor. Slipping the cable, if time will permit, is preferable to cutting it, as the anchor and cable are thus preserved. Before it is either cut or slipped, a spare buoy-rope should be passed through the hawse-hole, and fastened near the end with a rolling-hitch; the end should be wormed in the cunt-line and flopped, that it may be easily regained.

CABLE, stowing the. See STOWING.

CABLE, stream, a hawser or rope a little smaller than the bower cables, used to moor a ship in a river or haven, which is sheltered from the wind and sea.

CABLE tier, the hollow space in the middle of a cable when it is coiled.

CABLE Island, in Geography, a small rocky island, the resort of sea-fowl, on the southern coast of Ireland, forming the south-western point of Youghal bay. On the north side of it is good anchorage. W. long. 7° 51'. N. lat. 51° 53'.

CABLED, in Heraldry, is applied to a cross formed of the two ends of a ship's cable: sometimes also to a cross covered over with rounds of rope; more properly called a cross corded.

CABLET, in Sea Language, denotes any cable-laid rope under nine inches in circumference. Cablets used for tow lines or hawsers, require the strands to be laid shorter than cable strands, but not so short-laid in closing; for, being used in water, they would become stiff, hard, unhandy to coil away, and liable to break in cold weather. Yarn for ropes of this sort should be finer than for cables, and spun to run from 18 to 20 threads to three inches in circumference. It should not be much tarred, as the tar would ooze out and the strands kink.

CABLIAU of *Ström. söndm*, in *Ichthyology*, the common cod-fish, *GADUS MORHUA* of modern naturalists. In the *Linn. Fn. Suec.* it is called *CABBLIA*.

CABLING, in *Architecture*, the figure of a staff, or reed, either plain or carved, in resemblance of a rope, or a rush, wherewith a third part of the flutings of a column are sometimes filled up; hence called *cabled flutings*.

There are also *cablings* in relief without fluting, especially on certain pilasters, as in the church of Sapienza at Rome. See *FLUTES*.

CABLISH, *Cablicia*, in the *Forest Law*, denotes brush, or browse-wood; though Spelman takes it more properly to signify trees or branches, thrown down by the wind; from the French *challis*, or *bois chablis*, which denotes the same.

CABO, in *Geography*, a kingdom of Africa, in Nigritia, situate to the south of the Rio Grande, and near the source of the Casamauka, about 150 leagues from its mouth. Little is known concerning it; but some voyagers assert that the king is rich and powerful, and that in time of peace he keeps 7000 men well armed, in order to command due respect from his neighbours.

CABO Corfo, or *Cape-Corfo*, a cape and factory of Africa, on the Gold coast. N. lat. 5° 16'. W. long. 2° 8'.

CABO de Cruz, a bold point of land on the south side of the island of Cuba. N. lat. 19° 37'. W. long. 78° 28'.

CABO de St. Juan, the north-easternmost point of the island of Porto Rico. N. lat. 18° 30'.

CABOCHED, *CABOSHED*, or *CABOSSED*, formed from the obsolete French *cabeche*, from *caput*, head, in *Heraldry*, is where the head of a beast is cut off behind the ears, by a section parallel to the face; or by a perpendicular section: in contradistinction to couped, which is done by a horizontal line; besides that it is farther from the ears than *cabossing*. The head in this case is placed full-faced, or *affrontée*, so that no part of the neck is visible. This bearing is by some called *Trunked*.

CABOCHON, in *Conchology*, the name given by Argenville to the Linnæan *PATELLA EQUESTRIS*; which see.

CABOCLES, in *Modern History*, a name given in the West Indies by the Portuguese to those produced between Americans and Negroes.

CABOLITÆ, in *Ancient Geography*, a people of Asia placed by Ptolemy in Paropamisus.

CABOMBA, in *Botany*. See *NECTRIS*.

CABOT, **SEBASTIAN**, in *Biography*, an eminent navigator, the son of a Venetian pilot distinguished by his skill in the same art, and often resident in England, was born at Bristol about the year 1477, and instructed by his father in those branches of mathematical science which were necessary for forming a skilful seaman. Before he had attained the age of 17 years, he made many trips to sea; thus adding an acquaintance with the practical part of navigation to the knowledge of its theory. In his first voyage of any importance, he accompanied his father for the discovery of unknown lands, and particularly for exploring a north-west passage to the East Indies. John Cabot, encouraged in this attempt by the discoveries of Columbus, who returned from his first expedition in 1493, obtained, in 1495, letters patent from king Henry VII. empowering him and his three sons to discover, conquer, and settle lands then unknown, in recompence of which they were to be invested with many privileges. The king, however, reserved to himself one-fifth part of the neat profits, and restricted them to return from their voyage into the port of Bristol. Accordingly in the following year he prepared for his expedition, and obtained the king's permission to take up six ships of 200 tons burden and under, in any harbour of the realm, and to

engage a sufficient number of mariners. His majesty was at the expence of fitting one ship at Bristol, and the merchants of that city and of London added three or four small vessels, freighted with suitable commodities. With this fleet John Cabot and his son Sebastian set sail in the Spring of 1497, and pursued their course till the 24th of June, when they discovered the island of "Baccalaos," so called from the fish which they found in great abundance on its coast, but now known by the name of Newfoundland. Another adjoining island they called St. John, probably from the Saint's day on which it was discovered. On this island, as they supposed it to be, which was the south-west part of Newfoundland, they found inhabitants who were clothed with the skins of beasts, and who used bows, arrows, pikes, darts, wooden clubs, and slings. Three of these natives were brought with them to England. It is supposed, however, that Sebastian had made some voyages of discovery in the reign of Henry VII. without his father; and that in some of these he sailed as far north as 67° and a half, but was prevented from proceeding farther by the mutiny of his sailors. After the discovery of Newfoundland, Cabot and his son sailed down to Cape Florida; and on their return to England they were well received, as they were the first navigators who had actually seen the continent of America; Columbus not having observed it till the following year. During the succeeding period of 2 years, there is a chasm in the history of Sebastian's transactions; nor is it certain when or where his father died, though he probably terminated his life in England, to which he appears to have been much attached. In the 8th year of the reign of king Henry VIII. we find that Sebastian Cabot had formed an intimate connection with sir Thomas Pert, then vice-admiral of England; and that he had obtained by his interest with the king, a good ship for the purpose of prosecuting his discoveries. It seems to have been at this time his intention to have sailed by the south to the East Indies, and with this view he sailed first to Brazil; but disappointed in his purpose through the timidity of his coadjutor, sir Thomas Pert, as Hakluyt asserts, he directed his course to the islands of Hispaniola and Porto Rico, and having trafficked here for some time, he returned to England. Thus disappointed in his views, he left England and removed to Spain, where he was very respectfully received and appointed pilot-major, for the purpose of reviewing all projects of discovery, which were, at that period, numerous and important. In the year 1524, many opulent merchants entered into a treaty with him, and engaged to defray the charges of an expedition to the Moluccas, or Spice islands, by the new-found passage of Magellan. Accordingly he set sail from Cadiz with four ships, in April 1525; and proceeded first to the Canaries, then to the Cape Verde islands, and afterwards to Cape St. Augustine, and to the island of Patos, or Geefe. At the bay of ALL SAINTS he was liberally supplied with provisions, for which he made a very ungrateful return by forcibly carrying away four sons of the principal persons of the island. He then proceeded to the river La Plata, and landed on a desert island Martin Mendez, his vice-admiral, captain Francis de Rojas, and Michael de Rojas, where he left them because they had censured his conduct. Being prevented by a mutiny among his men and by scarcity of provisions from prosecuting his voyage to the Spice Islands, he sailed about 30 leagues up the river La Plata, and found an island which he called St. Gabriel, about a league in compass and half a league from the continent towards Brazil; and having discovered about three leagues higher a river which he named St. Salvador, and which, being very deep, afforded a good harbour, he brought

up his vessels and unloaded them. Here he built a fort; and advancing with boats 30 leagues higher, he found another river, called Zarcarana, and constructed on the banks of it, as the inhabitants were intelligent and not unfriendly, another fort, called by himself Santi Spiritus, or of the Holy Ghost, and by his followers Cabot's fort. He afterwards discovered the shores of the river Parana, with several islands and rivers, and at length arrived at the river Paraguay, where he found people tilling the ground; a circumstance which had not before occurred to him in that part of the world. In a conflict with the Indians, by whom he was opposed, he killed many of them, but 25 of his own men were slain, and three taken prisoners. During this winter he fell in with James Garcia, who had been dispatched from Galicia for the purpose of making discoveries, and having returned together to the fort of the Holy Ghost, they sent messengers to Spain. The two persons that were deputed by Cabot gave a very favourable account of the countries adjoining to the river La Plata which he had subdued, and produced gold, silver, and other valuable commodities, as testimonies to their commander's good conduct. At the same time they demanded a supply of provisions and ammunition, as well as other articles adapted to the purposes of commerce, together with a recruit of seamen and soldiers. The merchants, however, who had fitted out Cabot's squadron, were unwilling to comply with these requisitions, and chose to surrender their rights to the crown of Castile. But the king delayed the necessary preparations so long, that Cabot, who had been five years employed in this expedition, and who was tired with waiting for necessary supplies, determined to return home. Accordingly he embarked his men and effects on board the largest of his ships, leaving the rest behind him; and arrived at the Spanish court in the spring of the year 1531. In the mean while prejudices had been excited against him, on account of the rigour with which he had treated the Spanish mutineers, and because he had not proceeded to the Moluccas; so that his reception was not favourable. However, he retained his place, and continued in the service of Spain for many years: till at length, for reasons with which we are not acquainted, he resolved to return to England. This took place towards the latter end of the reign of Henry VIII. at which time he resided at Bristol. In the commencement of the following reign he was introduced first to the protector, lord Somerset, and by him to king Edward VI. who took great pleasure in his conversation, and granted him, in 1549, a pension of 166l. 13s. 4d. a year; an annuity which was allowed him, according to Hakluyt, as grand pilot of England. From this time he was highly favoured by the king, and consulted upon all commercial matters. In May 1552, the king granted a licence, together with letters of safe conduct, to such persons as were willing to embark on board three ships, destined for exploring a passage by the north to the East Indies. The enterprise was undertaken by the advice and recommendation of Cabot, then governor of the company of merchant-adventurers; and he furnished necessary directions, which evinced both his wisdom and integrity. For his trouble and charge in this business, his majesty presented him with a gratuity of 200l. This expedition was entrusted to the command of sir Hugh Willoughby, and it produced the discovery of the important trade to *Archangel*, which sec. Cabot was also appointed by royal charter governor for life of the Russia company, in whose concerns he took a very active part; and in 1555 letters patent were issued, by which their majesties Philip and Mary, granted him an annuity of 166l. 13s. 4d. during his life. In April 1556, he appears to have re-

tained the habitual ardour of his mind for the prosecution of discoveries; for he visited Mr. Burroughs at Gravesend on board his small vessel destined for Russia, and gave a liberal entertainment to the sailors on this occasion. This is the last circumstance that is recorded concerning him; and he is supposed to have died in the following year, when he had probably attained the age of nearly 80 years. He was a skilful navigator, and possessed in his time a very high reputation. To his capacity, integrity, and zeal, society was very much indebted. The variation of the compass was first observed by him. See VARIATION. Cabot published a large map, which was engraved by Clement Adams, and hung up in the privy gallery at Whitehall; and on this map was inscribed a Latin account of the discovery of Newfoundland. He also published a work entitled "*Navigazione nelle Parte Settentrionali*," printed at Venice in 1583, fol.; and his instructions above referred to were printed in Hakluyt's voyages. Biog. Brit.

CABOT, in *Geography*, a township of America, in the county of Caledonia and state of Vermont, situate on the height of land between lake Champlain and Connecticut river, about 17 miles from the 15 mile falls in this river, and containing 349 inhabitants.

CABOT'S *Head*, a promontory extending far into lake Huron, W. of Gloucester, and embaying a great part of the lake at its eastern extremity.

CABOTE, in *Ichthyology*. See CORAX.

CABOURG, in *Geography*, a town of France, in the department of Calvados, and district of Caen, 10 miles N. of it.

CABRA, a town of Spain in Andalusia, situate at the foot of a mountain, near the source of a river of the same name, containing, besides a church and six convents, a college for the study of philosophy and divinity; 25 miles S.E. of Cordova.

CABRA, an inconsiderable town of Portugal, in the province of Beira; 20 miles E.S.E. of Viseu.

CABRA, or KABRA, a town of Africa in the kingdom of Tombuctoo, situate on the river Guin, or Neel Abeed, west of the island Iinbala or Guinbala, and about 12 miles S. of Tombuctoo, of which it is the port. It is a large town without walls and a place of great trade. The inhabitants are said to be subject to diseases that are attributed to the heterogeneous qualities of their food, which is usually a farrago of milk, fish, flesh, butter, oil, and wine. Here resides a judge, who is appointed by the king for deciding all controversies. N. lat. 16° 24'. E. long. 1° 30'.

CABRAL, or CABRERA, PEDRO ALVAREZ, in *Biography*, a Portuguese navigator, who commanded the second fleet fitted out in 1500 for the East Indies by Emanuel king of Portugal. Anxious to avoid the coast of Africa in the course of his voyage, he stood out far to sea, and after a month's sailing, was driven by a tempest on the shore of an unknown country, which proved to be that part of South America, now called Brasil. Having landed at Santa Cruz on the 24th of April, 1500, he took possession of the whole country for the crown of Portugal. (See BRASIL.) From this new coast he proceeded to Sofala in Africa, whither he arrived after having lost six of his thirteen ships; and from thence he sailed to Calicut where he obtained leave of the sovereign, or zamorin, to form a commercial establishment. Some time after there occurred a jealousy between him and the inhabitants, which produced hostilities, in the course of which Cabral burnt several ships in the port, and battered the town, so that the zamorin was at length obliged to acquiesce in the terms that were proposed. He afterwards went to Cananor, where he made a treaty with the prince; and in 1501 he returned to Portugal with a rich cargo. He published an account of this voyage, printed in an Italian translation by Ramusio at Venice. Having gained reputa-

tion by his discoveries and exploits, he died in his own country. *Nouv. Dict. Hist.*

CABRAL, in *Geography*, a town of Spain, in the territory of Cordova; 3 miles N.W. of Lucena.

CABRE, a town of the island of Cuba; 30 miles S. of Spiritu Santo.

CABRELLA, a town of Portugal, in the province of Estremadura; $7\frac{1}{2}$ leagues E.S.E. of Setuval.

CABRERA, Lat. *Capraria*, a small island in the Mediterranean, deriving its name from the number of goats upon it. It is mountainous and desert; no part being inhabited except its port, which is large and safe, and the entrance of which, opposite to Majorca, is defended by a castle and a small garrison. Under the west end of the island there is a good road. Criminals are banished into this island; $2\frac{1}{2}$ leagues S. from Majorca.—Also, a small island near the north coast of the island of Sardinia, N. lat. $41^{\circ} 15'$ E. long. $9^{\circ} 27'$.—Also, another island, named likewise Capraa, lying about E.N.E. from Cape Corse, on the north point of Corsica, nearly N. from the west end of the Elbe Island.—Also, another island E. of the island Sapienza, at the S.W. point of the Morea.—Also, another island in the gulf of Venice, not far from the coast of Italy, and nearly north from mount St. Angelo, or the gulf of Varennes.

CABRERA island, lies on the south coast of Candia island, S. of the Archipelago islands, about twelve leagues E.N.E. from the island of Goza. On the east of it is a fair bay, in which is a good road; and another to the west.

CABRERES, a town of France, in the department of the Lot, and district of Cahors; 13 miles E.N.E. of it.

CABRES, *Ilba del*, or Goat island, a small island belonging to Africa, near the coast of Guinea, at a small distance from the island of St. Thomas. It is mountainous and covered with lemon-trees.

CABRETA, *cape*, lies on the coast of Spain, 5 leagues E. from the island Tariffa, and the westernmost point of the great bay of Gibraltar.

CABRIEL, a river of Spain which runs into the Xucar, soon after it enters Valencia.

CABRIERES, a town of France, in the county of Venaisin, the inhabitants of which were ordered to be massacred by an arret of parliament in 1545, under the pretext of religion; 3 leagues N. of Cavaillon.

CABRILLA, in *Ichthyology*, a species of PERCA, found in the Mediterranean sea, the body of which is marked with four longitudinal sanguineous bands. Linn. Mus. Ad. Fr.

CABRITA island, in *Geography*, See CAPREA.

CABROL, BARTHOLOMEW, in *Biography*, a native of Languedoc, received his education in anatomy and surgery, at Montpellier. Returning to his own country, in 1555, he was appointed surgeon to the hospital of St. Andrew, in that city. In 1570 he was invited by the University of Montpellier to take the office of demonstrator in anatomy; an office he filled with credit several years. In 1594 he published an anatomical treatise, under the title of "Alphabet Anatomique," at Tournon, 4to. reprinted at Geneva in 1602, and afterwards translated into Latin, with the title of "Alphabetum Anatomicum," id est, "Anatomes Elenchus accuratissimus, omnes humani corporis partes, ea qua secari solent methodo delineans, accessere oileologia, observationesque medicis ac chirurgis peritiles, 1604, Geneva." In this form it has been frequently reprinted; and is valuable, Haller says, for the number of curious and useful observations contained in it. It is inserted in a collection of treatises, entitled, "Collegium Anatomicum clarissimorum trium viro- rum, Jassolini, Severini et Cabrolii. Douglas Bibliog. Haller, Bib. Chir. Eloy. Dict. Hist.

CABRON, *cape*, in *Geography*, the north-east point of Presque ile de Samana, in the island of St. Domingo, 22 leagues S.E. by E. from old cape François. N. lat. $19^{\circ} 35'$ W. long. $68^{\circ} 40'$.

CABRUSI, in the *Writings of the Ancients*, a word frequently used to express Cyprian, or coming from the island of Cyprus. The ancient Greeks had almost all their vitriols and vitriolic minerals from this island; they therefore sometimes called these cabrusi, without any addition. It is very probable that our word copperas, the common name of green vitriol, is a false pronunciation of this word cabrusi.

CABUIA, a West Indian species of hemp, produced in the province of Panama, from a plant somewhat like the *chardon* or *iris*; when ripe, they lay it to steep in water, and after drying it again, beat it with wooden mallets till nothing but the hemp remains, which they afterwards spin, and make thread and ropes of it; the former of which is so hard and tough, that with it they saw iron, by fitting it on a box, and laying a little fine sand over the metal as the work proceeds.

CABUL, CABULISTAN, or ZABULISTAN, in *Geography*, a country of Asia, on the limits of Hindoostan, and west of the Indus, which was formerly a province of Persia, afterwards annexed to the Mogul empire, and comprehended again under the Persian monarchy in 1739, by Nadir Shah. It is bounded on the north by Kuttore or Caferistan, and the Hindoo-Kho mountains, which latter separate Cabul from Balk and Badakhsh; on the west by the same mountains and Candahar, on the south by Moulton and Lahore, and on the east by Cashmere. This Soubah, under the Mogul emperors, comprehended the whole space between the Indus and the mountains of Hindoo-Kho, being in dimensions 150 coses (each cos being about $1\frac{3}{8}$ statute mile, (according to the Ayin Acbaree; and this is its greatest extent; for 100 coses are given for its breadth between Kurrahagh, situate 11 royal coses S.W. of Ghizni, and Chuganferai at the western extremity of Caferistan. Cabul is confined on the north by the continuation of Hindoo-Kho; and on the north-east by Caferistan. Towards the south, or the quarter of Bungush, its extent is not ascertained: but as its greatest breadth is included within the space between Kurrahagh and Chuganferai, we may conclude that it cannot extend far beyond the river of Nughz. We have an ample description of Cabul in the Ayin Acbaree; from which, as well as from every other account, it appears to be a country much diversified by mountains covered with eternal snow, hills of a moderate height and easy ascent, rich plains and stately forests; and these enlivened by innumerable streams of water. It produces every article necessary to human life, together with the most delicate fruits and flowers. In the Ayin Acbaree Cabul is reckoned a part of the soubah of Cashmere; but it has been since, with great propriety, regarded as a soubah of itself. Cabul, with respect to its natural geography, is divided into two parts, separated by a ridge of very high mountains, usually covered with snow, which runs from west to east from the neighbourhood of Ghizni to that of Deenkyte on the Indus, below Attock. The tract lying to the north of this ridge is named Lumghan, or the Lumghanat; and that on the south Bungush, or the Bungushat; each having one or more considerable rivers intersecting their whole length, and discharging themselves into the Indus. Each tract has also its proper roads, and its passes over the Indus, from the districts of Cabul, Candahar, and Ghizni, respectively: but the northern, or Lumghanat road, is that in common use, either to Persia or to Samarcand, notwithstanding its circuitous nature, as it respects the former of these countries; for it is both the easiest and the safest.

Cabul, as well as Candahar, together with some districts

on the east of the Indus, are comprised within the extensive dominions of Timur Shah Abdalla, (usually styled king of Candahar,) which extend westward to the neighbourhood of the city of Terfihish; including generally Cabul, Candahar, Paishawur, Ghizni, Gaur, Seiltan or Sigistan, and Korafan. This tract is at least 800 British miles in length, from east to west, and its breadth, though unascertained, does not bear any proportion to its length. It does not differ much from the tract comprised within the ancient kingdom of Ghizni. Timur Shah's Indian subjects are chiefly Afghans; the rest, Persians and Tartars of almost every denomination. His government is said to be mild and equitable, with some degree of relaxation as to military discipline; which, in a government purely military, forebodes dissolution. Rennell's Memoir.

CABUL, a city of Asia in the above province, is the present capital of the successor of Timur Shah, and situated on a river of the same name, near the foot of the Indian Caucasus, or Hindoo Kho; and the proximity of this ridge occasions the most rapid changes in the temperature of the atmosphere. Its situation is spoken of in terms of rapture by the Indian historians; it being no less romantic than pleasant; enjoying a wholesome air, and having within its reach the fruits and other products both of the temperate and the torrid zones. In a political light, it is considered as the gate of India towards Tartary; as Candahar holds the same place with respect to Persia. Mr. Forster, in his "Journey from Bengal to England," describes Cabul as a walled city, about $1\frac{1}{2}$ mile in circumference, and seated on the eastern side of a range of two united hills, generally the figure of a semicircle. The fortification, which is of a simple construction, with scarcely a ditch, and the houses built of rough stones, clay, and unburned bricks, exhibit a mean appearance, and are ill suited to the grandeur that might have been supposed to subsist in the capital of a great empire. But the Afghans, he says, are a rude and unlettered people, and their chiefs have little propensity to the refinements of life, which indeed their country is ill adapted to gratify. From the Indus to the western limit of this extensive territory, there is an invariable deficiency of wood; inasmuch, that the lower class of people in the northern quarter suffer as much, perhaps, from the want of fuel in the winter season, as those of other countries would do from a scarcity of provisions.

This quarter of Afganistan, possessing but few Indian productions, receives furs and cotton cloths chiefly from Peshawur, whither it sends iron, leather, and tobacco. To Candahar it exports iron, leather, and lamp-oil, whence the returns are made in sundry manufactures of Persia and Europe, with a large supply of excellent melons. The Tartars of Bucharra bring to Cabul the horses of Turkestan, furs, and hides; the latter resembling those in Europe called Bulgar; the amount of which is applied to the purchase of indigo, and other commodities of India. The adjacent parts of Usbeck Tartary, of which Balk is the capital, hold a kind of dependency on Timur Shah.

The Afghans are the indigenous possessors of a tract of country, which stretches from the mountains of Tartary to certain parts of the gulf of Cambay and Persia; and from the Indus to the confines of Persia. The inhabitants of this wide domain have no written character, and speak a language peculiar to themselves. They are a robust, hardy race of men, and being generally addicted to a state of predatory warfare, their manners largely partake of a barbarous insolence, and they avow a fixed contempt for the occupations of civil life. See AFGHANS.

Ahmed Abdalla, first king of Candahar, was originally the chief of an Afghan tribe, conquered by Nadir Shah, on

whose death he suddenly appeared among his former subjects, and soon erected a considerable kingdom in the eastern part of Persia, including most of the Indian provinces ceded by the Mogul to Nadir. He established his capital at Cabul. Ahmed died about the year 1773, and was succeeded by Timur, who continued to reside at Cabul; but the monarchy has been styled that of Candahar from a central province. The successor of Timur was Zemaun, who probably still rules this extensive country. Cabul is situated in N. lat. $34^{\circ} 32'$. E. long. $68^{\circ} 34'$.

CABUL, a river of the above-mentioned province, has also the proper name of Kameh or Kamah from the vicinity of Jalalabad, 60 or 70 miles below the city of Cabul down to Paishawur. At Jalalabad it is navigable for jalehs, or rafts of a particular construction; and as no embarkations in hollow vessels are in use, we may infer that the navigation is interrupted by rapids, for the water of the Kamah is sufficient to carry boats. The Cabul, after receiving the rivers of Bijore, Penjekoreh, Chendoul, and Sewad, joins the Indus at Attock.

CABURE, in *Ornithology*, the Brazilian name of the great eared owl of that country, *STRIX BRASILIANA* of recent authors. The CABOURE of Willughby is the same bird.

CABURNS, in *Sea-language*, denote small lines made of spun yarn, wherewith to bind cables, seize tackles, and the like.

CABUSEIBA, in *Botany*. See MYROXYLON, PERUVIANUM.

CABYBARA, in *Zoology*, an animal of the *CAVIA* genus, distinguished specifically by having no tail; fore feet three toed, and palmated. Schreber.

This animal grows to the length of about two feet and an half; the head is oblong; snout narrow; nostrils black and roundish; upper lip cleft; whiskers black; eyes large; ears short, erect, naked, and black. It inhabits the eastern parts of South America, where it frequents fenny woods near large rivers; swims and dives well; feeds on fish and vegetables, the former of which it catches in the night; brings forth one young at a time. This is the thick nosed tapir of Pennant.

CABYLA, or CALYBE, in *Ancient Geography*, a small town of Thrace.

CABYLES, in *Modern History*, the Moorish mountaineers of Algiers (See ALGIERS), are partly the immediate descendants of the most ancient inhabitants of the country, and in this respect frequently denominated Brebers or Berbers (See BREBES); and partly the mixed progeny of the aborigines, and of the nations who in former times invaded the country and settled in it; but all of them have always been and still are distinguished from the other inhabitants of the country by their language, love of freedom, and rude unpolished manners. The Cabyles are divided into distinct tribes, many of which are free and independent, and do not acknowledge the superiority of Algiers; especially those who inhabit the inaccessible ridges of mountains. The neighbouring tribes are often united by friendly alliance, without subjecting themselves to a common head. Others live in a continual state of contention and feud with their neighbours, the chief causes of which are the infidelity and elopement of their wives. They are, in general, well-grown, robust, meagre, and of a sun-burnt red, and often blackish-yellow complexion, and have black or dark-brown hair. Their external appearance is rendered still more uncouth by dirt and tattered clothes. They commonly dwell in straw-huts; though stone-houses occasionally occur in their "daskras," or villages. Their number decreases, and their love of liberty gradually declines. The inhabitants

tants of the highest parts of the mountains, however, still assert their independence, and defend their liberty with undaunted valour against every hostile attack. Their courage, concurring with a perfect knowledge of the country, saves them from the superior force of their enemies, as the Algerines have, within a late period, frequently experienced. The government, therefore, endeavours to maintain a good understanding and friendship, where force is ineffectual, and often yields even to unreasonable demands. Thus the Cabyles of Conco are treated with great lenity; for the situation of their country is favourable, and they can assemble a strong army; and they carry great quantities of oil and soap for sale to Algiers. The case is the same with respect to the Cabyles who inhabit the sea-coast about Bugia, Bona, and Tabarca. Among the Cabyles, who acknowledge no common chief, those of the greatest age are particularly honoured; and only their priests, or "Marabuts," enjoy the general confidence of the tribes, and have under the cloak of religion acquired great power and authority, which in some instances have become hereditary. These then act in the capacity of heads of the tribes, form treaties of peace, send ambassadors, and are by others, and even by the Turks, considered as the chiefs of the nation. In the vicinity of the sepulchre of a deceased Marabut, or saint, is generally the habitation of the Marabut of the tribe, who, by means of a flag hoisted on a pole erected upon the edifice, gives the usual signal when the time of prayer arrives. From the same place signals are made, on the approach of the enemy, to the Cabyles, to assemble them at the appointed place of rendezvous. The language of the Cabyles, like that of the Moors, is a dialect of the Arabic. It deviates, however, so much from the latter, that in many places Moors and Cabyles are not able to understand one another.

CABYNE, in *Geography*, a small island in the Indian ocean, south of Bruton; and near the island called Hagedissen or Lizard-island.

CACABELOS, a small town of Spain in Leon, seated in a valley between high mountains; 40 miles N. W. of Leon.

CACABOGA, in *Zoology*, the name of an American serpent, by some accounted the same with the Tareiboia, or black water snake of that part of the world; but by others described as being of a yellow colour, living about houses, and doing great mischief among poultry, although its bite is not fatal to mankind. This is an ambiguous species.

CACACA, in *Geography*, a town of Africa, in the kingdom of Fez, taken by the Moors from the Spaniards in 1534, is defended by a strong fort on a rock; 16 miles S. of Melilla.

CACAGUALES, a town of North America, in the country of Mexico, and province of Tlascala.

CACALIA, in *Botany*, (*κακάλια*, Dioscorides.) Clus. C. Bauh. 197. Tournef. Cl. 12. gen. 10. Tab. 258. Ray Method. Plant. 34. Hist. 291. Linn. gen. 933, who in his earlier works called the genus *Kleinia*, but afterwards adopted the name taken up by Clusius, &c. though dubious of its identity with the plant of Dioscorides and Pliny. Reich. 1013. Schreb. 1269. Gart. 963. Tab. 166. Juss. 178. Vent. 2. 510. La Mark Pl. 673. Class and order, *syngnesia polygamia equalis*. Nat. Ord. *Compositæ discoides*. Linn. *Corymbifera*. Juss.

Gen. Ch. *Cal.* common, simple, oblong, somewhat calyced at the base, cylindric; scales five to ten, or more, equal, lanceolate, linear, forming a tube, with a few short ones incumbent on the base. *Cor.* compound, tubular; florets hermaphrodite, uniform; border four or five-cleft,

erect, gradually lessening into the tube. *Stam.* filaments five, very short, capillary; anthers cylindric, tubular. *Pist.* germ. oblong; style thread-shaped, the length of the filaments; stigmas two, oblong, revolute. *Peric.* the permanent calyx. *Seeds* solitary, narrow-ovate; down capillary. *Recep.* naked, flat, dotted.

Eff. Ch. *Cal.* cylindric, oblong, somewhat calyced at the base.

Obf. Linnæus in his *Species Plant.* and *Syst. Nat.* admitted some plants into this genus, which in opposition to his own generic character are without the short scales at the base of the calyx. These are now placed under a distinct genus, for which Linnæus's original name *Kleinia* has been revived. La Mark in *Encyc.* and professor Martyn in his edition of Miller, still, however, adhere to the arrangement of Linnæus. The latter has inconsistently retained the original generic character, which the former has altered so as to adapt it to all his species.

Species. * *Stems shrubby.*

1. *C. pendula*, Willd. Forstk. descript. 145. "Stem and branches fleshy, leafless, scaly; peduncles one-flowered," Vahl. Symb. 3. p. 90. Perennial. Stem about three feet high, branched, trifid towards the summit. Scales scattered, spiral-wise, rather crowded, about half an inch long, lanceolate-awl-shaped, yellowish, rigid, pungent, pressed close to the branches. Peduncles from the summits of the branches, solitary, straight, about seven inches long, with a few linear, small, remote scales. Calyx many-leaved, containing many florets. Corolla purple.
2. *C. cylindrica*, La Mark. "Stem weak; leaves slender, cylindric, fleshy, with a few hairs at their axils." Perennial. Stem a foot and a half high. Branches slender, cylindric, smooth, leafy. Leaves scattered, cylindric, two inches long, pale green. A native of Africa, cultivated in the royal garden at Paris.
3. *C. carnosu*, Willd. "Leaves roundish, fleshy incurved; peduncles terminal, one-flowered, naked." Ait. Hort. Kew. 3. p. 156. Perennial. Native of the Cape of Good Hope.
4. *C. ficoides*, Linn. Sp. Pl. (*Kleinia* Hort. Clif.) "Leaves compressed, fleshy." Perennial. Stems seven or eight feet high, Miller; (about two feet; La Mark), woody at bottom, soft and succulent upwards, irregularly branched. Leaves scattered, thick, tapering, succulent, a little curved, a little compressed in a direction perpendicular to the horizon; the upper ones covered with a very glaucous meal resembling that on some kinds of plum. Flowers yellowish white, at the extremities of the branches; in a loose, branched corymb. Stigma dark purple. Miller and La Mark. A native of Africa.
5. *C. repens*, Linn. Mant. 110. "Leaves depressed, fleshy." Perennial. It differs from the last in having a creeping root; and leaves not compressed but concave on their upper surface. Native of the Cape of Good Hope. The leaves and upper part of the branches of these two are pickled by the French with their meal on, and esteemed not inferior to rock samphire.
6. *C. cuneifolia*, Linn. Mant. 110. "Leaves wedge-shaped, fleshy." Perennial. Smaller than the two preceding. Leaves scattered, glaucous, veinless, flat above, and somewhat convex underneath. A native of the Cape. Cultivated in the Upsal garden. Linnæus, though he could not make it flower, judged it to be a *Cacalia*, not a *Cotyledon*, on account of its leaves not being opposite.
7. *C. articulata*, Linn. Sup. 354. Thunberg prod. 142. PHerit. stirp. tab. 83. (lacinia Jacq. ic. rar. tab. 168. runcinata La Mark?) "Stem decumbent, jointed; lower leaves hastate, upper lyrate." Linn. jun. "Leaves fleshy, flat; leaflets three-lobed." Willd. "Leaves petioled, flat, hastate-runcinate, fleshy, glaucous;" La Mark. Perennial. Stems three

CACALIA.

three feet high, upright but weak, round, fleshy, marked with lines of a deeper green, branching; young branches jointed. *Leaves* scattered, generally pinnate; pinnules oblong, tooth-gashed or entire, the end one largest. Jacquin. Pinnatifid or hastate, but more frequently ternate-pinnatifid; the segments lanceolate, spreading very much, the two lowest distinct; the sinuses rounded. L'Herit. Runcinate, or sometimes simply hastate, situated towards the summit of the branches and stem. *Flowers* white or slightly tinged with red, in a loose corymb; peduncles long. La Marck. Obs. According to Jacquin, as quoted by professor Martyn, the calyx is without incumbent scales at the base, which would make it a *Kleinia*; but Willdenow, who had access to a living plant, continues it under *cacalia*. A native of the Cape of Good Hope. 8. *C. papillaris*, Linn. Sp. Pl. (*Kleinia* Hort. Cliff. *Cacalianthemum* Dill. elth.) "Stem beset with truncated, petiolar spines; leaves lanceolate, plain." Perennial. Stem about three feet high cylindric, beset on all sides with apparently truncated tubercles, which are the permanent petioles of fallen leaves. *Leaves* three or four inches long, nearly cylindric, with a longitudinal furrow, glaucous-green, scattered about the summits of the branches. A native of the Cape of Good Hope. 9. *C. Kleinia*, Linn. Spec. Plant. (*Kleinia*, Hist. Cliff. 595. *Calcalianthemum* Dill. elth.) "Stem compound; scars of the petioles obsolete, leaves lanceolate, flat; flowers corymbose." Stem thick, fleshy, cylindric, branched, smooth; the scars of the fallen leaves a little protuberant; branches smaller at their insertion and seemingly jointed. *Leaves* four or five inches long, fleshy, pointed, slightly furrowed on their upper surface, growing in tufts at the summits of the branches. *Peduncles* several in the centre of the tuft of leaves, each supporting a corymb of oblong, pale-carnation-coloured flowers. La Marck. *Receptacle* narrow, sprinkled with obsolete papillæ, naked, smooth. *Seeds* oblong, nearly cylindric, smooth, rufescent; down longer than the calyx, of a silky whiteness; rays capillary, very minutely denticulated. A native of the Canary Islands. By some gardeners it has been called cabbage tree, from the resemblance of its stalks to those of cabbage; by others carnation tree from the shape of the leaves and colour of the flowers. Miller. 10. *C. odora*, Willd. "leaves lanceolate, flat; flowers umbellate." Vahl. Symb. 3. p. 90. Perennial. Stem erect, branched, scarred with three white, elevated lines proceeding from each scar upwards and downwards. *Leaves* at the summits of the younger branches, sessile, scattered, thick, smooth. *Peduncles* six or seven, erect, forming an umbel from the summits of the branches, and furnished at their base with a few lanceolate scales. Calyx cylindric, five-leaved, smooth, with two linear leaves at its base. Vahl. Found by Forskal on the mountains of Arabia Felix. 11. *C. Anteuphorbium*, Linn. Spec. Plant. 1168. (*Kleinia*, Hort. Cliff. *Anteuphorbium*, Bauh. Pin. 387. Dod. pempt. 378. Lob. ic. 2. p. 26. Moris. Hist. 3. p. 345. tab. 37. fig. 10. Dill. elth. 63. tab. 55. f. 2, 3.) "Leaves ovate-oblong, flat, with a triple line at the base of the petioles." Perennial. Stems several, three or four feet high, cylindric, as large as a man's finger, irregularly branched. *Leaves* succulent, pale green. It was formerly esteemed a specific against the poisonous effect of euphorbium. A native of the Cape of Good Hope. It has been cultivated in European gardens since 1570, but it very rarely flowers. The flower figured by Dillenius was produced in the garden of Mr. Blaithwait at Dirham in Gloucestershire. 12. *C. rigida*, Willd. "Leaves ovate, obtuse, flat." Thunb. Prod. 142. Perennial. A native of the Cape of Good Hope. 13. *C. arbuscula*, Willd. "Leaves lanceolate, flat, smooth." Thunb. Prod. 142. A native of the Cape of Good Hope. 14. *C.*

tomentosa, Linn. Sup. 353. "Leaves sessile, lanceolate, toothed, tomentous beneath." Perennial. Found by Thunberg at the Cape of Good Hope. 15. *C. asclepiadea*, Linn. Sup. 352. "Stem tomentose; leaves petioled, ovate-lanceolate, entire, very smooth above, tomentose beneath, revolute at the edge, panicles terminal." Perennial. Stems upright, straight. *Leaves* opposite, spreading at the base, and gradually drawn to a point, veined, the consilience of a bay leaf; petioles roundish, tomentose. *Panicles* small, crowded. *Calyx* with few flowers; the scales at its base rather large. It has the habit of an *asclepias*. Found by Mutis in South America. 16. *C. appendiculata*, Linn. Sup. "Stem tomentose; leaves ovate-heart-shaped, acute, angular, tomentose beneath; petioles with leafy appendages." Perennial. Stem angular, hoary. *Leaves* higher than the stem, on long petioles, a little angular, nerved, veined; appendages three pair of very small, opposite, entire, petioled leaflets; the largest pair situated the farther from the leaf. *Pedicles* furnished with a bracte. *Flowers* yellow. Found by Masson in watery places of the island of Teneriff. Another plant was found by him on the mountains of the same island which he judged to be a distinct species, but the younger Linnæus thought it only a variety with a very smooth stem, and leaves cordate-oblong, a little toothed, and not angular. 17. *C. reticulata*, Willd. "Leaves heart-shaped, roundish, embracing the stem, toothed; flowers corymbose." Vahl Symb. iii. 91. Perennial. Stem branched; branches from the nerves of the decurrent leaves, angular, smooth, thickened at the joints under the leaves. *Leaves* resembling those of *borbonia crenata*, alternate, about an inch long, smooth, reticulated with veins; teeth, as well as the edges of the reflexed leaves, thickened; nerves of a blood colour at the base. *Corymb* somewhat fastigiate; peduncles and pedicels smooth with a small leaf at the base of the pedicels. *Calyx* simple, smooth; leaflets twelve, linear, lanceolate, equal. *Down* simple, the length of the calyx, Vahl. 18. *C. procumbens*. Martyn's Miller, (Rumph. Amb. t. 103. f. 2.) "Stem somewhat shrubby, procumbent; leaves ovate-lanceolate, slightly serrated, fleshy; racemes elongated, interrupted." Lour. Cochin. 485. Perennial. Stems nine feet high, procumbent, round, equal, smooth, succulent, branched. *Leaves* bright green, smooth, alternate, petioled. *Calyx* cylindric, even. *Florets* gold-coloured, few, long, with the segments of the border erect. A native of China and Cochinchina, where it is used as a pot-herb.

** *Stems herbaceous.*

19. *C. acaulis*, Linn. Sup. 353. "Leaves femicolumnar; scapes one-flowered." Thunb. Prod. 142. Perennial. A native of the Cape of Good Hope. 20. *C. lutea*, Miller. "Leaves five-parted, acute, glaucous beneath; flowers terminal, on very long peduncles." Scape about eight inches high, terminated by six or eight yellow flowers, forming almost an umbel. *Leaves* cut into five or six long, acute segments almost to the midrib; segments acutely cut in two or three places. A native of St. Helena, whence it was sent to Mr. Miller. 21. *C. radicans*, Linn. Sup. 354. "Stem creeping, taking root; leaves round-ovate, fleshy." Thunb. Prod. 142. Perennial. Cape of Good Hope. 22. *C. sempervirens*, Willd. (*Semperviva*, Forsk. and La Marck.) "Stem erect; leaves fleshy, lanceolate, obtuse; peduncles generally two, terminal, one-flowered." Perennial. Stem scarcely a foot high. *Leaves* crowded together at the base of the stem, sessile, two inches long, smooth, shining, flat, keeled beneath. *Peduncles* straight, smooth, sprinkled with white dots, beset with linear scattered scales. *Calyx* red, or nearly violet with thirteen teeth and thirteen furrows. *Florets* near sixty. A native of Arabia Felix, on mountains.

23. *C. fenchifolia*, Linn. Sp. Pl. 1169. (Kleinia, Flor. Zeyl. Muel Schari, Rheed. *Senecio maderaspatanus*, Pluk. Amalth. 192. t. 444. f. 1. *Chondrilla zeylandica*. Burni. Zeyl. 61. *Santhus ambonensis*, Rumph. Amb. 5. p. 257. t. 103. *Tagolina*, Pet. Gaz. t. 80. f. 13.) "Leaves embracing the stem, toothed; lower ones lyre-shaped; upper lanceolate, arrow-shaped." Willd. Root annual. Stem slender, a little branched, about a foot and a half high, round, and sprinkled with a few hairs. Leaves alternate, with a few hairs especially on the rib. Flowers terminal, about the size of those of common groundsel, cylindric. Peduncles brittle-shaped. Calyx perfectly simple. The whole plant has the appearance of the common sow-thistle, but it is easily distinguished from it by the simple calyx and tubular florets. A native of Ceylon, Malabar, Amboina, China, &c. A decoction of it is esteemed a febrifuge and antialthmatic; its juice is given in diarrhoeas. 24. *C. sagittata*, Willd. "Leaves toothed; the lower ones petioled, obovate; the upper oblong-lanceolate, arrow-shaped, embracing the stem." Vahl. Symb. iii. p. 91. excluding the synonyms. Annual. Resembling the preceding, but three times larger in all its parts. Lower-leaves petioled, obovate, not lyre-shaped. Flowers of an elegant orange-purple colour. A native of Java. 25. *C. bisracioides*, Willd. "Stem simple; leaves petioled, obovate, toothed." Annual. Stem a foot high, erect, sometimes with one or two very small branches from the axils of the lower leaves. Leaves alternate, obtuse, remotely toothed, smooth on both sides; the uppermost lanceolate, sessile. Flowers somewhat corymbose. Peduncles alternate, pubescent, supported by a lanceolate bract. Calyx with twelve lanceolate leaves, and many flowers. A native of the East Indies. 26. *C. bicolor*, Willd. Stem branched; leaves lanceolate, smooth toothed; those of the stem embracing it; those of the branches petioled." Willd. Roxburg. Stem two feet high or more, erect, smooth, striated. Peduncles very long, terminal, scaly, one-flowered. Calyxes twelve leaved, many-flowered, the size of those of *C. sagittata*. Florets purple. A native of the East Indies. 27. *C. incana*, Linn. Sp. Pl. "Leaves lanceolate, toothed." Stem erect, tall. Leaves scarcely petioled, rather thick. Peduncles terminal, branched, long, naked or with one or two very small leaves. A native of the East Indies. 28. *C. rotundifolia*, Willd. "Stem branched; leaves roundish, petioled, repand, pubescent; flowers corymbose." Stem two feet high or more, erect, round, striated, slightly pubescent. Leaves alternate, small, scabrous on both sides, sprinkled with very short hairs. Corymbs terminal, many-flowered, divaricated. Calyxes of twelve lanceolate leaves. A native of the East Indies. 29. *C. scabra*, Willd. "Radical leaves petioled, oblong, toothed; stem-leaves lanceolate, sessile." Vahl. Symb. iii. p. 92. Stem erect, a foot high, simple, round, striated, hairy, especially at the base. Root-leaves, two inches long, with unequal teeth, terminating in a sharp point, rather scabrous above, veined, narrowed at the base, and decurrent into the petiole. Stem-leaves few; the three lowest near together, an inch and half long, with four or five teeth on each side; the three upper ones remote, half an inch long, linear-lanceolate, very entire, erect. Petioles of the radical leaves long, hirsute, flat. Flowers five, peduncled, alternate, situated near the summit of the stem; pedicels round, hirsute, with a linear-lanceolate bract at the base of each pedicle, and another in the middle. Calyx perfectly simple, of twelve linear-oblong leaflets the length of the florets. Down sessile, feathered with very minute hairs, visible only under a lens. Vahl. A native of Brazil. 30. *C. indica*, La Marck. "Stem downy; leaves nearly deltoid, irregularly toothed, on long petioles; bractes brittle-shaped, invelling the peduncles." Stem about a foot

high, clothed with a white cottony down, branched near the bottom, leafy. Flowers nearly solitary at the summit of each branch; scales of the calyx straight; peduncles cottony. A native of the East Indies, communicated to La Marck by Sonnerat. 31. *C. saracenicæ*, Linn. Sp. Pl. 1169. (*Solidago* Lemonier, Ob. 163. Sauv. Monsp. 84. Gouan Monsp. 144. *Senecio perennis*, Vaill. Aët. 366. *Virga aurea*, Moris. Hist. iii. p. 23. Bauh. Hist. ii. p. 1063. *Coryza* Chem. Aët. Par. 1705. p. 394.) "Leaves lanceolate, serrated, decurrent." Perennial. Stem two or three feet high, striated, almost entirely smooth, leafy, straight, a little branched at its summit. Leaves alternate, pointed, sessile, or even embracing the stem, smooth above, and slightly pubescent beneath. Flowers pale yellow, in a terminal corymb. Calyx nearly simple. Peduncles furnished with brittle-shaped leaflets. La Marck. A native of the south of France. This plant has so strong a resemblance to *Senecio Saracenicus*, that La Marck has separated it from that genus chiefly in deference to the authority of Linnæus. 32. *C. hastata*, Linn. Spec. Pl. (*Senecio*, Gmel. Sib. ii. p. 136. t. 66.) "Leaves three-lobed, acuminate, serrated; flowers nodding." Perennial. Stem covered with a glaucous meal. Leaves hastate-deltoid. Flowers of about five white florets, without the setaceous bractes, except at the subdivisions. Anthers black. Peduncles hoary, somewhat tomentose, Linn. Calyx cylindric, consisting of many leaves in a simple or nearly double series, calyced at the base with acute scales. Receptacle rather flat, naked, with pentagonal areas, inclosing a depressed little nipple. Seeds roundish, striated, of a pale bay colour. Down capillary, soft, white, minutely toothed, a little longer than the seed. Gært. A native of Siberia. La Marck judges it only a variety of the preceding. 33. *C. suavolens*, Linn. Sp. Pl. "Leaves hastate-arrow-shaped, toothed; petioles dilated upwards. Perennial. Stems four or five feet high, striated, leafy. Leaves alternate, pointed, smooth. Flowers whitish, in a terminal compound corymb; calyx and peduncle smooth, with setaceous bractes under the calyx, and under the divisions of the peduncles. A native of Virginia and Canada. 34. *C. atriplicifolia*, Linn. Sp. Pl. (*Porophyllum*, Gron virg. i. p. 94. *Nardus*, Pluk. alm. t. 101. f. 2.) "Leaves somewhat heart-shaped, toothed, sinuate; calyxes with five florets." Root perennial, composed of many fleshy, spreading tubes. Stems three or four feet high, round, slightly striated, leafy, a little branched. Leaves alternate, petioled, smooth, of a glaucous colour beneath, lower ones heart-shaped, rounded, as large as the human hand, with large unequal indentures; those on the stem heart-shaped, pointed, angular. Flowers small, oblong, pale, or reddish, in a terminal, loose corymbus. Calyx simple, consisting of five or six linear leaflets, scarious at their edges. La Marck. A native of Virginia and Canada. 35. *C. reniformis*, Willd. "Leaves petioled; radical ones between kidney and heart-shaped, toothed in a repand manner; stem ones oblong, toothed, wedge-shaped at the base, very entire; corymbs fastigiate." Perennial. Radical leaves large, smooth, hairy underneath on the nerves; stem-leaves very entire, remotely toothed from the middle to the end. Corymbs many-flowered. Calyx of five, lanceolate obtuse leaflets. Florets numerous, white. It resembles *C. atriplicifolia*, but is clearly distinguished from it by the form of its leaves and its fastigiate corymbs. A native of Pennsylvania. 36. *C. petasites*, La Marck. (*Alpina*, Linn. Sp. Plant. Willden. 33, but not all the synonyms, hirsuta, Villars Dauph. 3. 170, 173. *C. incano folio*, Clus. hist. 2. p. 115. *C. foliis crassis hirsutis*, Bauh. Pin. 198.) "Lower leaves large, roundish-heart-shaped, angular, toothed, stem-leaves

leaves somewhat hastate, auricled at the base; corymb loose." Perennial. *Stem* three or four feet high, round, reddish, a little pubescent. *Radical leaves* near a foot in diameter, toothed between the angles, green and smooth above, whitish and cottony underneath, resembling those of the common butterbur; petioles long; stem-leaves smaller, alternate, furnished at their base with two roundish auricles which embrace the stem; upper ones lanceolate, sessile and embracing the stem. *Flowers* purple, in a terminal, loose, and branched corymb: florets two or three: calyx simple, of four leaflets. La Marck. *Bract* linear at the base of each peduncle. *Calyx* calyced, with three linear, open leaflets. Villars. Observed by La Marck on Mont d'Or, in Auvergne, in sheltered, moist situations, and especially in the ravines where it grows in abundance. There is a smaller variety with clustered flowers. 37. *C. leucophyllus*. Willden. (alpina Tourn. inf. 452. tomentosa, Jacquin and Villars.) "Leaves petioled, cottony on both sides, toothed: lower ones heart-shaped, acuminate; upper ones lanceolate; petioles naked; flowers corymbose; calyxes many-flowered." Willd. This species is remarkable for the whiteness of all its parts. *Stem* from twelve to fifteen inches high, straight, simple, cottony. *Leaves* alternate, frequently with two small auricles at the base of the petiole. *Flowers* terminal, in several fascicles, or small, close corymbs; calyx of more than six leaflets; florets from eight to fifteen. It varies in sometimes having the upper surface of the leaves green. A native of the Alps. This variety seems to be the albifrons of the younger Linnæus and Willdenow, excluding all the synonyms quoted by the latter. 38. *C. alliarifolia*, La Marck, (alpina β Linn. pyrenaica, Tourn. 452.) "Leaves between kidney and heart-shaped, serrated, smooth on both sides, without auricles: calyx with about five florets." La Marck. Perennial. *Stem* about a foot high, almost smooth. *Leaves*, especially the lower ones, rounded like those of *erysimum alliaria*, or rather those of *caltha palustris*, green on both sides, with branched nerves. *Flowers* purple, in a small compound terminal corymb. *Calyx* smooth, of five or six oblong, obtuse leaves. A native of the Pyrenees and the mountains of Dauphiny. Obs. Gowan's description of his *C. alliaris*, (Illust. p. 65.) does not correspond with this plant, though he quotes some of its synonyms. 39. *C. echinata*, Linn. Sup. 353. "Leaves between kidney and heart-shaped, angular, toothed, downy beneath; leaflets of the calyx tubercled." Found by Masson on precipices in the island of Teneriff. 40. *C. candicans*, Willd. "Downy; radical and lower leaves ovate, petioled, crenate; upper ones sessile, elliptic, very entire." Vahl. Symb. 3. p. 91. t. 71. *Stem* a foot high, erect, simple, leafy, about the size of a swan's quill, and, as well as the rest of the plant, the calyxes excepted, clothed with a very white wool. *Radical leaves* two inches long; *lower stem-leaves* three inches; *petioles* of the radical and lower stem-leaves three inches long, flat, embracing the stem, dilated upwards into the leaf. *Corymb* terminal many-flowered. *Pedicles* one-flowered, with an acuminate leaflet at the base of each. Scales of the *calyx* lanceolate, smooth. *Florets* the length of the calyx. Vahl. A native of the straits of Magellan. 41. *C. scandens*, Willd. "Stem climbing; leaves triangular, sinuate-toothed." Thunb. Prod. 142. A native of the Cape of Good Hope. Obs. The *C. Scandens* of P'Heritier is the *Eupatorium Scandens* of Linnæus removed to *Mikania* by Willdenow. 42. *C. quinqueloba*, Willd. "Stem climbing; leaves five-lobed." Thunb. Prod. 142. Cape of Good Hope. 43. *C. bipinnata*, Linn. Sup. (pinnatifida, Berg. cap. 230.) "Leaves twice pinnate, linear." *Stem* erect, striated, smooth. *Leaves*

rather crowded, toothed, smooth three inches long. Panicle terminal, somewhat fastigiate. *Flowers* yellow. *Calyces* cylindric, five-leaved, five flowered, acute. A native of the Cape of Good Hope. 44. *C. bulbosa*, Mart. Mil. "Leaves radical, lyrate; stem almost naked; panicle few-flowered." Lour. Cochinch. 485. *Root* a roundish knotted, perennial bulb. *Root-leaves* toothed, somewhat fleshy, petioled, few. *Stem* a foot and a half high, upright, round. *Flowers* gold-coloured, on a terminating peduncle, several together. *Calyx* cylindric, with a calycle of five thread-shape loose leaflets. Tube of the *florets* longer than the border, inflated, reflexed, with a short converging border. *Stigmas* two, long, erect. A native of China and Cochinchina. 44. *C. pinnatifida*, Mart. Mil. "Leaves pinnatifid; segments lanceolate, serrated: stem twisted. Lour. Cochinch. 486. *Stem* two feet high, upright, thick. *Leaves* smooth, not fleshy. *Flowers* yellow, in a terminating panicle, few together. *Calyx* oblong, round." A native of China near Canton, among rice.

Propagation and Culture. All the sorts which are natives of the Cape of Good Hope may be propagated during the summer months, by cuttings, which should be laid to dry a fortnight, that the wound may be healed over before they are planted; but if they have been kept six months they will take root. The pots in which they are planted may be plunged in a moderate hot-bed; but if they are planted in June or July they will root as well in the open air. They should have a light sandy earth, and in winter be placed in an airy glass-case, where they may enjoy the sun and air in mild weather, but must be protected from the frost. Like other succulent plants from the same country, they must have little water in winter, and only a moderate quantity in summer.

The *carnosa* increases fast by its roots, which may be parted either in the beginning of September or at the end of March. They should be planted in pots filled with light earth, and constantly kept in the tan-bed in the stove.

The *papillaris* and *antephorbium* require a sandy poor soil, and must be kept very dry both summer and winter; but they require the open air in summer. The *kleinia*, if kept in a dry warm glass case in winter, and in a warm sheltered situation in summer, will flower annually, and grow to the height of eight or ten feet.

The *sonchifolia* is propagated by seeds, which succeed best when sown in autumn soon after they are ripe, and the pot plunged in the tan-bed in a stove. In spring they may be sown in a hot-bed, and at a proper time transplanted into another hot-bed, shading them till they have taken root. When the plants have acquired strength they should be planted in pots, and either plunged into a moderate hot-bed under a deep frame, or placed in a glass-case, where they will flower and perfect their seeds. The *suaveolens* and *atriplicifolia* multiply greatly by their spreading roots, and also by their seeds, which are wafted to a great distance by the wind. The roots should be transplanted in autumn. They require a loamy soil, and a shady situation. See Martyn's Miller.

CACALIA Porophyllum and *Suffruticosa*, Linn. *ruderalis*. Swartz; and *angulata*, Vahl. See KLEINIA.

CACALIA Sonchifolia, Forskal. See KLEINIA *angulata*.

CACALIA Linaria, Cavanilles. See KLEINIA *suffruticosa*.

CACALIA Cordifolia and *Laurifolia*. Lin. Sup. See MIKANIA.

CACALIA foliis auriculatis, &c. Burman. Zeyl. 52, t. 21. See EUPATORIUM *Zeylanicum*.

CACALIA foliis rotundioribus, Moris. 3, 94. See EUPATORIUM *Rotundifolium*.

CACALIE, in *Entomology*, a species of **CHRYSOMELA** that inhabits Austria: the colour is greenish, with a longitudinal streak on the wing-cases and future blue: wings red. *Herbst*.

CACALIANTHEMUM, in *Botany*, Dill. Elth. See **CACALIA** *Papillaris* and *C. Kleinia*.

CACALLA, or **CAZALLA**, in *Geography*, a town of Spain, in the country of Seville, famous for its wine; 40 miles N. of Seville.

CACALOTL, in *Ornithology*, the Brazilian name of the **CORVUS VARIUS** of Brisson, a variety of our common raven, according to *Fernand's* History of New Spain, &c.

CACALOTOTL. Ray describes the lesser ani of modern writers, **CROTOPHAGA ANI** of Gmelin, under this name.

CACAMO. See **ACAMANTIS**.

CACAO, in *Botany*. See **THEOBROMA** and **CHOCOLATE**. The cacao nuts are used by the Indians as money; 150 of the nuts being estimated at much the same value with a Spanish ryal.

Cacao affinis. Sloane. See **RANDIA MITIS**.

CACAO, in *Entomology*, a species of **BRUCHUS**, found among the seeds of the *Theobroma*. The body is fuscous, with griseous spots. *Fabricius*, &c.

CACAOTETE, in *Natural History*, the name by which the Brazilians call the **BELEMNITES**, which is very common with them as well as with us.

CACAPOHON, in *Geography*, a river of Virginia, which runs about 70 miles north-easterly along the western side of north-ridge, and discharges itself into Potowmack river, 30 miles N. from Frederickstown.

CACARA, in *Botany*, Rumph. See **DOLICHOS unguiculatus** and *pruriens*.

CACASTOL, in *Ornithology*, the name given by Buffon to the Mexican starc, **STURNUS MEXICANUS**, a bird of a blue colour varied with black. Ray calls it *Cacaxtotoil*, and Brisson *Cotinza Mexicana*.

CACATOCHA of *Valent*, in *Ichthyology*. See **CORYPHÆNA PENTADACTYLA**. The fish called by the same writer **CACATOCHA BABINTANG** is the **CILETODON ARGUS** of Brunnich, a species distinguished by having eleven dorsal spines, the body marked with many black dots, and the tail entire.

CACATORY fever, a denomination given by Sylvius to an intermittent fever, accompanied with a severe looseness, and sometimes gripes.

CACATUA, in *Ornithology*, synonymous with *Kakatoë*, and *Cockatoo*. Brisson calls the lesser white Cockatoo, **PSITTACUS SULPHUREUS** of Gmel. *Cacatua luteo-cristata*. His *cacatua minor* is the red vented cockatoo of Brown; and the *cacatua rubro-cristata*, the greater red-crested cockatoo of Latham, &c.

CACAVATE, in *Botany*, a name given to the cacao (*Theobroma Linn.*) in the general history of plants published at Lyons, 1567.

CACCARI, in *Geography*, a town of Naples, and province of Calabria Citra; 10 miles W. of Umbriatico.

CACCAVONE, a town of Naples, in the country of Molise; 9 miles N. of Molise.

CACCIA, a small district of the island of Corsica. See **ALGERI**.

CACCIA, Ital. **CHASSE**, Fr. a musical term for a *Hunting-piece*. *Cornuda caccia*, a hunting horn, commonly called a French horn. *Alla caccia*, in the hunting style. See **CHACE**.

CACCINI, GIULIO ROMANO, in *Biography*, one of the first cultivators of *recitative* during the latter end of the 16th

Vol. V.

century at Florence. He is said, by Gio Battista Doni, to have been a young, elegant, and spirited singer, accustomed to attend the meetings of a society of learned noblemen and gentlemen at Florence; the members of which society were much displeased with the little respect that was paid to lyric poetry by the composers of that time, who thought of nothing but fugues, canons, and crowded harmony, which being totally devoid of melody, rendered the words that were set in this manner wholly unintelligible; as the music was all in choruses, *fugato*, where every part was singing different words at the same time. These gentlemen wished to discover some kind of simple melody that would tune declamation, admit of harmony occasionally, and approach as nearly as possible to the declamation of the ancients; which they were sure was in musical intervals, as it was accompanied by instruments. *Tilix pares et impares*.

"Caccini being seized with a passion for this kind of music, studied it with great diligence, composing and singing to a single instrument, which was generally the Theorbos lute, played by *Bardillo*, who happened then to be at Florence. In imitation therefore of Galilei, but in a more beautiful and pleasing style, Caccini set many canzonets and sonnets, written by excellent poets, and not by such wretched scribblers (*rimatori a dozzina*) as were usually employed before, and are still frequently the favourites of musicians; so that he may be said to have been the first to see this error, and to discover that the art of counterpoint will not alone complete the education of a musician, as is generally imagined. And he afterwards confessed, in a discourse prefixed to his works, that the conversations held at Count del Vernio's were of more use to him, than thirty years' study and exercise of his art. Here he likewise claims the merit of having first published songs for a single voice, which, indeed, had the greatest success. And it must be confessed, that we owe to him, in a great measure, the new and graceful manner of singing, which at that time spread itself all over Italy; for he composed a great number of airs which he taught to innumerable scholars, and among the rest to his daughter, who became a famous singer, and still continues very excellent in that faculty.

"In the recitative style, however, Caccini had a formidable rival in Jacopo Peri, a Florentine, who was not only a good composer, but a famous singer, and performer on keyed instruments, having been taught by Christopher Malvezzi; and applying with great diligence and enthusiasm to this kind of singing, succeeded wonderfully, and met with universal applause.

"The first poem set in this new manner was *Dafne*, a pastoral written by *Rinuccini*, and set by Jacopo Peri and Caccini, in a manner which charmed the whole city." See **RECITATIVE** and **OPERA**.

Various experiments in dramatic music were made at the houses of the nobility of Florence previous to the exhibition of the first serious opera, which was the *Euridice*, written by *Rinuccini*, and chiefly set by Jacopo Peri, for the royal nuptials of Mary of Medicis with Henry IV. of France, in 1600. Though the music of this drama went under the name of Peri, who performed a part in it himself, yet he confesses in his preface that Giulio Caccini, "whose great merit was known to the whole world," composed some parts of it, and taught the singers. Caccini himself afterwards set the entire drama of *Euridice* to music in *stilo rappresentativo*, and published it at Florence. Specimens of his musical recitation are given in Burney's General History of Music, vol. IV. so that there can be no doubt but that Caccini was one of the first founders of the musical drama or **OPERA**, whence all the improvements in setting

words, in finging, and in producing instrumental effects by a well regulated orchestra for these last 200 years, may be deduced.

CACCO, in *Ornithology*, one of the synonymous names by which Buffon distinguishes the long-billed rain cuckow, *CUCULUS VETULA* of *Gmelin*, &c.

CACELLA, in *Geography*, a sea-port town of Portugal, in the province of Algarva, on the fourth coast, about 8 miles W. from the mouth of the Guadiana. N. lat. $37^{\circ} 9'$. W. long. $6^{\circ} 40'$.

CACERA DELL' PAGANI, a town of Naples, in the province of Capitanata; 13 miles S. of Troia.

CACERES, a town of Asia, in the island of Luçon, or Manilla, founded by the second governor and proprietor of these islands, D. Francis de Sande, and consisting of Indian huts and some convents, well built. It is the residence of a bishop, under whom are the provinces of Colilaya, Camarines, and Ifalon. N. lat. $14^{\circ} 15'$. E. long. $124^{\circ} 40'$.

CACERES, a town of Spain, in the province of Estremadura, seated on the Sabor, and well known for its fine wool; 20 miles W. of Truxillo.

CACERES, a town of North America, in Mexico, and district of Tlascala; 70 miles N.W. of Vera Cruz.

CACHACHRON HEAD, the south point of Dominica island in the West Indies, and nearly N. from the north end of Martinico.

CACHALES, in *Ancient Geography*, a river of Greece in the Phocide, which washed the walls of Tithoreus, according to Pausanias.

CACHALOT, or **CACHELOT**, in *Zoology*. See **PHYSETER MACROCEPHALUS**.

CACHAN, or **KASHAN**, in *Geography*, a town of Persia, in the province of Irak, which carries on an extensive trade in silk, stuffs, brocades, and fine earthen ware, inhabited by Christians and Guebres; 50 miles N. of Ispahan. N. lat. $34^{\circ} 10'$. E. long. $50^{\circ} 2'$.

CACHAO, **CHACO**, **CHECO**, or **KESHO**, one of the eight provinces of Tonquin, seated in the central part of the kingdom, and encompassed by the other seven. Its soil is fertile, and some parts of the country are mountainous; it abounds with a variety of trees, and particularly that which yields the varnish. The silk manufacture is carried on in this province more than in any of the others. It takes its name from its capital, which is the metropolis of the whole kingdom; though Dampier reckons it as, in other respects, hardly comparable to a Chinese city of the third rank, having, however, a considerable population, which principally depends on the crowds of neighbouring villagers who resort to it at particular times, and especially on market-days, with their various commodities. These persons are allowed to have their halls in different parts of the city, for the convenience of the disposal of their wares. The town itself, though it is the constant residence of the Tonquinese monarchs, has neither walls nor fortifications; and if we except the royal palace and the arsenal, has little else worthy of notice. The streets are neither regular nor handsome; some of them, indeed, are airy and wide, but the rest are narrow, and all of them are paved: the houses are low and mean, constructed of wood and clay, and not above one story high. The magazines and warehouses belonging to foreigners are the only edifices built of brick. In various parts of the city there are, even in dry weather, ditches of stagnated water and stinking mud, which are very offensive to strangers; and yet, upon the whole, its airy situation, and serene air, render it healthy and pleasant to the natives; so that it is seldom, if ever, visited with those pestilential diseases that are

common in large cities of those eastern climes. On account, however, of the materials with which its edifices are constructed, it is subject to frequent and dreadful conflagrations. As a preventative of the desolating effects of these calamities, every house is furnished with a low building of brick, in form of an oven, in which the inhabitants deposit, on occasions of any alarm, their most valuable property. The government likewise obliges every family to keep a cistern, always full of water, on the top of the house, together with a long pole and bucket for throwing water upon the house. The chief palace of the chowa, or king, is situated in the centre of the city, and surrounded with a strong wall, enclosing within its circuit a great number of apartments, two stories high; those of the chowa and his wives are embellished with a variety of carving and gilding after the Indian manner, and are finely varnished. In the outward court are a great number of sumptuous stables for the king's elephants and horses; the inner courts are inaccessible, not only to strangers, but even to the king's subjects, the members of the privy council and the ministers of state excepted. This enclosure, which is of a vast circumference, is faced with brick within and without, and the whole structure is terminated by spacious gardens. The king is a kind of prisoner in this palace, and his authority is exercised by an officer, whose family have long transmitted the executive power in hereditary succession. The arsenal is a large building, well stored with warlike ammunition and artillery. It stands on the banks of the river Song-koy, and on that branch of it which Dampier calls Dombear, represented by him as the deepest and widest of the two. The English factory-house is situated on the north side of the city, fronting the river. It is a low edifice, with a spacious dining-room in the centre, and on each side are the apartments of the merchants, factors, and servants. At each end of the building are small houses for other uses, which form two wings, with the square in the middle, and parallel with the river, near the bank of which stands a flag-staff, on which they commonly display the English colours on Sundays, and all other remarkable days. Adjoining to this house, on the south side, is the Danish factory, which is neither so large nor so convenient. On the same side of the river runs a long dike, with its timber and stones strongly cemented together, which prevents the river, during the time of their heavy rains, from overflowing the city. This river disembogues itself into the gulf of Tonquin. Dr. Halley, in the Philosophical Transactions, has given an account of the surprising tides in this bay; each flux being of 12 hours duration, and its reflux the same, so that there occurs but one high-water in 24 hours. Cachao, or Kesho, is the only city in the whole kingdom, and is said to consist of about 20,000 houses. N. lat. $22^{\circ} 10'$. E. long. $105^{\circ} 31'$. See **TONQUIN**.

CACHAR, a rich but mountainous territory of the kingdom of Ava, lying north-west of Munnipoora, subject to the independent sovereignty of a rajah. Its capital is Cospore.

CACHASSÆ, in *Ancient Geography*, a people of Scythia, placed by Ptolemy on this side of Imaus, between the Norossi and the Aspasii.

CACHE, or, as it is called in China, *Cayas*, and in many parts of India, *Cas*, *Casæ*, *Casie*, and *Cassie*, in *Commerce*, a small copper coin, equal in value to a little more than a French denier.

CACHEF, or **CACHEEF**, in the *Turkish Affairs*, the governor of a city, town, or even a province of Egypt.

The title cachef is also given to the captains or commanders of little flying armies, intended to keep the Arabs in obedience.

Egypt is divided by the Turks into thirty-nine *cachef-zeks*, or governments.

CACHEMIRE, in *Geography*. See CASHMERE.

CACHEO, a town of Negroland in Africa, seated on the river St. Domingo, or Cacheo, and belonging to the Portuguese, who have three forts, and carry on a great trade there in slaves and wax. N. lat. $12^{\circ} 5'$. W. long. $16^{\circ} 20'$. The river divides into several large branches before it falls into the ocean.

CACHET, CHRISTOPHER, in *Biography*, born at Neuf-chateau in Lorraine, the 26th of November 1572, received the rudiments of his education among the Jesuits. To improve himself further, he visited the principal states of Italy, but purposing to practise medicine, he fixed his residence at Padua, and after finishing his studies there, he settled at Nancy, where he arrived at the highest honours in his profession, being physician and aulic counsellor to four of his sovereigns, as appears by his epitaph, under his portrait, in the house of the Cordeliers at Nancy, where he was buried Sept. 30, 1624.

Ut erat bono publico natus,
Lucem literis, nomen libris, laudem suis, Patriæ gloriam,
famam sibi,

Principibus sæpe salutem peperit.

Serenissimis ducibus

Carolo 3tio. Henrico 2do. Francisco 2do. Carolo 4to.

Archiatr et consiliarius.

He was author of several works: "Controversiæ Theoricæ Practicæ, in primam Aphorismorum Hippocratis Sectionem. Opus in duas partes divisum, Philosophis ac Medicis perutile et perjuvandum. In quo quæcumque ad Venæsectionem, Purgationem, et Victus Rationem pertinent, enodantur, &c." Tulli Leucorum, 1612, 8vo. "Pandora Bacchica furens, Medicis Armis oppugnata;" Tulli, 1614, 12mo. "Apologia dogmatica in Hermetici cujusdam anonymi scriptum de curatione Calculi, in qua Chymicarum Ineptiarum vanitas exploditur;" Tull. 1613, 8vo. "Vrai et assuré Preservatif de la Petite Verole et Rougeole;" 1617, 8vo. The only art here taught is to keep children carefully from all infected places. Haller. Bib. Med. Eloy. Dict. Hist.

CACHETUS, in *Ancient Geography*, a river of Asia, in the kingdom of Pontus, near the town of Heraclea, according to Diodorus Siculus.

CACHEXIA, a term applied by the older writers in *Medicine*, to denote those conditions of the body, from whatever causes they may arise, in which the functions are imperfectly performed, and the complexion unhealthy. It is derived from *κακός*, bad, and *ἥξις*, habit. The cachectic state of the constitution was supposed to depend upon an acrimony, or some other morbid change in the fluids of the body; and this seems to have been chiefly inferred from the change of complexion. Hence Van Swieten observes, that "expert physicians always examine carefully into the appearance of the face, in those parts where the integuments are thin, and the vessels lie exposed, when they wish to know the condition of the blood and humours." § 1170. These hypotheses, however, are now considered as unfounded. But upon whatever circumstances the cachectic state depends, it is obvious, that it occurs in all instances of slow convalescence from acute and chronic diseases in general, and accompanies all lingering affections of the viscera and other parts; and therefore that it is essentially different in its nature in different instances. Hence it is impossible to give a general history of it, as of a specific disease; or to enumerate the remedies which may be successfully employed for its cure. Where it is merely a debility, consequent on some

severe disease, moderate exercise, a light nutritious diet, and tonic medicines are indicated. But where it is a concomitant of some organic affection, the nature of that must determine the nature of the remedy to be adopted.

In the more accurate language of the present day, this vague and indefinite term is seldom employed. But it has been used with great propriety by Sauvages and Cullen to denote a particular class of diseases, in their respective systems of nosology; including those complaints in which the general habit is affected, and a change of complexion, with emaciation or morbid enlargement, are characteristic symptoms. Such are dropsy, jaundice, rickets, &c.

CACHIBONA, or CLYDE, in *Geography*, a river of the island of Dominica, which runs into the sea on the east coast, a little to the north of Halifax bay.

CACHICAME, in *Zoology*, Buffon's name of the Pig-headed Armadillo; *Dasyus novemcinctus* of Linnæus.

CACHIMAYO, in *Geography*, a large river of South America, in Peru, which falls into the ocean within 2 leagues of La Plata.

CACHIQUE Tower and Bay, are situated on the coast of Barbary, in the Mediterranean, nearly W. from Algiers 6 or 7 leagues.

CACHOLONG, in *Mineralogy*. See CHALCEDONY.

CACHOPS Sands, in *Geography*, are two remarkable banks, which contract the channel of the mouth of the Tagus, at its influx into the sea, below Lisbon.

CACHORRODOMATO, in *Zoology*, the name by which the Portuguese in America call the TAIBI; a creature said to resemble the Opossum in many respects, and by some suspected to be the male of that creature.

CACHRUS, in *Entomology*, a species of PAPILIO, (*Plebejus*) with entire yellowish wings, and a common fuscous border spotted with white. Fabr. &c. This inhabits South America.

CACHRYIS, in *Botany*, *καχρυς*, Gr. The word is used in various senses by different authors, and has been the occasion of great perplexity to the grammarians and commentators. In Theophrastus (lib. iii. cap. 7.) it seems to denote the catkins of the oak, walnut, pine, &c. by other writers it is used, sometimes for the root, sometimes for the seed of the plant to which modern botanists have given the same name, and sometimes for the plant itself. It also signified the seeds of roasted barley; and some have supposed that the plant derived its name from the resemblance of its seeds to those of barley. (See the notes on Theophrastus by Constantine and Bodeus a Stapel, p. 139, 140.) Tournef. Inst. p. 325. Plate 127. Raii Meth. Plant. 47. Linn. gen. 342. Schreb. 474. Willd. 538. Gært. 808. Pl. 140. Juss. p. 223. Vent. vol. iii. p. 26. Libanotis Cachryophorus, Raii Hist. Plant. p. 424. Class and order, *pentandria digynia*. Nat. Ord. *Umbellatæ*, Linn. *Umbellifera*, Juss.

Gen. Ch. Cal. universal and partial umbels manifold: universal and partial involucre, many-leaved, linear-lanceolate: perianth proper, scarcely discernible. Cor. flowers all uniform: petals five, lanceolate, almost upright, equal, flatish. Stam. filaments five, simple, the length of the corolla: anthers simple. Pist. germ top-shaped, inferior: styles two, inferior, the length of the corolla. Peric. fruit somewhat egg-shaped, obtuse, very large, splitting in two. Seeds two, very large, very convex on one side, flat on the other; of a fungous or spongy substance, each enclosing a solitary ovate-oblong kernel.

Ess. Ch. fruit somewhat egg-shaped, with a thick integument of a spongy substance.

Sp. 1. C. *odontalgica*, Linn. Sup. 181. Pallas It. vol. iii. p. 270. t. g. f. 1, 2, 3. Vol. v. p. 106. Pl. 4. French translation. Gært. vol. ii. p. 274. Pl. 140. f. 3. "Radical

dical leaves twice pinnate, white with down; stem naked; seeds perfectly plain." *Root* perennial, very long, acrid and aromatic, producing when chewed an abundance of saliva in the mouth, and on that account employed as a cure for the tooth-ache. Pinnules of the radical leaves ternate, the leaflets elegantly incurved upwards. *Stem* simple, striated, from nine to twenty-one inches high, panicled at top with umbelled branches forming a kind of thyrse; naked, with the exception of a stipule-like leaf at the origin of each branch, cut nearly half way down into three or four segments, and a pair of short lanceolate leaves a little above the middle of each branch. *Flowers* yellow. Gartner observes, that the structure and position of the cotyledon of the seed is very singular, being leafy, elliptic, divaricated downward and collateral, nearly as in menispermum, except that both are included in one cell of the albumen. Found abundantly by Pallas in the arid deserts, between the Volga and the Jaick. 2. *C. Morifoni*, Willd. Allion. Aust. p. 23. Morif. Umb. 63. Pl. 3. f. 1. *C. laevigata*. La Marck Encyc. 1. p. 256. "Leaves super-decompound, bristle-shaped, cut into many segments: seeds plain, smooth." Vahl. Symb. 3. p. 49. *Root* perennial, long, thick as a man's arm, white. *Stem* two or three feet high, striated, smooth. *Root-leaves* large, finely cut; the last segments bristle-shaped and short: upper leaves of the stem opposite. *Flowers* yellow. *Seeds* white, smooth, not furrowed. La Marck quotes the libanotis of Gouan as a synonym of this species; but Gouan describes the seeds of his plant as furrowed. Professor Martyn observes, that the libanotis of Gouan seems to be a different species from that of Linnæus. A native of Spain, Italy, and the south of France. 3. *C. Libanotis*, Linn. Sp. Pl. Morif. Hilt. 3. p. 267. S. 9. Pl. 1. fig. 6. Umb. Pl. 3. f. 3. Libanotis ferulæ folio, semine anguloso. Bauh. Pin. 158. "Leaves twice pinnate; leaflets acute, much divided; seeds furrowed, smooth." *Root* perennial, large, white, branched, aromatic. *Stem* thick, round, smooth, finely striated, leafy, branched, about two feet high. *Leaves* large, green, almost as finely cut as the preceding. *Flowers* yellow. The whole plant has an aromatic, sweet smell, and is esteemed carminative, altringent, and anti-icteric. A native of Italy, the south of France, and the coast of Barbary. 4. *C. ficula*, Linn. Sp. Pl. Morifon. Hilt. 3. p. 267. S. 9. Pl. 1. f. 3. Umb. Pl. 3. f. 2. "Leaves many times divided; leaflets linear, acute: seeds furrowed, hispid." *Root* perennial, large, long, branched. *Stem* two or three feet high, thick, round, striated, smooth, branched. *Radical-leaves* a little resembling those of Peucedanum, large, a little rough to the touch: their common petiole imperfectly cylindric, striated. *Flowers* yellow. *Seeds* deeply channelled, angular, remarkably rough. 5. *C. taurica*, Willd. "Leaves twice pinnate; leaflets linear, acute; seeds furrowed, tubercled." *Leaves* as in the preceding, but narrower. *Involucre* universal, none; partial of eight or ten linear leaflets. *Flowers* dioicous. *Seeds* three times less than those of the preceding, furrowed, thickly set with large, globular, often reddish tubercles. Willdenow, from a dried specimen. A native of Tauris and Siberia. 6. *C. cretica*, Willd. La Marck Encyc. 1. p. 257. "Leaves twice pinnate; leaflets lanceolate, serrated; seeds furrowed, rough." *Root* perennial. *Stem* two feet and a half high; channelled; leaflets resembling those of Angelica Sylvestris. *Seeds* ovate-pointed, blackish, channelled, rough with stiff hairs, and furnished with a remarkably fungous integument. A native of Candia. 7. *C. panicifolia*, Willd. Vahl. Symb. 1. 25. Martyn's Miller. (*C. pastinacea*, La Marck Encyc. *C. ficula*, Morif. Hilt. 3. p. 267. Sec. 9. Pl. 1. f. 4. *Panax ficulum*, Boccone Sec. 1. Pl. 1.) "Radical-leaves pinnate, ovate-obtuse, somewhat

lobed; seeds hirsute." *Root* perennial. *Stem* four or five feet high, almost naked; branches alternate. *Radical-leaves* large, unequally winged with five or three leaflets, elliptic obtuse; crenulated, and sometimes lobed, pubescent, a little harsh to the touch, of a greyish green colour: leaflets at the summit of each leaf, decurrent on the petiole. *Flowers* white. *Involucres* of from six to nine leaves. *Germs* covered with white hairs. La Marck. Seeds a little spongy. Vahl. A native of Sicily, Spain, and Barbary.

CACHRYS Orientalis, Tournef. Cor. 23. Travels, 2. p. 121. Pl. See *LASERPITUM ferulatum*.

CACHRYS, in *Entomology*, a species of *PAPILIO* (*Hesperia* Fabr.) that inhabits Cayenne. The wings are entire, yellowish, with a common brown border spotted with white. Fabr. &c.

CACHU, *CACHOU*, or *CATECHU*. See *CATECHU*.

CACHUNDE, the name of a medicine highly celebrated among the Chinese and Indians, and made of several aromatic ingredients, the perfumes, medicinal earth, and precious stones: they make the whole into a stiff paste, and form out of it several figures according to their fancy, which are dried for use; these are principally used in the East Indies, but are sometimes brought over to Portugal. In China, the principal persons usually carry a small piece in their mouths, which is a continued cordial, and gives their breath a very sweet smell. It is a highly valuable medicine also, in all nervous complaints, and is esteemed a prolonger of life, and a provocative to venery, the two great intentions of most of the medicines in use in the East.

CACHYMIA, in *Metallurgy*, a term used by Paracelsus for an imperfect metalline ore, as he expresses it, an immature metalline body, which is neither a saline substance nor a metal.

The cachymia may be divided into sulphureous, as marcassite; mercurial, as arsenic or orpiment; and saline, as all talcs.

CACIDARI, in *Ancient Geography*, a people of Scythia, on this side of Imaus, according to Pliny.

CACIQUES, in *History*, a denomination anciently given in America to governors of provinces and generals of armies. It was also appropriated to the sovereigns of the five great kingdoms into which the island of Hispaniola was divided when the Spaniards first visited it, and also to the sovereigns of the principalities or kingdoms in the other islands. Their power over the subject, which was hereditary, was absolute, and they were regarded with almost idolatrous veneration. Besides these, there were also subordinate chieftains, or princes, who were tributaries to the sovereign of each district. They seem to have somewhat resembled the ancient barons or feudatories of Europe; holding their possessions by the tenure of service. Oviedo (lib. iii. c. 4.) relates, that they were under the obligation of personally attending the sovereign, both in peace and war, whenever they were so commanded. We have already observed, that the dignity of the Cacique was hereditary: but if Martyr is to be credited, the law of succession among them was different from that of all other people; for he observes (P. Martyr, decad. iii. lib. 9.) that the Caciques bequeathed the supreme authority to the children of their sisters, according to seniority, and disinherited their own offspring; being certain, as he further observes, that, by this policy, they preserved the blood-royal, which might not happen to be the case in advancing any of the children of their numerous wives. The account of Oviedo, however, is more probable; he remarks (lib. v. c. 3.) that one of the wives of each Cacique was particularly distinguished above the rest, and appears to have been considered

Adored by the people as the reigning queen, and that her children, according to the priority of birth, succeeded to the father's honours; but in default of issue by the favourite princefs, the fifters of the Cacique, if no brothers furvived, took place of the Cacique's own children by his other wives. The principal Cacique was diftinguifhed by regal ornaments, and numerous attendants. When he travelled through his dominions, he was commonly borne on men's foulders; and he was held in fuch veneration, that if he ordered any of his fubjects to caft themfelves headlong from a high rock, to drown themfelves in the fea, merely at his own fovereign pleaſure, he was obeyed without a murmur; oppoſition to the fupreme authority being confidered not only as unavailing, but as impious. Their veneration extended even beyond death; for when a Cacique died, his body was embowelled, and dried in an oven, moderately heated, fo that the bones and even the ſkin were preſerved entire. The corpe was then placed in a cave with his anceftors; and thus they intended to render, not the name alone, but the perfons alfo, of their worthies immortal. If a Cacique died in battle, and the body could not be recovered, they compoſed fongs in his praife, which they taught to their children, and theſe fongs formed a branch of theſe ſolemnities which were called "Arietoes," conſiſting of hymns and public dances, accompanied with muſical inſtruments made of ſhells, and a fort of drum, the found of which was heard at a great diſtance. Martyr relates (Decad iii. lib. 9.) that on the death of a Cacique, the moſt beloved of his wives was immolated at his funeral. But Oviedo (lib. v. c. 3.) denies that this cuſtom was general among them.

CACOBÆ, in *Ancient Geography*, a people placed by Ptolemy in India, on this ſide of the Ganges.

CACOCHYMIA, from *κακος*, bad, and *χυμος*, juice, or humour, a word formerly employed by medical writers to denote a ſuppoſed morbid condition of the fluids of the living body.

CACODES, in the *Ancient Writers of Medicine*, a name given to ſeveral kinds of matter diſcharged from the human body, which had an ill ſmell. The offenſive matter voided ſometimes by vomit has this name, as alſo that evacuated by ſtool, and the diſcharge of foul ulcers.

CACOETHES, or **CACOETHIA**. See **MALIGNANT**.

CACONGO, in *Geography*, a kingdom of Africa, on the coaſt of Loango, ſituate between three conſiderable ports, much frequented by foreigners; viz. Loango, Cabinda, and Cacongo. The territory is in general flat, the air is more ſalubrious than that of Congo or Angola, and the ſoil alſo more fertile, on account of its frequent ſhowers, and its black mould, which, in the other adjacent kingdoms, is either chalky or ſandy. The inhabitants are likewiſe more civilized, though not leſs ſuperſtitiouſly addicted to the ſame heatheniſh rites, than their neighbours. They bear the character of a treacherous, fraudulent, turbulent, and cowardly race; but they are much employed in traffic with the Europeans, and eſpecially the Dutch, from whom they purchaſe a great variety of European goods, as coarſe cloths, knit caps, hatchets, and other iron tools, linen, and other commodities, which they exchange for ſlaves at Congo, Angola, and other African ſtates. This country is governed by its own hereditary princeſs, but under the protection of the kings of Loango, to whom they were formerly vaſſals, though they have ſince ſhaken off the yoke. The chief town is of the ſame name, and it is ſituated in S. lat. 4° 45'. E. long. 13°.

CACONGO, one of the chief rivers of the above kingdom, the others being the Kaja and the Cabinda. It runs 4 leagues S. of the Kaja, and 7 to the N. of the Cabinda, and

is ſaid to be navigable by boats of 10 tons burden. This river runs through almoſt the whole length of the kingdom from eaſt to weſt; and after a courſe of about 80 or 90 miles, falls into the ſea, near the town of Cacongo. About 4 miles from its mouth is the town, or rather village of Melamba, where the ſea makes a kind of ſemicircular bay, which affords a convenient road for the veſſels that traffic thither, the whole coaſt between the Cacongo and Zaire being extremely dangerous and full of rock, and ſhelves. The lands on each ſide are fertile and delightful, and abound with elephants' teeth, which the Membates, who are ſituated on the other ſide of the Zaire fetch and carry to the port of Pinda, where the Portugueſe, or any other Europeans, buy and export them.

CACOORS, in *Botany*, a ſpecies of *MIMOSA*, which ſee. The ſeeds of this plant are mentioned by ſir Hans Sloane as being thrown aſhore on the Hebrides and Orkneys. See **MOLUCCA BEAN**.

CACOPHONIA, compounded of *κακος*, evil, and *φωνη*, voice, in *Grammar* and *Rhetoric*, the meeting of two letters, or ſyllables, or even of two words, which yield an uncouth and diſagreeable ſound.

CACOPHONIA, in *Medicine*, denotes a vice or depravation of the voice, or ſpeech; of which there are two ſpecies, *aphonia* and *dysphonia*.

CACOPHONY, Gr. in *Muſic*, the combination of many ſounds ill choſen or out of tune, noiſe.

CACORLA, in *Geography*, a little town in Spain, in the country of Jaen, belonging to the archbiſhop of Toledo, 4 leagues E. of Ubeda.

CACOSIN, a town of the iſland of Cuba, 50 miles N.N.W. of Bayamo.

CACOUCIA, in *Botany*. La Marck Encyc. Illuſt. Pl. 359. Aublet. Guian. p. 450. t. 179. Juſſ. 320. (Schonbrea, Willdenow 857.) Claſs and order, *decandria monogynia*. Nat. ord. *Onagra* Juſſ. *Myrti* Lam.

Gen. Ch. *Cal.* ſuperior, bell-shaped, coloured, five-pointed, deciduous. *Cor.* petals five, ſharply egg-shaped, inſerted at the diviſions of the calyx. *Stam.* filaments very long, inſerted on the calyx below the inſertion of the petals; anthers ovate. *Piſt.* germ inferior, angular; ſtyle ſimple, as long as the ſtamens; ſtigma acute. *Peric.* a kind of berry, five-angled, ſomewhat ſpindle-shaped, almoſt woody, pulpy within, covered with a white ſkin or aril.

Eſſ. Ch. *Calyx* bell-shaped, five parted, bearing the corolla; petals five; berry five-angled, one-feeded; ſeed arilled.

Obſ. Nearly allied to *Combretum* and *Fuchſia*, but differing in the fruit.

Species, *C. coccinea*. A perennial ſhrub, with a ſtem about ſix or ſeven inches in diameter, branched, climbing to the top of the higheſt trees, from which its branches hang down clothed with leaves and flowers. *Leaves* alternate, ovate, acuminate, very entire, veined, green, firm, with an even ſurface, on very ſhort petioles. *Flowers* ſcarlet, ſeſſile, ſcattered in long terminal ſpikes, with a long ſtraight pointed bract to each flower. La Marck. A native of Cayenne.

CACTI, the third natural order in the fourteenth claſs of Juſſieu, with the following character. *Calyx* ſuperior, divided at the apex. *Petals* definite or indefinite, inſerted at the top of the calyx. *Stamens* definite or indefinite, with the ſame inſertion as the petals. *Germ* inferior, ſimple; ſtyle ſingle; ſtigma divided. *Berry* inferior, one-celled, many-feeded; the ſeeds attached to its inner ſurface. *Stem* ſhrubby or arboſcent; *leaves* alternate or none. It contains only two genera, *Ribes*, with definite petals and ſtamens, and *Cactus*, with petals and ſtamens indefinite. Juſſieu obſerves

that these two genera, notwithstanding the difference in the number of their stamens and petals, are closely connected by their inferior germen, single style, and one-celled fruit, with the seeds attached to its inner surface, and that the affinity is strengthened by the similar structure of the spines in several of their species. La Marck adds to this natural order Tetragonia and Mesembryanthemum, which Jussieu arranges under Ficoideæ, his fifth order of the same class.

CACTI, in *Entomology*, a species of COCCINELLA, with the wing-sheaths black, and two red spots. Fabricius. Found on the cacti of America.—Also, a species of COCCUS.

CACTOIDEÆ, in *Botany*, the fifth natural order of Ventenat's fourteenth class, who places under it only the Linnæan genus Cactus, considering Ribes as more properly belonging to the Saxifrageæ, but forming the connecting link between that order and Cactus. This able botanist has fallen into a slight absurdity in calling an order which contains only the genus Cactus, Cactoidæ; which in fact is only saying that Cactus is like itself.

CACTUS, (κακτος, Gr. the name of a plant described first by Theophrastus, and afterwards by Dioscorides, Athenæus, and Pliny. Theophrastus, whom the succeeding writers have nearly copied, speaks of it as a plant not indigenous in Greece, and peculiar to Sicily, producing from the root several creeping stems, with a broad and prickly leaf, which, when stripped of their bark, are eaten either fresh or pickled; with an upright stem besides, which he says is called pternix, and is eaten fresh but not pickled; and having a prickly pericarp, called afeulia, which is likewise eatable when separated from the down of the seeds, and resembles the head of a palm. Most of the earlier modern botanists, supported by the authority of Athenæus, suppose it to be the same plant which the Greeks called κινάρη, and the Romans Carduus, the Cynara scolymus of Linnæus, or common artichoke; but Bodæus a Stapel strongly insists, that it must be another plant not ascertained by modern botanists. See his Notes on Theophrastus, p. 627.—629, where he has corrected the corrupt texts of Theophrastus and Athenæus, by comparing them with each other, and with the Latin of Pliny. What are called by Theophrastus creeping stems, are probably nothing more than the strong midrib of the broad prickly leaves.) Linn. gen. 613. Schreb. 838. Willden. 966. Gart. 799. Juss. p. 311. Vent. vol. 3. 291. Class and order, *icofandria monogynia*. Nat. ord. *Succulentæ* Linn. *Cacti* Juss. *Cactoidæ* Vent.

Gen. Ch. *Cal.* superior, imbricated, tubular, deciduous. *Cor.* petals numerous, disposed in several ranks; the outer ones shorter, the inner rather larger. *Stam.* filaments numerous, inserted into the calyx; anthers oblong. *Pist.* germ inferior; style cylindric; stigma headed, multifid. *Peric.* berry oblong, umbilicated at its summit, one-celled. *Seeds* numerous, bedded in pulp.

Eff. Ch. *Calyx* superior, imbricated. *Corolla* of many petals. *Berry* one-celled. *Seeds* numerous.

Obf. Linnæus, on account of the conformity in the parts of fructification, has united in one genus a numerous tribe of succulent plants, differing greatly from each other, and many of them from all other plants, in their general structure and habit, which former botanists had distributed into separate genera, under the names of Melocactus, Cereus, Opuntia, and Pereskia. He observes, that Melocactus is monocotyledinous, and Opuntia dicotyledinous; but that nevertheless they are of the same natural genus. Jussieu mentions the circumstance on the authority of Linnæus, but gives no farther information on the subject, referring the germination of Melocactus, as well as the existence and nature of the perispermum in all the Cacti, to future inquiry.

* *Echinomelocacti*, turks'-cap, or melon-thistles; of a roundish form, in some degree resembling a melon.

Species 1. *C. mammilaris*, smaller melon thistle. Linn. Sp. Plant. (*Echino-melocactus* minor, Herm. Par. 136. tab. 136. Ficoides, Pluk. Alm. 184. tab. 29. f. 1. Comm. hort. 1. p. 105. t. 55. Brad. succul. 3. p. 11. tab. 19.) "Roundish, covered with ovate, bearded tubercles." The body of the plant consists of a roundish fleshy substance, sessile, about the size of a man's fist, without remarkable angles, but beset on all sides with numerous conic tubercles, which are cottony at their summit, and terminated by small diverging spines. There is also a slight cottony down between the tubercles. The flowers are small, whitish, scattered about the plant between the tubercles. The berries are of a purplish blue colour, according to La Marck, but are said by Miller to be of a fine scarlet, and continue fresh upon the plant through the winter. They have an agreeable flavour, and are very good to eat, especially when properly dressed. Bosc. A native of South America, among rocks. 2. *C. glomeratus*, clustered melon-thistle. La Marck. Plum. Sp. 19. tab. 201. f. 1. "Ovate, downy, compound, growing close together, covered with papillary tubercles." In several respects it resembles the preceding, but differs from it in growing several together in a close group, in its glaucous colour, and very white abundant down, in its size, which does not exceed that of a pullet's egg, and in the red colour of its flowers. Observed by Plumier at St. Domingo, and described by La Marck from his MSS. It appears to be the childing of Miller, though that is said by him to be rather larger than the mamillifera. 3. *C. melocactus*, great melon-thistle. Linn. Sp. Pl. (*Melocactus*, Bauh. Pin. 384. Tourn. 653. *Echinomelocactus*, Clus. Exot. tab. 92. Lob. ic. 2. p. 24. Bradl. Succ. 4. p. 9. tab. 32.) "Roundish, with fourteen angles." A roundish mass, sometimes more than a yard in circumference, and in its native country almost twice as large; consisting internally of a soft, green, fleshy substance, full of moisture; deeply divided into fourteen or fifteen regular, smooth, flat-sided parts; the ridge of the ribs furnished with a row of clustered, stiff, straight, diverging spines, about an inch long, and red at their summit. Flowers red, situated at the top of the plant. A native of South America. 4. *C. coronatus*, crowned melon-thistle. La Marck. "Ovate with twenty angles; crowned with a cottony pileus or cap." About a foot high, fleshy; ribs oblique or a little spiral; their ridges beset with a row of clustered diverging spines, about six or seven lines long, and generally a little curved; cap three inches and a half in diameter, composed of a white, very close cottony down, interspersed with clusters of red spines, which are stiff as the bristles of a brush, but not prickly. A native of South America. 5. *C. nobilis*, noble melon-thistle. Linn. Mant. "Roundish, with fifteen angles; spines broad, recurved." This species seems to hold a middle space between the last two; but its external surface is entirely red. It varies in its form, being sometimes oval or conic, and sometimes more globular. Its ribs are oblique or spiral, and its spines long, white as ivory, and a little curved. A native of St. Domingo, among rocks on the coast. Obf. Mr. Miller makes four distinct species of the great melon-thistle, and thinks that if the islands in the West Indies were examined, many more would be found. Professor Martyn considers them as only varieties. La Marck has made three species which we have adopted: though from the description in different authors, it is not easy to determine which are species and which varieties. They grow from apertures in the steep sides of rocks in the hottest part of America, and seldom live long when transplanted into a better soil. In times of great

great drought, the cattle rip them up with their horns, tear off the outside skin, and greedily devour the fleshy moist part. The fruit is an agreeable acid, and is frequently eaten in the West Indies. Miller.

** *Ere~~c~~ cereuses*, supporting themselves. Torch-thistles, or torch-wood.

6. *C. cylindricus*, cylindric torch-thistle. La Marek, Jussieu. "Erect, weak, cylindric, not angular, but reticulated on their surface, with decussated furrows." La Marek. "Tessellated with regular, rhomb-shaped, little areas, bearing spines on their elevated centre." Juss. Spines clustered, whitish, very sharp. A native of Peru. 7. *C. trigonus*, three-sided torch-thistle. La Marek. (*C. petaiaya*, Linn. Syst. Nat. Jacq. Americ. 151.) "Stem erect, triangular, with scarlet, leafy fruit." Nearly allied to *C. triangularis* of the next division; but differs from it in having a stem, which supports itself to the height of eight or ten feet; and, though it rises still higher when it obtains the support of a neighbouring tree, does not attach itself by any radicle. Flower whitish, six inches in diameter, with scarcely any smell, opening in the night. Fruit of a shining scarlet colour on the outside, furnished with obtuse leaflets, which are irregularly notched at the summit; pulp white, fleshy, sweet: seeds small, black, shining. A native of Carthage, and other parts of South America. There is a variety which has a straight trilateral stem, almost as thick as a man's body, furnished with blackish, very sharp, clustered spines, about two inches long; dividing at the top into triangular, fleshy branches, of a delicate green colour, undulated, or scolloped at their angles, and disposed in a large spreading panicle. From the upper branches rise large beautiful white flowers, a little odorous, standing on a germ, furnished with some scaly leaves. The fruit is yellowish, smooth, of the form and size of a large apple, with a white sweet pulp, filled with small blackish seeds. Observed by Plumier at St. Domingo. La Marek observes, that it may perhaps be distinct from Jacquin's plant; but as they agree in so many characters, he has placed them together, that he may not multiply species without necessity. 8. *C. paniculatus*, La Marek. (*Melocactus arborescens*, Plum. Sp. 19. Tournef. 653. *Cactus brachiatus*, Burm. Amer. tab. 192.) "Trunk erect, panicled at the summit with quadrangular, jointed branches; petals round, white, marked with red lines; fruit tubercled, yellowish." This plant, in its habit and size, exactly resembles the variety of the preceding species; but the interior petals are scarcely larger than a finger nail, crenulated, very white, pencilled with small red lines. Stamens entirely white: fruit ovate, a little larger than a goose's egg, with reddish spinous tubercles, and full of small seeds of a dark chestnut colour. A native of St. Domingo, described by La Marek from the MSS. of Plumier. 9. *C. tetragonus*, four-sided torch-thistle. Linn. Sp. Pl. "Quadrangular, long, erect; angles compressed." Stem seldom more than four or five feet high, branched, deeply and widely cut in a longitudinal direction, so as to give it the appearance of having four thin wings. A native of South America. 10. *C. pentagonus*, Linn. Sp. Pl. "Erect, long, jointed, with about five angles." Stem slender, feeble, but upright; internodes about a foot long: clusters of spines without any sensible down at their base. A native of America. 11. *C. hexagonus*, Linn. Sp. Pl. (*Cereus Surinamensis*, Ephem. n. c. 3. p. 349. tab. 7 and 8. Herm. Par. 116. Raj. Dendr. 23. *C. maximus Americanus*, Bradl. Succ. 1. p. 1. tab. 1. *Melocactus*, Plum. Sp. 19. Burm. Amer. tab. 191.) "Erect, long, with six angles; angles distant." Stem thirty or forty feet high, not branched if the top be not

injured, and it have room to grow; but whenever the stem is cut or injured, it puts out shoots from the angles, immediately under the wounded part, and frequently one or two lower down; these, if they are not cut off, form distinct stems, and grow upright, but are seldom so large as the principal stem. Flowers from the angles on the side of the stem, as large as those of hollyhock, on a thick, fleshy, scaly, round, channelled, and hairy peduncle; calyx prickly, closely surrounding the corolla, green, with purple stripes; inner petals white, and crenated at their extremity. Miller. A native of Surinam, whence it was introduced into Holland, and bore flowers in 1681. It was cultivated in England in 1690, and has been the most common sort in the English stoves, but has not borne fruit, nor often produced flowers. 12. *C. heptagonus*, Linn. Sp. Pl. "Erect, oblong, with seven angles." Stem perennial, one or two feet high. A native of America. 13. *C. repandus*, Linn. Sp. Pl. Brown. Jam. 238. (*Cereus altissimus gracilior*, Sloan. Jam. 197. Hist. 2. p. 158. Raj. Dendr. 22. Trew. Ehret. t. 14.) "Erect, long, octangular; angles compressed, waved; spines longer than the wool." Stem rather slender. Fruit yellow without, with scattered asperities; snow-white within, containing many black seeds. A native of South America. 14. *C. lanuginosus*, Linn. Sp. Pl. (*Cereus curassavicus*, Herm. Parad. tab. 115.) "Erect, long, with about nine angles; angles obsolete; spines shorter than the wool." Stem rather glaucous; spines intermixed with a yellowish wool. Flowers greenish. Fruit about the size of a walnut, red externally, and without spines. A native of Curassou. 15. *C. royeri*, Linn. Sp. Pl. (*Cereus*, Boer. Lug. 1. p. 293. Herm. 48. Par. 115.) "Erect, jointed, with nine angles; divisions between the joints somewhat egg-shaped; spines the length of the wool." Perhaps only a variety of the preceding. Stem long; channels between the angles shallow, woolly, and very spinous; spines long, and yellowish; down pale white. Fruit red, and without spines. A native of America. 16. *C. peruvianus*, Linn. Spec. Pl. (*Cereus peruvianus*, Bauh. Pin. 458. Lob. ic. 2. p. 25. Cierge epineux, Aët. Acad. 1516. p. 146.) "Erect, long, with about eight angles; angles obtuse." Stem branched in its upper part; angles furnished with small clusters of brown, very slender, diverging spines, proceeding from a cottony tuft. Flowers lateral, almost sessile, solitary, whitish, five or six inches in diameter; scales of the calyx fleshy, green, purplish at their extremity; petals about thirty, lanceolate, white, with a tint of bright purple at their summit; stamens very numerous, shorter than the petals; anthers yellowish; style the length of the stamens; stigma with ten straight divisions. There is now, or at least in 1803, there was growing at the Museum of Natural History in Paris, a superb plant of this species near forty feet high. It was presented more than a hundred years ago, by Hottot professor of botany at Leyden to Fagon first physician to Lewis XIV., and superintendant of the royal garden, when it was only four or five inches high. The growth of each year is distinguished by a contraction of the stem; each of these contractions is at first very deep, and remains nearly the same for some years, when it gradually diminishes, and at length is entirely obliterated. This plant grew at first about a foot and a half in a year, and when it was fourteen years old was twenty-three feet high and seven inches in diameter. At the age of eleven it produced its first two branches, about three feet from the ground. A year after it produced its first flowers, and has continued to flower ever since. See Dict. Agric. Nouv. Encyclopedie. A native of Peru. 17. *C. fimbriatus*, La Marek. Burm. Amer. tab. 195. f. 1. "Erect, long,

with

with about eight angles; petals fringed, fruit spinous, scarlet." *Stems* growing many together, about the thickness of a man's thigh, and from eighteen to twenty feet high; conic and very spinous at their summit, beset at their angles with clusters of white, long, very sharp spines. *Flowers* at the summit of the stem, rather large; style much longer than the stamens. *Fruit* globular, fleshy, nearly the size of an orange, of a bright shining red colour, rough with tubercles and armed with whitish, sharp spines; flesh of a flame colour, very tender, of an agreeable, acidulous flavour, and filled with numerous black seeds. La Marck from the MSS. of Plumier. A native of St. Domingo. 18. *C. polygonus*, La Marck. *Burm. Americ. tab. 196.* "Erect, branched, with eleven angles; fruit warty, red." This species is nearly allied to *C. repandus*, but is distinguished from it by the number of its angles, and by the red colour of its fruit, and of the down on its summit. *Stem* perennial, about ten feet high, and six or seven inches in diameter; angles waved, and beset with clusters of small spines: bark greyish, thick, covering a woody substance nearly as durable as oak, with an abundant, succulent, greenish pith. *Branches* from the summit of the stem, straight, long, a little larger than a man's arm, fleshy, greenish, with angles and spines similar to those of the stem, terminating in the shape of a cone and clothed near the summit with a very red woolly down. *Flowers* growing near the summit, solitary, white, about the size of a crown piece. *Fruit* fleshy, the shape and size of a fig, reddish brown without, succulent, nearly insipid, seeds small, black. La Marck from the MSS. of Plumier. A native of St. Domingo. 19. *C. menfarum*, *Encyc. Dict. Agric. Bosc. Nouv. Dict. Thierry de Menoville, Traité de la Culture du Nepal 1786.* "Erect, with many angles, branched; fruit without spines, scaly, brown without, red without." Nearly allied to the preceding, but less in size, not so much branched or spinous, and of a darker green colour. *Flowers* red. A native of Guaxaca and Tehuacan in South America, where it is known by the name of Pitahiha, and is greatly esteemed by the natives on account of its delicious fruit. Linnæus has applied the same name to a very different species, which La Marck, whom in this instance we have followed, has called trigonus. 20. *C. aurantiiformis*, *Encyc. Dict. Agric. Bosc. Thierry.* "Erect, with many angles, branched; fruit spherical, gold-coloured." Habit of the preceding. *Flowers* white. *Fruit* containing a white, insipid, but refreshing pulp. A native of St. Domingo. 21. *C. divaricatus*, La Marck. (*Melocactus*, *Plum. Spec. 19. Burm. Am. Tab. 193.*) "Very spinous; trunk erect, striated, branched at the top; branches straight, striated, standing out on all sides; fruit gold-coloured, tubercled." *Stem* a little thicker than a man's thigh, three or four feet high, greenish; formidably armed with numerous, very sharp, diverging spines. *Flowers* lateral, near the summits of the branches. *Fruit* globular, a little larger than a man's fist; pulp white, sweetish; seeds small, brown. A native of St. Domingo.

* *Creeping Cereuses with lateral roots.*

22. *C. grandiflorus*, great or night-flowering, creeping cereus, *Linn. Spec. Plant. (Cereus scandens minor, Miller Icon. Tab. 90. C. gracilis scandens ramiflorus, flore ingenti, &c. Trew. Eph. Tab. 31, 32. Eph. Nat. Cur. 1752, vol. ix. app. 184. Tab. 11, 12, 13. C. americanus, major articulatus. Volk. Hesp. t. 133. t. 134.)* "Creeping, with about five angles." *Stem* cylindric, branched, greenish; angles not very prominent; spines small, clustered, diverging. *Flowers* lateral, about six inches, sometimes near a foot in diameter, sweet-scented; calyx large, long,

tubular, scaly below, composed in its upper part of straight, linear, pointed, yellowish leaflets, disposed in several rows, and forming a kind of ray to the flower; petals white, numerous, lanceolate, disposed in several rows, in a beautiful roseaceous form; style a little longer than the stamens; stigma with twenty divisions. The flowers begin to open between seven and eight o'clock in the evening, usually in the month of July, are fully blown by eleven, and by three or four in the morning they begin to fade, and soon after hang down in a state of irrecoverable decay. When the plants are large, several flowers will open in the same night, and there will be a succession of them for several nights together. *Fruit* a little larger than a goose's egg, covered with scaly tubercles, fleshy, orange or red, of an agreeable acid flavour; seeds very small. A native of Jamaica, Vera Cruz, and St. Domingo. 23. *C. flagelliformis*, pink-flowered, creeping cereus. *Linn. Spec. Pl. Kniph. Cent. 1. Tab. 12. Knorr. Del. 1. f. 8. Curtis Bot. Mag. 17. 54. (Cereus minor scandens, flore purpureo, Ehr. Sel. 2. f. 2. Trew. Ehret. t. 30. Ficoides Americanum, Pluk. Alm. 148. t. 158. f. 6. Sloane Jam. 197. Hist. 2. p. 258.)* "Creeping, with ten angles." *Stems* cylindric, channelled, about the size of a man's little finger, from three to five feet long; spines numerous, weak, clustered, proceeding from elevated points or tubercles. *Flowers* lateral, sessile, oblong, of a lively pink colour; calyx coloured, tubular, its lower part composed of small, straight, sharp scales; petals and upper leaves of the calyx, oblong, acuminate, of a similar colour, and distinguished from each other only by their size; stamens the length of the interior petals; filaments very white; anthers small, yellow; style the length of the stamens, stigma scarcely divided. It produces more flowers than the preceding species, which keep open three or four days, if they have not too much warmth. The fruit had been produced, but not ripened, at Chelsea, in the time of Mr. Miller. A native of the warmer climates of South America. 24. *C. parasiticus*. Parasitic creeping cereus. *Linn. Spec. Pl. "Creeping, round, striated, without spines."* Professor Martyn suspects it to be the root of some species of *Epidendrum*, but La Marck gives the following synonyms and description. *Cactus repens parasiticus inermis aphyllus, ramiflorus, propendens. Burm. Jam. 238. Opuntia minima, Plum. Sp. 6. Burm. Americ. tab. 197. f. 2. Stems* slender, cylindric, jointed, branched, climbing or pendant from the trunks of large trees: when young beset with prickles, but losing them when old, and retaining only the remnants of them, which form greyish, sharp tubercles. *Flowers* small, lateral, sessile. *Fruit* not so large as a common pea. A native of St. Domingo. 25. *C. pendulus*, slender, creeping cereus. *Willden. Martyn, Swartz. 77. Burm. Jam. 238. (Casslyta baccifera, I. Mil. Illust. Casslyta polysperma, Ait. Cat. Hort. Kew. Rhipsalis Casslytha, Gært. 1. p. 137. Tab. 28. f. 1.)* "Branches in whorls, round, smooth, without spines." A native of Jamaica, hanging from the largest trees to the length of two or three feet. Gærtner observes that, though sir Joseph Banks had hinted to him in a letter that it ought to be referred to the genus cactus, he was induced to keep it separate, because the embryo of cactus is slightly spiral, and the albumen of the seed farinaceous; whereas there is no albumen in this, and the embryo fills the whole cavity of the seed. 26. *C. triangularis*, triangular creeping cereus, *Linn. Sp. Pl. Brown. Jam. 468. Jacq. Amer. 152. 75. Aët. Helv. 5. 268. t. 2. (Cereus Bradl. Suc. 1. p. 4. t. 3. Eph. Nat. Cur. 1752. v. ix. app. 199. tab. 10. f. 14. 1754. v. ix. app. 349. t. 3. Ficoides, Pluk. Alm. 147. t. 29. f. 3.)* "Creeping, triangular." Perennial. *Stems* long, climbing up trees,

and supporting themselves by lateral roots, branched, twisted, jointed, oblong, fleshy, near three inches in diameter, contracted at the joints, with small clusters of short spines on their edges. *Flowers* large, white, lateral, solitary; the lower and tubular part of the calyx consisting of short scales,

even at their base, and reddish at their summit; the others longer and sharper, with a yellowish point. *Fruit* ovate, the size of a goose's egg, red without, and within marked with projecting tubercles, which are the remnants of the fallen scales of the calyx, superior in flavour to that of any other species. A native of the Antilles, Jamaica, Guiana, and Brazil. It is cultivated in the island of Barbadoes for the sake of its fruit. There is a variety with more fleshy fruit, red without and white within, of a sweetish but less pleasing taste.

Obs. The plants of this and the preceding division have been called *Cereuses*, from *cera*, wax, on account of the fancied resemblance of the stems of some of the species to a wax candle; and torch thistles, or torch wood, because the Indians use them as flambeaux. The very improper appellation of thistles is derived from their prickles.

Opuntia, Indian figs, or prickly pears, composed of articulated divisions growing one upon another, and commonly compressed or flattened at their sides. These plants are said to be prolific, because the parts of the stem are separated from each other by so deep a contraction, that they seem rather distinct individuals than ramifications of the same plant. 27. *C. moniliformis*. Necklace Indian fig. Linn. Sp. Pl. (*Melocactus*, Plum. Sp. 19. ic. 198. Burm. Am. tab. 198.) "Proliferously jointed, divisions globular, spinous, glomerate." From the root, which is reddish, branched, and rather woody, there springs first a globular stem about the size of a green walnut, fleshy, tender, of a lively green, and beset with long, brown, sharp spines; from this globe soon proceed two others exactly similar, each of which produces two others, and so on successively, till the whole forms an assemblage of globes, spread on the ground, and united together like the pearls of a necklace. *Flowers* on the upper globular divisions red, solitary, sessile. *Calyx* furnished with acute scales at its base; style much longer than the petals. *Fruit* bright red, a little larger than a pigeon's egg; pulp white, tender, of a pleasant acidulous taste. *Seeds* small, of a gold colour. La Marck from the MSS. of Plumier. 28. *C. opuntia*, common Indian fig, or prickly pear, Linn. Sp. Pl. Brown Jam. 237. n. 2. Allion Pied. n. 1932. Plenc. Ic. t. 373. Gart. t. 138. f. 3. La Marck Illust. Pl. 114. (*Opuntia vulgaris*, Bauh. Hist. i. p. 154. Mil. Icon. 191. Tourn. 239. Plum. Sp. 6. Hall. Helvet. ii. 1099. *Ficus indica*, Lob. Ic. ii. p. 241.) "Proliferously jointed; divisions ovate, compressed, spines bristle-shaped." Six or eight feet high. *Divisions* about a foot long, eight inches broad, and one inch thick, fleshy, rounded at their edges, green, firm, attenuated at their base, appearing rather like leaves than divisions of the same stem, and having been sometimes, but erroneously, so called. As the plant grows old, the lower divisions increase more in thickness than in length and breadth; and the joints swell and enlarge till they equal the other parts of the stem, and form a cylindric trunk. The lower divisions sometimes hang down so as to touch the ground, and take root one after another, till at length a large space is covered by a single plant. The young ones have on their surface numerous fleshy, cylindric, pointed protuberances, several lines in length, and at least one line in diameter, which do not remain more than two months, and are succeeded by clusters of spines. These are considered by La Marck as proper leaves, but are said by Lancy (*Encyc. Dict. Agricult.*) to be rather rudiments of leaves. *Flowers* yellowish, generally

on the upper edge of the divisions, but sometimes on their sides; petals about ten; ovate-wedge-shaped; stamens not longer than the petals, irritable, when touched, before they shed their pollen; stigma with from five to ten divisions. *Fruit* nearly the shape of a fig, generally of a deep red colour, enclosing a red succulent, sweetish pulp, which is said to make the urine of those who eat it red as blood, without producing any other sensible effect. A native of America, like all the other species, but is now naturalized in many parts of the south of Europe, and on the coast of Barbary. A variety of it is found in America, as far north as Nova Scotia and New foundland, which is larger than the common sort, and armed with stronger spines; the fruit also is much larger, and of a deeper purple colour, the divisions rounder and more compressed, and the whole plant more upright. Mr. Miller's figure is taken from a specimen of this variety sent him by Mr. Peter Collinson. 29. *C. Ficus indica*, Linn. Sp. Pl. oblong Indian fig. (*Opuntia folio oblongo media*, Tourn. 239.) "Proliferously jointed, divisions ovate-oblong, spines bristle shaped." This has the branches growing more upright than the former, and has longer spines; the fruit is also larger and of a deeper purple colour. It is the most common sort in Jamaica. 30. *C. tuna*, Linn. Sp. great Indian fig. (*Opuntia major validissimis spinis*, Tourn. 239. Sloane Jam. 103. Hist. ii. p. 149. t. 244. f. 1. *Tuna major*, Dill. Elt. 396. t. 295. f. 380.) "Proliferously jointed; divisions ovate-oblong; spines awl-shaped." This has stronger branches than the preceding, with larger whitish spines. The flowers are bright yellow. There is a variety with strong black spines and purplish fruit. La Marck considers the last two as only varieties of *C. opuntia*, and adds, as another variety, the *opuntia minima folio subrotundo* of Tourn. which is rarely more than half a foot high, with divisions two or three inches broad, and few spines. 31. *C. coccinellifer*, Cochineal Indian fig. Linn. Sp. Pl. Brown Jam. 231. (*Opuntia maxima*, Sloane Jam. 194. Hist. ii. p. 152. t. 8. f. 1. *Tuna*, Dill. Elt. 399. t. 297. f. 383. *Ficus indica*, P. Alm. 146. t. 381. f. 2.) "Proliferously jointed; divisions ovate-oblong, nearly without thorns." About six feet high. *Divisions* a foot long, five or six inches broad, and near two inches thick; spines few and harmless. *Flowers* few, blood-red; stamens longer than the petals, by which it is decisively distinguished from the last three species. A native of Mexico and other parts of South America. This species is said by Linnaeus, and has been generally supposed by others, to be the plant on which the Cochineal insect feeds; but Thiercy de Menonville is of a different opinion, founded on his personal observations at Mexico. 32. *C. testudinis crus*, tortoise-leg Indian fig, Thiercy. "Proliferously jointed; divisions oblong, compressed, but in a zig-zag manner, woody; spines numerous, very large, white; fruit spherical, green." In the course of a year it will grow to the height of ten feet, and produce thirty shoots; and in three or four years acquires the size of a tree. *Divisions* situated perpendicularly one upon another, and so bent as to produce, in the ideas of the colonists, a resemblance of the paws of a tortoise in the act of walking. *Flowers* aurora-coloured. *Fruit* unpleasantly acid. A native of sterile places in St. Domingo. 33. *C. luteus*, yellow Indian fig, Thiercy. "Proliferously jointed; divisions compressed, ovate; woody, nearly without spines; flower and fruit yellow; petals spreading." A beautiful plant growing to the size of a tree. *Fruit* egg-shaped, of an agreeable flavour. 34. *C. campechianus*, Thiercy. "Proliferously jointed; divisions compressed, oblong, woody, with few spines; flower and fruit red; style longer than the stamens and petals;

petals connivent." Smaller than the last two. *Divisions* oblong, dark green, smooth, shining; spines not more than two together. *Petals* of a bright reddish purple colour; stigma sulphur-coloured, with six divisions. *Fruit* the size of a pigeon's egg; truncate at the summit, blood-red throughout, rather insipid, armed with spines. A native of St. Domingo. 35. *C. sylvestris*, wild cochineal Indian fig, Thiery. "Proliferously jointed; divisions compressed, very spinous; flower and fruit red; petals spreading." Not rising into a tree, and seldom exceeding eighteen or twenty feet in height. *Divisions* pale green or yellowish, from ten to fifteen inches long, and from seven to ten broad: spines white, from ten to fifteen in a cluster, crossing each other so as almost to cover the surface. *Fruit* the size of a walnut. A native of the inner parts of Mexico, and the most common species from Theguacan to Guaxaca. The wild cochineal insect feeds on all the four preceding, but is most fond of the last; and is found on it in such numbers as to destroy whole divisions, and, in the opinion of Thiery, to prevent its growing to its full size. 36. *C. splendidus*, superb Indian fig, Thiery. "Proliferously articulate; woody, very large; divisions ample, oblong, glaucous; those formed in the first three years, spinous; the younger ones nearly unarmed; spines rigid and pungent." A large tree. *Divisions* numerous, thirty inches long, from twelve to fifteen, and even twenty broad, beset with tufts of stiff, red bristles, which are very pungent, and easily insinuate themselves into the skin, so as to become very troublesome when neglected. In the older divisions these tufts are accompanied by three spines of unequal size, very strong and sharp; the others have rarely more than one or two, and often none. The beautiful glaucous colour of this species, its immense size, the vigour and richness of its vegetation, with the number and amplitude of its divisions, render it the most striking and magnificent of all its family, and give it, in Thiery's opinion, a just right to the epithet superb. This active naturalist never saw either the flower or the fruit, but was informed at Mexico, that the latter is delicious. It is not a native of Mexico, but is cultivated there solely for its fruit. Monf. Thiery brought it from Mexico to St. Domingo, and is convinced by experiments, made for three successive years, that it is equal to the *C. nopal* as a food for the true cochineal insect of the merchant and dyer. 37. *C. nopal*, Thiery. True cochineal Indian fig. "Proliferously jointed, woody; divisions compressed, ovate-oblong, perfectly smooth, green; those formed in the first three years spinous; the younger ones nearly unarmed; spines rigid and pungent." Very similar to the *splendidus*, from which it seems to differ chiefly in colour. Monf. Thiery de Menonville is, however, well assured from all his inquiries and observations made on the spot, that this is the only species on which the true cochineal insect is bred in Mexico. He is persuaded that it does not grow wild in that country, and suspects that it is a variety of some unknown species, brought by cultivation to its present state of perfection. It differs from the *C. coccinellifer* of Linnæus and other botanists in being always found with strong sharp spines. The latter is also said to grow wild in Jamaica, where *C. nopal* is entirely unknown. 38. *C. curassivicus*, curassow, or least Indian fig, or pinpillow. Linn. Sp. Pl. (*Opuntia minima*, Bradl. succ. 1. p. 5. f. 4. *Ficus indica minima*, Com. hort. 1. p. 107. t. 56. Pluk. alm. 147. t. 281. f. 3.) "Proliferously jointed; slightly compressed, almost cylindric, bellying out in the middle." *Divisions* about three feet long, feeble, and unable to support themselves, taking root as they lie on the ground, furnished with numerous clusters of white, sharp, slender spines. It is called pinpillow in the West Indies from the resemblance of its branches to a pin-

cushion stuck full of pins. It flowered once at Badmington in the collection of the late duchess of Beaufort, and produced a yellow flower, but did not ripen its fruit. Said to be a native of Curassow. 39. *C. spinosissimus*, cluster spined Indian fig. Willd. Ait. Kew. 2. p. 155. Mart. hort. Cantab. 88. La Marck enc. 1. p. 557. "Stem feebly erect, compressed; divisions compressed, disposed crosswise; spines very numerous, long, yellowish." Nearly allied to *C. divaricatus*, with which it would perhaps have been better associated, notwithstanding its compressed divisions. *Stem* from three to five feet high, not channelled or angular, producing near its summit, oblong, much compressed branches, in a cruciform direction, or making nearly right angles with each other; spines very slender in numerous clusters, each of which proceeds from a tubercle, and consists of two sorts of spines; the lower ones long, few in number, and diverging; the upper ones small, numerous, and collected into a bundle like the hairs of a pencil. A native of Jamaica. 40. *C. phyllanthus*, spleen-wort-leaved Indian fig. Linn. Sp. Pl. Brown jam. 237. (*Cereus*, Dill. elth. 73. t. 64. f. 74. *Opuntia*, Sloan. jam. 216. hist. 2. p. 159. *Phyllanthus*, Pluk. alm. 296. t. 247. f. 5.) "Proliferous, ensiform, compressed, ferrate-repand." Distinguished from all the other species by its peculiar form. Divisions of the *stem* sword-shaped, much compressed, feeble, about two inches broad, and from two to four feet long, bordered by large, rounded, indentures, and traversed longitudinally by a thick, cylindric nerve, so as to bear some resemblance to the leaves of scolopendrium: *spines* none. *Flowers* in the indentures at the edge of the divisions, and at the summit, whitish; *calyx* long, slender, curved, greenish, beset with scattered scales. *Fruit* esculent, bright red, with eight ribs, and scaly tubercles; pulp white; seeds black. A native of South America.

Obs. Professor Martyn has followed Willdenow in admitting a species on the authority of Swartz, which they call *alatus*: but it is evident from the description that it is no other than *C. phyllanthus*. Willdenow has most incautiously applied to both the synonym of Brown, (Jam. 237.) and has even transcribed it twice at full length, at the distance of only ten lines.

***** *Furnished with true leaves.*

The species placed under this section are totally different in habit from all the preceding, having not only real leaves, but stems and branches similar to those of other trees and shrubs.

41. *C. pereskia*, Barbadoes gooseberry, or blad-apple. Linn. Sp. Pl. Brown jam. 237. (*Pereskia*, Hort. Cliff. 122. Plum. gen. 37. Dil. Elt. 305. t. 227. f. 294. *Malus americana*, Comm. hort. 1. p. 135. t. 70. *Portulaka*, Pluk. alm. 135. t. 215. f. 6. *Grossularia fructu majore arbor*, Sloan. Jam. 165. hist. 2. p. 86. Rai. dend. 27.) "Stem round, woody; prickles in pairs, recurved; leaves lanceolate-egg-shaped." An evergreen shrub. *Stem* branched, furnished in its lower part with long, stiff, clustered spines. *Branches* long, cylindric, flexible, samentous, full of pith, and armed at each knot with a pair of prickles resembling those of the common bramble. *Leaves* alternate, roundish, succulent, contracted into a petiole at their base; green, smooth, about the size of those of purslane. *Flowers* monocious, white, very fragrant, growing several together on a common short peduncle in the axils of the leaves. *Fruit* globular, leafy, pale yellow, pleasantly acid, a little larger than a hazel nut. *Seeds* generally three, black, roundish, compressed. A native of the West Indies. It was raised from seeds by Commelin, in 1690, and cultivated in the royal garden at Hampton Court, in 1696; but though it vegetates vigorously, it has not flowered in Europe. 42.

C. por-

C. portulacifolius, Linn. Spec. (*Opuntia*, Plum. Sp. 6. ic. 197. fig. 1.) "Stem round, woody, spinous; leaves wedge-shaped, retuse." About the size of a common apple-tree. *Trunk* the thickness of a man's thigh, with spreading spinous branches. *Leaves* alternate, in size and consistence like those of *C. pereskia*; with a solitary spine at the base, a little longer than the clustered ones on the branches. *Flowers* at the ends of the upper branches, probably monoicous, purplish, rosaceous: petals rounded, a little larger than a finger nail. *Fruit* globular, about the size of a common apple, without the tufts of leaves which are found on *C. pereskia*, greenish, with a whitish, mucilaginous, acid pulp. *Seeds* numerous, dark-coloured.

All the known species are perennial.

CACTUS, in *Gardening*, comprehends different curious plants of the succulent exotic kinds, of strange and singular growths, cultivated in this climate for curiosity in stoves and green-houses. They may be divided into the melon-thistle, the torch-thistle, and creeping cereus, and the Indian fig kinds. The species principally cultivated in the first sort, are *C. mamillaris*, smaller cactus, or melon-thistle; *C. melo-castris*, melo-cactus, great melon-thistle, or turk's cap. In the second kind, *C. tetragonus*, four-angled upright cereus, or torch-thistle; *C. pentagonus*, five-angled upright torch-thistle; *C. hexagonus*, six-angled torch-thistle; *C. heptagonus*, seven-angled upright torch-thistle; *C. repandus*, slender-upright torch-thistle; *C. lanuginosus*, woolly upright torch-thistle; *C. peruvianus*, Peruvian upright torch-thistle; *C. royeri*, Royer's upright torch-thistle; *C. grandiflorus*, great flowering creeping cereus; *C. flagelliformis*, pink flowering creeping cereus; *C. triangularis*, triangular cereus, or strawberry pear. And in the third sort, *C. opuntia*, common Indian fig, or prickly pear; *C. ficus Indica*, oblong Indian fig; *C. tuna*, great Indian fig, or prickly pear; *C. coccinellifer*, cochineal Indian fig; *C. curassavicus*, curassoa, least Indian fig, or pin-pillow; *C. spinosissimus*, cluster-spined Indian fig; *C. phyllanthus*, spleen-wort leaved Indian fig; *C. alatus*, narrow long jointed Indian fig; *C. moniliformis*, neck-lace Indian fig; *C. pereskia*, Barbadoes gooseberry.

The two first sorts are plants of a very singular structure, having much the form of a large melon, without stems, branches, or leaves, sitting in a close manner to the surface of the earth, and differing in height from a foot to a yard, being deeply ribbed longitudinally in some sorts, and in all closely armed with strong spines. They are perennial, both in root and top, continuing many years; affording ornament and variety in the stoves of hot-houses. Each species has several varieties.

The second sort also affords plants of highly curious succulent growths, in some of the species and varieties rising to a considerable height, and producing flowers of great beauty; and in others creeping or trailing to some distance, or hanging down over the sides of the pots that contain them—affording much variety in this way, as well as by their elegant and curious flowers, especially in some of the kinds, as the *grandiflorus*, and some others. The six-angled torch-thistle, and smaller creeping cereus, are the least tender.

In the third sort, the plants are likewise highly curious from their fleshy succulent jointed growths, and being beset with sharp spines: in many of the kinds most of the species, except the first, are less hardy than those of any of the other two kinds. They, however, produce much variety in stove collections among other plants of similar growths.

Method of Culture in the Melon-Thistle Kind.

These plants may be increased with facility, either by

sowing the seeds in pots of light sandy earth, and plunging them in the bark bed; when, after the plants have advanced a little in growth, they should be pricked out into separate very small pots, and plunging them in the bark bed, where they mostly make great progress, though it is often some years before they acquire any considerable size or growth; or by setting the young plants which issue from the sides of the old ones in pots of the same sort of earth, in the spring or autumn, managing them in the same way as those raised from seeds. But in order to have large plants at once, they may be procured from the West Indies in tubs of dry compost rubbish, care being taken to guard them well from cold and moisture. On their arrival they should be planted out in pots, and plunged in the bark bed till perfectly rooted, and become strong plants.

These plants should always be placed upon the tops of the flues or shelves of the hot-houses in winter, and in the bark beds in summer; very moderate waterings being given in very hot weather, but none at all in the winter season, as they are very succulent plants, and quickly rot by moisture.

Method of Culture in the Cereus or Torch-Thistle Kind.

These plants are constantly increased by planting the cuttings of branches, which have been laid in a dry place some weeks for the moisture to exhale, and the wounded parts to be healed over, in small pots in the summer season, filled with a compost constituted of one third light earth, the same quantities of sea-sand and sifted lime rubbish, well mixed together for some length of time before it is made use of, plunging them in the bark hot-bed of the stove; some rather coarse gravel or shells being previously placed in the bottoms of the pots to prevent the stagnation of moisture.

In the upright sorts, the cuttings for this use may be provided by taking off the tops of such kinds as are wanted; the plants afterwards throwing out shoots below, so as to furnish plentiful supplies annually. But in the creeping sorts, as there are various stalks and branches, these may be taken off in cuttings of from three to five or six inches in length, and be planted out in the same manner as the above.

About the beginning or middle of August, the plants, after being raised in this manner, should have air given them by degrees, in order to harden them against winter, but not be wholly exposed either to it or the sun; and towards the end of September removed into the stove, or green-house, for the winter, during which season they must not have much water. The young plants should constantly have a dry situation in winter, as they imbibe the greatest part of their nourishment from the air, in order to prevent their roots from rotting; and should not be exposed in the open air, even in summer, unless under shelter, as rains are very injurious to them. Nor should the creeping sorts be exposed too much to the open air, even in the hottest seasons; but, if they be designed to flower in winter, be kept very warm, and have no water given them at that period.

The great flowering creeping cereus being a tender plant, requires a warm stove to protect it, in which it may be trained against the walls, or upon sticks. But the six-angled, and small sort, with pink-coloured leaves, are not so tender, being capable of being preserved in a good green-house, or when placed under a hot-bed frame, in the autumn, winter, and very early spring months.

Method of Culture in the Indian Fig Kind.

These plants are capable of being readily increased during the early summer months, by cuttings of the joints of the branches taken off, and planted in pots of light sandy com-

poft. These cuttings, previous to planting, should, as in the other sorts, be laid in a dry place, ten or fifteen days, to heal over the cut parts; and the hot-house kinds, by being then plunged in the bark-bed, or other hot-bed, will be greatly promoted in their rooting; but the green-house sort, or common *opuntia*, readily strikes root without, though it is greatly forwarded by such assistance. They all require the earth to be occasionally moistened a little. In the summer season, they likewise often require water, but it must not be given in large quantities, lest it rot them; and in winter, it should be proportioned to the warmth of the stove; as, if the air be kept very warm, they require to be often refreshed with a very little to prevent the branches shrinking; but if kept in only a moderate degree of warmth, little is necessary. The heat in which they thrive best is that marked temperate on botanical thermometers, as when kept too warm in winter, it causes their shoots to be very weak and tender. The sorts which are inclinable to grow upright should have their branches supported with stakes, to prevent their being broken down with their own weight. Plants of this sort are mostly exposed to the open air in the summer season; but they thrive much better when continued in the stoves, provided they have free air; as when set abroad, the rains much diminish their beauty, retard their growth, and prevent their producing flowers and fruit in such plenty, as when constantly kept protected in the house.

CACTUS, in *Natural History*, a species of *Madrepora*, with compressed, divergent, dichotomous, branches, carinated at margin, and sides contiguously flattened, found only in a fossil state. Forsk. Fn. Arab.

CACULE, in the *Materia Medica*, a name given by Avicenna, Serapio, and all the other Arabian writers, to the *cardamom* seeds. They distinguish two kinds of this fruit, a larger and a smaller. The larger is the grain of paradise, and the smaller the common cardamom seed of these times. They also called the cardamoms in general by the name *heil*, and distinguished the small kind, now principally in use, by the word *hilbanc*, which after writers corrupted into *hilbave* and *hilbua*, or *helbua*.

CACULO, in *Geography*, a small town of Africa, near the river Faleme, on its eastern bank. N. lat. 13° 56'. W. long. 10° 20'.

CACUS, in *Entomology*, a species of *SPHINX*, with black indented wings, marked with three pale approximate streaks: posterior pair black striated with black. Cramer, &c. Inhabits Surinam.

CACUS, in *Fabulous History* and *Mythology*, the son of Vulcan, represented by Virgil as a monster, half man and half satyr, and of an enormous height, discharging from his mouth streams of flame. The fable reports that Hercules, after the defeat of Geryon, conducted his herd along the banks of the Tiber, and whilst they were feeding fell asleep. In the mean while Cacus stole away eight cows, and in order to escape detection, drew them backwards by their tails into his den on mount Aventine. When Hercules determined to quit these pastures, the lowing of those bulls which remained was answered by that of the cows which Cacus had stolen, and thus the theft was discovered. Hercules ran with great fury towards the cavern; but found its entrance closed by a large rock, which was suspended by chains of iron forged by Vulcan. However, he removed the rock and found his way into the den amidst the flames and smoke vomited by the monster, seized him by the throat, and strangled him. In memory of this victory, the inhabitants of mount Aventine observed a yearly festival in honour of Hercules. The Latin poets have emulated one another in celebrating this defeat of Cacus. The den of Cacus, says Bryant (*Analysis of An-*

cient Mythology, Vol. II. p. 22), was properly Ca-chus, the cavern or temple of Chus; from which the poets and later historians have formed a strange personage, whom they represented as a shepherd, and the son of Vulcan. There certainly, he says, stood a temple of old upon the Aventine mountain in Latium, which was the terror of the neighbourhood. The cruelties of the priests, and their continual depredations, may be inferred from the history of Cacus. Virgil (*Æn. lib. viii. v. 190, &c.*) makes Evander describe the place to Æneas, though it is supposed in his time to have been in ruins. Livy (*lib. i. c. 7.*) mentions Cacus as a shepherd, and a person of great strength and violence. He is also mentioned by Plutarch (in *Amatorio*, vol. ii. p. 762) as vomiting fire and flames from his mouth. As in temples of this sort there were both priests and priestesses, we read of a Cacus and a Caca. The latter was supposed to have been a goddess who was made a deity for having betrayed her brother to Hercules. Lactantius de *Falsa Religione*, apud Institut. lib. i. c. 20. The learned Bryant adds, that under the characters of Caca and Cacus, we have a history of Cacusan priests, who seem to have been a set of people devoted to rapine and murder.

CACUTHIS, in *Ancient Geography*, a river of India, which, according to Arrian, discharged itself into the Ganges.

CACYPARIS, a river of Sicily, on the eastern coast, between Syracuse and Helorum.

CACYRON, a town placed by Ptolemy in the interior part of Sicily. The inhabitants are called by Pliny Cacyrini.

CADA WATER, a river of Scotland, which runs into Loch Fine; 9 miles S. W. of Inverary.

CADABA, in *Botany*, La Marck Encyc. Forsk. Ægypt. 68. (Stræmia, Willd. 365. Vahl. Sym. 1. p. 20.) Clasi and order, *gynandria pentandria* Forsk. *Pentandria monogynia* Willd. Vahl. Nat. ord. *Capparides*, Juss.

Gen. Ch. *Calyx* four-leaved, spreading, deciduous. *Cor.* petals four or none; claws filiform, the length of the calyx, situated on the receptacle of the calyx, two on each side; borders lanceolate, waved. *Nect.* tubular-ligulate, situated between the upper division of the calyx and the receptacle of the fructification. *Stam.* filaments five or four, inserted on the peduncle of the germ; anthers upright. *Pist.* germ superior, cylindric, pedicelled; style none; stigma simple. *Peric.* capsule pedicelled, cylindric, one-celled, two-valved; valves revolute. *Seeds* numerous, kidney-shaped, disposed in three rows in a kind of pulp.

Ess. Ch. *Calyx* four-leaved. *Nectary* ligulate. *Capsule* pedicelled, pulpy.

Obs. It resembles capparid in its pulpy capsules, and cleome in its flowers. Its gynandrous stamens and tubular ligulate nectary distinguish it from the former, and its fruit from the latter. Vahl and Willdenow call the pericarp a berry; Jussieu considers it as a silique. La Marck styles it both a silique and a capsule within the compass of a few lines. Its valvular structure is inconsistent with the essential character of a berry; and the situation of its seeds does not correspond with the definition of a silique: it is therefore properly a capsule. We have preferred Forskal's original generic name to that afterwards adopted by Vahl. If there be no strong reason to the contrary, the right of priority should always be respected.

Sp. 1. *C. indica*, La Marck, (Cleome fruticosa: Linn. Sp. Pl. Burm. Ind. 140. tab. 46. f. 3. Stræmia tetrandra. Willd.) "Leaves oblong egg-shaped, smooth; flowers tetrandrous." A shrub. *Stem* cylindric, branched. *Leaves* entire, alternate, petioled, sometimes obtuse and sometimes rather pointed, an inch long, and four or five lines broad; petioles short. *Flowers* whitish, peduncled; in short, simple,

terminating racemes. *Pedice* of the fructification about an inch long, making an obtuse angle with the peduncle of the flower. *Capsule* pulpy, which determines it to be a cadaba, not a cleome. A native of the East Indies, whence Sonnerat sent specimens of the flowers and fruit to La Marek. 2. *C. rotundifolia*, Forst. "Leaves circular, smooth." A middle-sized tree. *Leaves* alternate, flat, rather thick, sometimes slightly sinuate, and often emarginate, petiole half the length of the leaf. *Flowers* erect, in terminating racemes, without petals; nectary greenish; the ligulate part ovate, flat, red above and yellow beneath. *Stamens* inserted on the lower part of the pedice of the germ. *Fruit* two inches long, cylindric, swelling out in knobs, smooth, green; valves red within. *Seeds* black, in a dry reddish pulp. A native of Arabia. 3. *C. faringia*, Forst. "Leaves egg-shaped, oblong, mealy." A shrub. *Branches* round; covered, like the leaves, with a mealy down. *Leaves* alternate, obtuse, entire, flat, half an inch long. *Flowers* peduncled, in terminating racemes; petals waved; nectary white; stamens inserted a little below the middle of the pedice of the germ. A native of Arabia. 4. *C. glandulosa*, Forst. "Branches, leaves, calyx, and pistil glandular, villous." A shrub. *Branches* round, as well as all the other parts of the plant covered with glandular hairs. *Leaves* half an inch long, petioled, alternate, roundish, entire, rough to the touch. *Flowers* nodding, from four to six, in a terminating raceme; capsule half an inch long, very hairy. A native of Arabia.

CADAHALSO, in *Geography*, a town of Spain, in New Castile, surrounded with pleasant gardens and woods; 6 miles N. of Escalona.

CADALEN, a town of France, in the department of the Tarn, and chief place of a canton in the district of Gaillac; 2 leagues S.E. of it. The town contains 1,627, and the canton 4,709 inhabitants; the territory includes 155 $\frac{1}{2}$ lieues, and 7 communes.

CADAN, or KADAN, a town of Bohemia, in the circle of Saaz, seated on the Eger, and founded in 821; 10 miles E. of Saaz. N. lat. 50° 20'. E. long. 13° 34'.

CADAON, a river of Portugal, which forms the harbour of Setuval.

CADARA, in *Ancient Geography*, a town of Arabia Felix, on the Persian gulf.—Also, a large peninsula of the Red Sea, on the southern coast of Arabia, which formed an extensive bay, crossed by Ptolemy Philadelphus, in 12 days and nights. Pliney.

CADARI, or KADARI, a sect of Mahometans, who assert free-will, attribute the actions of men to men alone, not to any secret power determining the will; and deny all absolute decrees, and predestination. The author of this sect was Mabel ben Kaled Al Gihoni, who suffered martyrdom for it. The word comes from the Arabic, *cadara*, power. Ben Aun calls the Cadarians, the Magi, or Manichees of the Mussulmen. This name is given by some to the Motazalites, though they disclaim it, and give it to the Jabarians, who likewise reject it as an infamous appellation, because Mahomet is said to have declared the Kadarians to be the Magians of his followers.

CADAVAL, in *Geography*, a town of Portugal, in the province of Traz-os-Montes; 13 miles S.S.W. of Mirandella.—Also, a town of Portugal, in the province of Estremadura, including a district of eight parishes, and about 350 inhabitants; 13 miles S.E. of Peniche.

CADAVAYLLO River, is about 3 leagues N.N.E. from the sand off the mouth of Lima river, on the coast of Peru in South America.

CADAVERUM, in *Entomology*, a species of ACARUS,

having the body somewhat bilobate, and the posterior part furnished with four bristles, which are longer than the body. Schrank. Found in the carcases of insects.

CADAUM CASTRA, in *Ancient Geography*, a place of Africa, in Mauritania Cæsariensis, on the coast from Cala to Rufucurum. Antonin. Itin.

CA-DE', or CHIADA, in *Geography*. See *League of God's house*.

CADE, a cag, cask, or barrel; used in the book of rates for a determinate number of some sorts of fish.—Thus a cade of herrings is a vessel containing the quantity of five hundred herrings, and of sprats one thousand.

Anciently the cade of herrings appears to have contained six hundred fish, reckoning six score to the hundred.

CADE bay, in *Geography*, lies on the south-west side of the island of Antigua, in the West Indies, and a little to the north-west from Carlisle bay on the south of the island.

CADE's *Insurrection*, in *English History*, a formidable insurrection, which took place in Kent in 1450, and which was so called from the artful and bold adventurer, John Cade, by whom it was headed. Cade having collected a considerable number of the common people, by specious promises of reforming all abuses, whence he obtained the name of John Amendall, marched towards London, and encamped on Blackheath. From hence two addresses were sent by the insurgents to the king and council, artfully professing the greatest attachment to the person and government of the king, and requesting the redress of grievances, together with the punishment of evil counsellors, who had oppressed the people at home, and occasioned the loss of the king's dominions abroad, and that the king would govern by the advice of the dukes of York, Exeter, Buckingham, and Norfolk, and the well-affected barons of the kingdom. These addresses, which had marked out for destruction certain members of the council, were rejected, and it was resolved to subdue the insurgents by force. For this purpose, an army of 15,000 men was ordered to march against the insurgents; and a detachment overtook and engaged them near Seven-oaks, but was defeated. Cade and his followers, elated by this victory, returned to their former station on Blackheath; and as the aspect of affairs was now become serious and alarming, lenient measures were adopted, and the archbishop of Canterbury and the duke of Buckingham were deputed to treat with the rebels. In the conference that ensued, Cade behaved with decency and firmness, but refused to lay down his arms, till the requisitions in his address were granted. After the return of the messengers, the court retired to Kenilworth castle, and the tower of London was garrisoned. Cade advanced to Southwark, and was at length admitted into London. Having seized and beheaded lord Say and Seale, late high treasurer of England, and his son-in-law sir James Cromer, sheriff of Kent, they proceeded to pillage the city; but they were soon driven out of it, and failing in their attempts to repossess it, they agreed to a short truce. A proclamation was issued from the tower, which announced a pardon under the great seal to all who immediately departed to their own homes; and this proclamation produced such an effect, that in a few hours the army, lately so formidable, disappeared. Cade, finding that he was thus suddenly abandoned, put his booty on board a barge, and sent it to Rochester, and proceeded by land with a few attendants; but being denied admittance into Queenborough castle, he dismissed all his followers, and put on a disguise. A proclamation was immediately published, offering a reward of 1000 marks to any who brought him in, dead or alive. He was discovered baking in a garden at Hethfeld, in Suffolk, by

by Alexander Eden, a gentleman of Kent, and, making some resistance, was killed, and his body was brought to London. Thus ended an insurrection, which, under a leader of higher rank and greater honour, might have produced a revolution.

CADÉ Lamb, in *Rural Economy*, a young lamb brought up in the house wholly by the hand. Where the ewe dies soon after lambing, the young lamb may be preserved and brought up in this way.

CADÉ, oil of, (huile de Cadé, Fr.) is an empyreumatic oil of turpentine, thinner than tar, and obtained along with it in the distillation of pine wood. It appears to be very similar to what is called in this country *spirit of tar*. See **TURPENTINE**.

CADÉ's point, in *Geography*, lies at the north-west end of the island of Nevis, in the West Indies, and is the nearest cape to Major's bay, at the south-east end of the island of St. Christopher's, or St. Kitt's.

CADÉ-worm, in *Entomology*, a name given by some authors to the larvæ of the phryganeæ, which are found in ditches, and used as bait for fish. See **PHRYGANEÆ**.

CADEL-AUANACU, in *Botany*, Rheed. mal. 2. p. 61. t. 75. Rai. hist. 167. 1855. Sup. 112. 666. See **CROTON tiglium**.

CADELI, Rheed. mal. See **ACHYRANTHES aspera**.

CADELIUM, Rumph. Amb. See **PHASEOLUS Max.**

CADEMOSTO, or **CADAMUSTI**, LEWIS, or properly **ALVISE DA CA DE MOSTO**, in *Biography*, a celebrated Venetian navigator, was born about the year 1432; and having made several voyages in the Mediterranean, he left Venice in 1454, and being accidentally driven by a storm on the coast of Portugal, he was employed by the infant don Henry in a voyage of discovery. A caravel was fitted out and laden, chiefly at the expence of De Mosto, who embarked in March 1455 with Vincenzo Diaz, to whom the command of the vessel was entrusted, and proceeded to the coast of Africa. Being joined at sea by two other vessels, they sailed to some distance beyond Cape Verd; but the crews, through fear of the negroes, refusing to proceed further, they were under the necessity of returning to Portugal. In the following year, Cademosto, accompanied by Usomare, a Genoese, undertook a second voyage with three ships towards the same parts; and having passed cape Blanco, they were driven by a storm on Cape Verd islands, which had not yet been discovered. From hence, they proceeded as far as the mouth of the river St. Domingo. Cademosto, after his return to Portugal, published, in 1464, an account of his voyage, which is valuable, as it contains the earliest relation extant of the Portuguese navigations on the African coast, and of the gold trade of Tombut, and its principal branches. This work was first published at Vicenza in 1507; it was afterwards translated into Latin and French, and inserted by Grinæus in his collection entitled "*Novus Orbis*," and by Ramusio in his collection of voyages, and since in several others. The author resided some years ago at Lagos in general esteem. He returned to Venice in 1464, and after this period we have no further account of him. *Nouv. Dict. Hist.*

CADENA, in *Ancient Geography*, a town of Asia Minor, in Bithynia.

CADENAC, in *Geography*, an ancient town of France, in the department of the Lot, by which river it is surrounded, seated on a steep rock, which, having never submitted to the English in their various invasions and conquests, was invested with peculiar privileges; 28 miles E.N.E. of Cahors.

CADENCE, in *Music*, denotes a kind of close, or rest, either at the end of a song, or some of its parts, into which it is divided as into members, or periods.

The word seems a metaphor drawn from the dancing-school, where it properly signifies a pause, or fall, from motion to rest. A cadence is properly when the parts fall, and terminate on a chord, or note, the ear seeming naturally to expect it. Regularly it is to be made on the final or dominant, though sometimes also on the mediant or middle chord of a note.

Cadences in singing answer nearly to points or stops in discourse. They are rests contrived to favour the weakness of the performers, as well as the hearers, of a musical composition. Men are not able to sustain their attention, or their voice, beyond the space of two measures; even in this short interval we perceive the song to fall, and tend rapidly to a pause, or rest: the notes which introduce these pauses, are called cadences, on the proper conducting and expressing of which a great part of the musician's skill depends. The chief cadence or close is the key itself, in which the bass must always conclude; the next in dignity is the fifth above; then, if the key-note is made sharp, a cadence may be made on the second of the key; after which (by means of a sharp fifth) on the sixth; and by a sharp second on the third of a key; after which, returning to the original key and subject, when the hearer is reminded of both, by means of a flat seventh, there may be a close in the fourth of the key; after which, with a sharp seventh, the piece may terminate by a final cadence or close in the original key. See **CLOSE**, **MODULATION**.

In all these cadences, a major key is understood. For cadences in a minor key, see **COUNTERPOINT**.

Dr. Pepusch's definition of cadences in music is, perhaps, the most short, clear, and comprehensive, to be found in any elementary book.

"Cadences in music are the same as stops in speaking or writing; that is to say, they are endings or terminations either of a part or of the whole piece of music, as stops are of a part or of the whole speech. For which reason they are distinguished into full cadences and middle cadences; these last are like commas and semicolons, after which more is expected to follow, they not making so full a stop as the others; whereas after a full cadence we are sensible that we are come to a conclusion." *Treatise on Harmony*, p. 4.

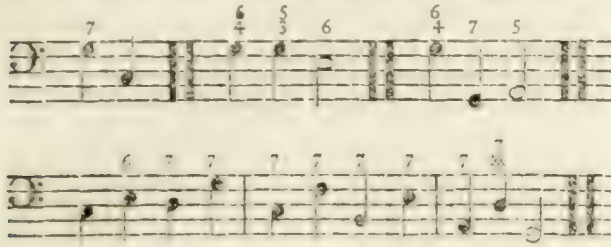
This author's arrangement of the modulation in the key of C as the representative of all major keys, differs somewhat from the present practice. It is however that of the greatest masters of the early part of the last century. \hat{C} , \hat{G} , \hat{E} , \hat{A} , \hat{F} , c , which include all the concords to the key note.

In a long piece of music, however, he allows a transient modulation into D minor, as a sixth cadence. But Dr. Pepusch's modulation into E differs totally from that of the secular composers of more modern times. It is, in fact, no more than a semi-cadence on the fifth of the key of A minor, with a sharp third; nor is the scale any thing more than that species of octave assigned by most writers on ancient music to the Dorian mode. See **MODE**, and **ANCIENT MUSIC**. It begins and ends in E without flat or sharp; $\widehat{EFGABCD}e$. Dr. Pepusch says, that "from the peculiarity of its modulation, whatever is composed in this mode or key is so solemn, and it seems so much appropriated to church music, that it is called by the Italians *tuono di chiesa*. From the contemplation of this scale, the sieur Blainville, in 1751, fancied, or wished others to fancy, that he had discovered a new cadence, or key, different from the major and minor, the second being minor, and the seventh major. See *Dict. de Rousseau*, art. *Mode*.

The resolution of a discord, according to Rousseau, is a kind

kind of cadence. "And, as all harmonic phrases are necessarily connected by discords, expressed or understood, it follows, that all music may be said to consist of a succession of cadences." The *regle de Poësie* seems to favour this idea; as every other sound carries a discord. See *REGLE de l'Odéon*.

According to Rameau, there are four kinds of cadences; the perfect, imperfect, interrupted, and disappointed.



Padre Martini's cadences, in his *Saggio di Contrappunto*, being such as are peculiar to the ecclesiastical modes, will be of little use in secular music. The closes of Haydn, Mozart, and Paisiello, however new, elegant, and ingenious the treble may be, are all built on the bases and harmony of the old closes of 100 years ago; for in a full close, as the base must fall a fifth or rise a fourth, the treble must either fall from the ninth to the eighth, or rise from the seventh to the eighth.

In early days of counterpoint, the great study of composers was cadences. A Studio of Palestrina being found at Rome in the year 1770, it was chiefly filled with cadences and chants, in his own hand-writing.

In melody, the preparation for closes in the principal part are infinite; in harmony they are numerous, but may be numbered. Neither Rameau's cadences, nor those of Padre Martini, quite satisfy us. In Gasparini there is an ample collection, chap. vi. *per far le cadenze d'ogni sorte*. From these Walther has cited many, but more correctly; for Gasparini's book, in the edition which we have seen, is miserably printed. The cadences in Walther are good, as far as harmony is concerned, which is not so changeable as melody; and to these, chiefly from Gasparini, we have all the Italian names: as *cadenza maggiore, minore, maggiore sminuita, cadenza sfuggita, finta, fiorita, perfetta, imperfetta, irregolare, d'inganno, &c.*

In ancient music, cadence is nearly synonymous with rhythm. The French make use of the term cadence for a trille or shake.

CADENCE, in the *Modern Dancing*, is when the several steps and motions follow, or correspond to, the notes or measures of the music.

CADENCE, in the *Manège*, denotes an equal measure, or proportion observed by a horse in all his motions, when he is thoroughly managed, and works justly, either at the gallop, *terra à terra*, or the airs.

A horse's working in cadence imports, that his times or motions are uniform, and that one does not take in more ground than another.

CADENCE, in *Oratory*, and *Poetry*, denotes the harmonious movement of verse or prose; otherwise called the numbers, and by the ancients *ῥυθμός*. See *РHYTHM*.

As to prose, Aristotle suggests that though it be not measured like verse, it should nevertheless be numerous or harmonious (see *NUMBER*); and Cicero enjoins the orator to take care to gratify the ear, "*superbissimum aurium judicium*." Indeed, the finest thoughts will be destitute of power to please, if they are expressed in terms that are harsh and ill arranged. As the ear is agreeably soothed by a soft and flowing discourse, it is offended by want of harmony in the structure and flow of the periods; whether it

be occasioned by the excessive brevity and abruptness of termination, on the one hand, or by excess of length, a kind of crawling, languid, movement on the other, which are both alike disgusting to a delicate ear. By observing a due mean between those two extremes, a discourse acquires that harmony which is adapted both to please and even to persuade. See *STYLE*.

As to the cadence of verse, it depends, in Greek and Latin poetry, on the number and proper intermixture of those feet or periodic measures which enter into the composition of verse, and which vary in the different kinds of it; and, in living languages, the cadence results from the number of syllables which each verse admits, and from the richness, variety, and disposition of the rhymes. In the ancient poetry, says M. Rollin (*Method of Teaching and Studying the Belles Lettres*, vol. i. p. 249.) "there is a plain, common, and ordinary harmony of cadence, which supports itself alike universally, renders the verse smooth and flowing, carefully throws out whatever may offend the ear by a rough and disagreeable sound; and, by the mixture of different numbers and measures, forms that pleasing harmony, diffused throughout the whole body of the poem." "Besides this," he says, "there are certain particular cadences, of greater significance, which make a more sensible impression. These sorts of cadences are very beautiful in versification, and add a considerable grace, provided they are used with prudence and address, and do not return too often. They prevent the tediousness, which uniform cadences, and regular returns, in one and the same measure, cannot fail of producing." "In the Latin poetry," he adds, "we have entire liberty to divide our verses as we please, to vary the pauses (caesuras, or cadences) at will, and artfully to spare delicate ears the uniform returns of the dactyle and spondee, which close an heroic verse." Accordingly he produces a variety of examples from Virgil, which seem to evince and illustrate the value of this kind of liberty, and the use that may be made of it. Thus, long words, properly placed, form a full and harmonious cadence, especially if there are several spondees in the verse; e. g.

"*Lucentes ventos tempestatque sonoras*

Imperio premit." *Æn.* I. 57.

Again, the spondaic verse has sometimes a great degree of gravity. Virgil has used it very advantageously in the description of Sinon's surprise and astonishment.

"*Namque ut conspectu in medio turbatus, inermis*

Constitit, atque oculis Phrygia agmina circumspexit."

Æn. II. 67.

It is also very proper for expressing any sentiment that is sad and doleful; e. g.

"*Quæ quondam in buis aut culminibus desertis*

Nocte sedens, seram canit importuna per umbras."

Æn. XII. 863.

A monosyllable at the end of a verse serves sometimes to give it great force; e. g.

"*Hæret pede pes, densusque viro vir.*" *Æn.* X. 361.

There are also several sorts of suspended cadences, which have their peculiar graces; e. g.

"*Et frustra retinacula tendens*

Fertur equis auriga, neque audit currus-habenas."

Georg. I. 513.

Broken cadences likewise produce a good effect; e. g.

"*Tali remigio navis se tarda movebat:*

Vela facit tamen." *Æn.* V. 280.

Elisions contribute very much to the beauty of verse, by making the numbers smooth, flowing, rough, or majestic, according to the difference of the objects to be expressed. Spondees and long words, which give a slowness and heaviness to verse, are proper for expressing sorrow; e. g.

"*Extinctum*

"Extinctum nymphæ crudeli funere Daphnini
Flebant." Eclog. V. 20.

Joy, on the other hand, demands the rapidity of dactyles; e. g.

"Saltantes satyros imitabitur Alphesibæus." Eclog. V. 73.

To express softness, we must select words consisting of many vowels, with smooth and flowing consonants; and avoid such syllables as are composed of several consonants, harsh elisions, and rough letters or aspirates; e. g.

"Devenère locos lætos, et amœna vireta
Fortunatorum nemorum, fœdèque beatas."

Æn. VI. 638.

In expressing roughness, we must chuse words which begin and end with an *r*, or which double the *r*; rough consonants, as the *x*, or the aspirate *h*; words formed of double consonants; and elisions; e. g.

"Ergo ægrè râlris terram rimantur." Georg. III. 534.

Lightness and swiftness are expressed by dactyles; e. g.

"Mox ære lapsa quieto

Radit iter liquidum, celeres neque commovet alas."

Æn. V. 216.

Heaviness, on the other hand, requires spondees; e. g.

"Illi inter sese magna vi brachia tollunt

In numerum, versantque tenaci forcipe ferrum."

Georg. IV. 174.

In other cadences, words placed at the end have a peculiar force or grace; e. g.

"Vox quoque per lucos vulgo exaudita silentes
Ingens." Georg. I. 476.

See ORDER, JUNCTURE, and NUMBER.

CADENCE, in *Reading*, denotes the falling or lowering of the voice below the key note at the close of every period. The key-note, in speaking, is that tone or sound with which the modulation commences, and it is generally continued through every complete sentence or period; and to this the occasional inflexions of the voice, either above or below it, may be supposed to refer. Of course the tones that fall a little lower than the key at the close of a sentence or period, are called *cadences*; and they are sometimes distinguished into two kinds, under the appropriate epithets of *significant* and *ornamental*; the former serve to mark the sense, and the latter to decorate the modulation. In many extensive and long periods, the full sense of which is long suspended, and where the final words are not very important, the cadence is a kind of notice of their termination, distinct from the pause, which, besides the ornamental variety it affords, is a very necessary and useful article in perspicuous elocution. As this cadence naturally accompanies the termination of every entire sense, it may sometimes fall before the semicolon, but more generally before the colon, as well as the period; for these marks are often found to terminate a complete sense; and in such cases the relation of that which follows to that which preceded, is signified to the mind by the relative shortness of the stop, and the mode of introducing the additional matter. See MODULATION, PAUSE, and PUNCTUATION.

CADENCED. An air or melody in *music* is said to be well cadenced, when the rhythm is good, the accents well placed, and the passages well phrased. See RHYTHM, ACCENT, and PHRASE.

CADENCY, in *Heraldry*, the state or quality of a cadet. Nisbet has an essay on the additional figures and marks of cadency. See DIMINUTION.

CADENE, in *Commerce*, one of the sorts of carpets which the Europeans import from the Levant, by way of Smyrna. They are the worst sort, and are commonly sold by the piece from one to two piales per carpet.

CADENET, in *Geography*, a town of France, in the

department of Vaucluse, and chief place of a canton in the district of Apt, near the Durance, three leagues S. of Apt. The town contains 2051, and the canton 8811 inhabitants; the territory comprehends 260 kilometres and 9 communes. N. lat. 43° 40'. E. long. 53° 30'.

CADENSO, or CADENIO, one of the Laccadive islands in the Indian sea. N. lat. 11° 55'. E. long. 72° 32'.

CADENZA *Sfuggita*, in the *Italian Music*, is used when a part instead of ascending or descending the proper interval, to form a *cadence*, proceeds by some other interval. For instance, when the bass, instead of rising a fourth or falling a fifth, ascends only by a tone, or semitone-major.



Thus, in Ex. 1, where the bass, instead of proceeding to C, the key-note, after G, goes to A. Thus also, in Ex. 2, after E, the ear would naturally expect to hear A the key-note; but this is avoided, and F put in its place.

The interrupted and disappointed cadences in recitative are innumerable: being governed by the dialogue; in which a full and formal close from the chord of the fifth to the key-note seldom occurs, except in the last bar of the recitation preceding an air.

CADEQUIA, in *Geography*, a sea-port town of Spain in Catalonia; 5 miles N.E. of Rosas.

CADER, a town of Asia, in the Arabian Irak, on the Tigris; 100 miles S. of Bagdad.

CADER-IDRIS, the CHAIR OF IDRIS, a lofty mountain near Dolgellau in Merionethshire, North Wales, in height the second of the principality, is so called from a tradition of its having been a fortress belonging to Idris, who is supposed to have been a prince of these parts in ancient times. It is also said that Idris was a famous poet, astronomer, and philosopher, and that the summit of Cader-Idris was his favourite seat and observatory. Mr. Rowland in his "Mona Antiqua," (p. 84.) says, that the ancients decyphered astronomy by the name of Edris; a name attributed to Enoch, whom they took to be the founder of astronomy; whence he derives Cader-Idris; and he adds that not far off there is another place, called "Cerrig-Brudyn," i. e. the astronomer's stones or circle. Accordingly the former of these places may have been the residence, and the latter the observatory of those druids in the Isle of Anglesey, who applied particularly to the study of astronomy.

This mountain rises on the sea shore, close upon the northern side of the estuary of the small river Dilynwyl, about a mile from Towyn. It proceeds with almost a continual ascent, first northwards for about 3 miles, then for 10 miles further it runs E.N.E. giving out for its summit a branch nearly 3 miles long, in a south-westerly direction, parallel to the main ridge. It is very steep and craggy on every side, but the southern descent, especially to the border of Tallylyn lake, is the most precipitous, being nearly perpendicular. The breadth bears but a small proportion to its length; a line passing along its base and intersecting the summit, would scarcely equal 4½ miles; and in the other parts it is a mere ridge, whose base hardly ever exceeds 1 mile in breadth. Its peak, called "Pen-y Gader," is said by Pennant (Snowdonia, p. 98.) to be 2850 feet above Dolgellau. Cader Idris is the commencement of a chain of primitive mountains, extending in the N.N. easterly direction, and including the Arrans and the Arennigs. It is much more lofty and craggy than the flates and secondary mountains, which surround

round it, and consists of siliceous porphyry, and siliceous schistose porphyry, both in mass and intersected by veins of quartz, argillaceous porphyry in mass, and granitic of Kinnaw in mass, composed of quartz and schist. Here are found also several rocks, containing the component parts of quartz and porphyry, with so great a proportion of white and smoky-coloured greasy-looking quartz as almost to conceal the other ingredients. In several specimens the felspar, having been decomposed, has fallen out and given the quartz a porous appearance, which accounts for the porous lava said by some travellers to have been found here. There are no mines in Cader-Idris, or the neighbourhood. At the foot of this mountain is a small lake, called "Llyn-y-Gader;" above the exterior ridge is another deep and clear lake, kept constantly full by the numerous tributary torrents that fall down the surrounding rocks: and at a still higher elevation is a second lake, clear as glass, and overlooked by steep cliffs so as to resemble the crater of a volcano, accurately represented in Wilson's excellent view of Cader-Idris. Some travellers have mentioned their having found lava and other volcanic productions here: but Mr. Aikin and his companions, who ascended this mountain, could discover nothing of this kind; nor did the water of the lake appear to differ in any respect from the purest rock-water, though it was repeatedly tried with the most delicate chemical tests. A clear, loud, and distinct echo repeats every shout that is made near this lake. On the summit of the mountain is a small plain, with two rocky heads of nearly equal height, one looking to the north, the other to the south. In the former direction Snowdon and its dependencies shut up the scene; on the west was seen the whole curve of the bay of Cardigan, bounded at a vast distance by the Caernarvon mountains, and nearer, dashing its white breakers against the rocky coast of Merioneth. The southern horizon was bounded by Plinlimmon, and on the east the eye glanced over the lake of Bala, the two Arennig mountains, the two Arrans, the long chain of the Berwyn mountain, to the Breiddyn hills on the confines of Shropshire; and dimly in the distant horizon, was beheld the Wrekin, rising alone from the plain of Salop. On the opposite side of the mountain, by which these travellers descended, they found another beautiful mountain lake, whose cold clear waters discharge their superabundance in a full stream down the side of the mountain. All these waters abound with trout, and in some is found the Gwyniad, a fish peculiar to rocky alpine lakes. Following the course of the stream, they came on the edge of the craggy cliffs that overlook Tallylyn lake; and after a long and difficult descent they arrived on the borders of Tallylyn, where they entered the Dolgellau road. The plants which they found were lobelia dortmanna, in all the lakes, especially in Llyn-y-Gader; saxifraga hypnoides; S. nivalis; lycopodium selago; L. clavatum; festuca vivipara; vaccinium vitis-idaea; gnaphalium dioicum; pteris crispa; narthecium ossifragum; pinguicula vulgaris; sedum rupestre; S. telephium, &c.

Beneath Tyrrau Mawr, one of the points of Cader-Idris, and on the right are some remains of circles of upright stones, with many *carns*, and several *maeni-hirion*, of rude, upright columns. At a small distance beyond these, near the river Krogennan, are the remains of "Llys Bradwen," or the palace of Ednawain, chief of one of the fifteen tribes of North Wales, about the reign of Gruffydd ap Cynan, measuring nearly 30 yards square: having an entrance 7 feet wide, with a large upright stone on each side as a door-case: the walls are rude and uncemented. Aikin's Tour. 8vo. 1797. Evan's Cambrian Itinerary. 8vo. 1801.

CADEROUSSE, a town of France, in the country of Venaissin; 1 league W. of Orange.

CADES, in *Ancient Geography*. See KADESH.

CADESIA, a town of Persia, in the province of the Babylonian or Chaldean Irak, on the verge of the Desert, 61 leagues from Bagdad, and 2 stations, or 15 parasangs, from Cusa. It became famous among the Arabs for the defeat of the Persians, in the battle fought in the 15th year of the Hegira, (A.D. 636.) under the caliphate of Omar, by Saad, son of Abuvacaz, general of the Arabs, against Rustam, surnamed Ferozkhad, general of Jezdegerd, the last king of Persia, of the dynasty of Chosroes, or of the Sassanides. The army of the Moslems consisted of 30,000 men; but that of the Persians was much more numerous. The combat lasted three days, and the several periods of it were distinguished by their peculiar appellations: the first, from the seasonable appearance of 6000 of the Syrian brethren, was denominated the day of *succour*. The day of *concussion* expressed the disorder of one, or, perhaps, of both, of the contending armies. The third, a nocturnal tumult, received the whimsical name of the night of *barking*, from the discordant clamours which were compared to the inarticulate sounds of the fiercest animals. The morning of the succeeding day determined the fate of Persia; and a seasonable whirlwind drove a cloud of dust against the faces of the unbelievers. The clangor of arms was re-echoed to the tent of Rustam, who was gently reclining in a cool and tranquil shade, amidst the baggage of his camp, and the train of mules, that were laden with gold and silver. On the sound of danger he started from his couch; but he was overtaken in his flight by a valiant Arab, who caught him by the foot, struck off his head, hoisted it on a lance, and instantly returning to the field of battle, carried slaughter and dismay among the thickest ranks of the Persians. This battle has been justly described by the epithets of obdurate and atrocious; and the Saracens acknowledge a loss of 7500 men. The standard of the Persian monarchy was overthrown and captured in the field; which standard was a leathern apron of a blacksmith, who, in ancient times, had arisen the deliverer of Persia; but this badge of heroic poverty was disguised, and almost concealed by a profusion of precious gems. After this victory, the wealthy province of Irak, or Assyria, submitted to the caliph; and his conquests were firmly established by the speedy foundation of Bassora, a place which ever commands the trade and navigation of the Persians. D'Herbelot. Bib. Orient. Gibbon's Hist. vol. ix. p. 367, &c.

CADET, the younger brother of a family; a term naturalized in our language from the French.

In Paris, among the citizens, the cadets have an equal portion with the eldest; in other places the eldest has all. According to the custom of Spain, one of the cadets, in great families, takes the mother's name.

CADET also denotes a young gentleman-soldier, who, to attain to some knowledge in the art of war, and in expectation of preferment, chooses to carry arms as a private man in a company of foot.

Cadet differs from volunteer, as the former takes pay, though only that of a private man, whereas the latter serves without pay.

In 1682, the king of France established companies of cadets, wherein the young gentry were trained up to war, and taught the arts and exercises belonging thereto, as riding, fencing, mathematics, &c.

CADÉ, CLAUDE, in *Biography*, one of the physicians to Lewis XIV. was born at a village near Troyes, in 1695. Applying diligently to the study of medicine and surgery, at the age of 21, he was sent to Paris, and admitted among the attending surgeons at the Hotel Dieu, where, he profited so well by the opportunities which offered for information, that, in 1724, he was admitted of St. Genevieve, and at-

tained to considerable eminence in his profession. He died at Paris, Feb. 10, 1745. His only work is "Observations sur les Maladies scorbutiques," Paris, 1742, 12mo. which was republished, two years after, with additions. His two sons, Lewis Claude, and Anthony Alexis, who were both brought up to the practice of medicine, distinguished themselves by their publications on the subjects of chemistry and pharmacy, of which the following are most known: "Analyse Chymique d'une Eau Minerale nouvellement decouverte a Passy," 1757, 12mo.; "Reponse a plusieurs Observations de M. Baumé sur l'Æther Vitriolique, sur le Mercure precipité per se, sur la Reduction de Chaux, de Cuivre, et d'Étain a travers les Charbons," Paris, 1775, 4to.; besides numerous communications to the Academy of Sciences at Paris, and *Curios. Nat.*; of both which Lewis Claude was member. *Eloy. Dict. Hist.*

CADETES, in *Ancient Geography*, a people of Gaul, towards the maritime parts of Armorica. *Cæsar*.

CADEUMA, a town of Ethiopia, near Egypt. *Pliny*.

CADGE, a round frame of wood on which falconers carry their hawks when they expose them to sale.

CADGOLLS, in *Geography*, a mountain of Scotland, in the county of Ross; 6 miles S.E. of Tain.

CADI, among the Turks and Saracens, denotes an ordinary judge, who decides in all civil controversies within the district of a town or city, though subject to appeals to superior judges.

The word is Arabic *قاضي* or *قاضى*, q. d. *judge*, formed of *قضى*, to judge. *D'Herbelot* writes it *cadhi*.

The term *cadi*, used absolutely, denotes the judge of a smaller town or village who judges, without appeal, all litigious affairs, not only of the musulsans, but even those of the Jews and Christians; those of cities being called *mollas*, or *moulas*, sometimes *mouli-cadies*, or *great cadies*. The place of a *cadi*, or of a *molla*, is frequently occupied by a lieutenant, called *naib*, who judges, like them, without appeal; he is a *muderis*, who runs the career of magistracy, and is generally appointed *cadi* the following year, and sent to another post. The *cadis* remain in this rank, and obtain no other advancement besides that of a tribunal, more extensive, and, consequently, more lucrative. They, nevertheless, become *mollas* of an inferior rank; such are those of Bagdad, Philopopolis, &c.; but they cannot become *cadileschers*, *muftis*, &c. unless they enter the grand mosque of Soliman I. and continue their studies. The tribunal of justice is denominated *makkama*, or *mekméé*.

We find numerous complaints of the avarice, extortion, and iniquity of the Turkish *cadis*; all justice is here venal; the people bribe the *cadis*; the *cadis* bribe the *moulas*; the *moulas* the *cadileschers*; and the *cadileschers* the *muftis*.

It is usually vain to appeal, even if an appeal were allowed, from the sentence of the *cadi*; since the affair is never heard anew, but judgment is passed on the case, as stated by the *cadi*. The tribunal, whence these *cadis* issue their decisions, is sometimes at their own houses; but never at any place which corresponds with the idea annexed to so solemn an employment. In an empty mean apartment, the *cadi* is seated on a mat or wretched carpet; and on each side of him are his clerks and some domestics. The door is open to every body; the parties appear; and there, without interpreters, advocates, or attorneys, each pleads his own cause. Squatted on the ground, they state the facts, dispute, and reply again in their turns, sometimes the debates are violent; but the cries of the clerks, and the staff of the *cadi*, soon restore order and silence. Gravely smoking his pipe, and twisting the end of his beard round his finger, this judge listens, interrogates, and concludes by pronouncing a sentence without appeal, which at most allows but two months

delay. The parties are never very well satisfied; they retire, however, with respect, and pay a fee, estimated at one-tenth of the litigated property, without murmuring at the decision, as it is invariably directed by the "infallible Koran." Venality, indeed, is so barefaced, and so impudent, that the parties may bargain for their cause with the *cadi*, as they would for any common commodity. Corruption is habitual and general; nor is it likely to be otherwise in circumstances, where integrity may be ruinous, and injustice lucrative; where each *cadi*, deciding without appeal, fears neither a revision of his sentence, nor punishment for his partiality; and where, in short, the want of clear and precise laws affords a thousand ways of avoiding the shame of an evident injustice, by opening the crooked paths of commentaries and interpretations. The *cadis*, nevertheless, are often cashiered, and punished for notorious injustice with the bastonade and mulcts; but the law forbids them to be put to death. Constantinople has had *cadis* ever since the year 1390, when Bajazet I. obliged John Palæologus, emperor of the Greeks, to receive *cadis* into the city, to judge all controversies happening between the Greeks and the Turks settled there. In some countries of Africa, the *cadis* are also judges of religious matters. Among the Moors, *cadi* is the denomination of their higher order of priests, or doctors, answering to the rabbins among the Jews.

CADI, in *Ancient Geography*, a town of Mysia, according to *Steph. Byz*; but *Strabo* places it in Phrygia.

CADIA, in *Botany*, (the Arabic name of the plant,) *Forsk. Arab. 90. Vitman Summa Plant. tom. iii. p. 141. L'Heret. Mag. Encyc. tom. v. p. 20. Vent. vol. iii. 374. (Panciatica, Hort. Pan. 1793. p. 9. Spædoncea, Defont. Dec. Philos. v. 56. p. 260.)* Clafs and order, *decandria monogynia. Nat. Ord. Leguminoſe, Vent.*

Gen. Ch. *Cal.* bell-shaped, five-cleft. *Cor.* petals five, rarely six or seven, inversely heart-shaped, equal. *Stam.* filaments ten, rarely more, awl-shaped, a little curved, gibbous at their base, the length of the corolla, ranged in a circle near the petals; anthers oblong, incumbent. *Pist.* germ pedicelled; style simple. *Peric.* legume linear, compressed, bent at the end, membranous, many-seeded. *Seeds* oblong, shining.

Eff. Ch. *Calyx* five-cleft; petals equal, inversely heart-shaped; legume many-seeded.

Sp. C. *purpurea*, Ait. Hort. Kew. 3. 492. Picc. Hort. Pan. 9, with a coloured figure. A shrub. *Stem* about three feet high; branches and petioles pubescent. *Leaves* alternate, unequally pinnate; leaflets numerous, sometimes opposite, sometimes alternate, linear, revolute, the nerve commonly ending in a little point; stipules bristle-shaped, caducous. *Flowers* the colour of a peach-blossom, without scent; racemes few-flowered, axillary, pendant, shorter than the leaves. *Legume* less than a span in length. *Seeds* eight or ten. A native of Arabia.

CADIANG, a kind of lentiles in Batavia, and the adjacent country, which makes a considerable part of the food of the common people. Dr. Hawksworth's Account of the Voyage to the South Seas, vol. iii. p. 733.

CADIAPATAM POINT, in *Geography*, lies on the coast of Malabar, in the East Indies, near the extremity of the peninsula of India, to the west of Cape Comorin. Poolytopu village is situated on the sea-coast, E.N.E. 4 geographical miles from this point. N. lat. 8° 9' 18". E. long. 77° 26' 35".

CADIAR, a town of Spain in Grenada; 28 miles S.E. of Grenada.

CADIERE, LA, a town of France, in the department of the Var, and district of Toulon; 3 leagues N.W. of it.

CADILESCHER, CADI-LESKER, or KADILESKER, a capital

capital officer of justice among the Turks, answering to a chief-justice among us.

The word comes from the Arabic *ladi*, judge, the particle *al*, and *efchar*, army; as being at their first institution chiefly judges of the soldiery; of whose causes they have still the sole cognizance. D'Herbelot writes the name *cadilefcher*, or *cadhi efcher*.

It is said that this authority was originally confined to the soldiery; but that at present it extends itself to the determination of all kinds of law-suits; yet, nevertheless, subject to appeals.

At Constantinople there are two cadilefchers, who superintend the concerns of the Ottoman empire; one of Romania, or of Turkey in Europe, and the other of Natolia, or of Turkey in Asia. They were formerly the judges of military men, the former for European Turkey, and the latter for the Asiatic countries, when the Sultan commanded them in person. The cadilefcher of Romania was then charged to decide on the affairs of the Mussulmans, and the other on those of the tributary subjects. For some time past, the former has the pre-eminence over the latter, and determines alone all the causes carried to his tribunal, by the sole will and at the request of the plaintiffs. The tribunal of the cadilefcher of Natolia has been a long time suppressed as useless. They both assist at the divan of the grand visir, hear and discuss the business brought before them; after which the cadilefcher of Romania alone pronounces the sentence. The musti presents annually a list to the sultan for the nomination of two cadilefchers, of the stambol effendi, of the mollahs of Mecca and Medina, of those of Bursa, Adrianople, Cairo, and Damascus, as well as of those of Jerusalem, Aleppo, Smyrna, Larissa, Salonica, Scutari, Galata, and Aijup, which is one of the suburbs of Constantinople. It is commonly according to the rank of seniority that the choice is made, when favour does not advance some protected person, or the son of some great man. When chosen, the cadilefchers remain in place only a year; but the cadilefcher of Natolia generally succeeds that of Romania, and the former has before passed through the same rank. To them it belongs to appoint all the simple cadis of the empire; and this circumstance renders their place, in a country where every thing is venal, very lucrative, independently of the appanages which they possess. The cadilefcher of Romania appoints the cadis of Turkey in Europe, and that of Natolia appoints those of Asia and Egypt. Subordinate to them is the stambol-effendi, molla, or judge of the capital. See STAMBOL-EFFENDI. The cadilefchers are sometimes advanced to the rank of *musti* (which see); but according to the established order, he must be chosen from among the cadilefchers of Romania, and those who have occupied that employment. Those who aspire to the office of cadilefcher must pass through a previous course of education. For this purpose there are attached to the imperial mosques of Constantinople, Bursa, and Adrianople, *madrestes*, or colleges, to which young people are sent, from all parts of the empire, to be instructed in the law of the prophet, in religious, civil, and criminal jurisprudence, and to learn all the opinions and all the subtleties of the commentators on the Koran. They then undergo various examinations, and when they are thought to be well informed, the rank of *muderis* or professor is assigned to them. These colleges were founded by different sultans. The first was established at Nicæa, in the year 1330, by Orkhan. They enjoy a considerable revenue, and provide for the support of 2 or 3 thousand scholars. The *muderis*, who are not willing to follow the career of professor and obtain the eminent rank of molla, solicit of the cadilefcher the place of *cadi*, which is easily granted them

for a pecuniary consideration. The *muderis*, who are ambitious of obtaining the most important places, such as those of molla, cadilefcher, and musti, pass, after fresh examinations, to the mosque of Soliman I. and wait till their turn, their merit, or their interest procures for them an appointment. Eight of them, under the appellation of *makhredjé*, are appointed every year mollahs, or judges, of the towns of Jerusalem, Aleppo, Smyrna, Larissa, Salonica, Scutari, Galata, and Aijup. Four among the latter, are afterwards named to the cities of Bursa, Adrianople, Cairo, and Damascus, and the following year two of these become mollahs of Mecca and of Medina; from among these last is taken the stambol-effendi. Thus, successively in their turn, they arrive at the place of cadilefcher, and even of musti. But the *muderis*, before they can attain to this distinction, must either be protected, or manifest ardent zeal for religion, distinguished talents, great application to study, and very austere manners. The mollahs, cadilefchers, and others who are not employed, and who are waiting for offices, have appanages or benefices, called "*Arpaliks*." Several obtain inferior tribunals, where they place naibs, who discharge their functions, and to whom they grant only a part of the income.

Tournefort (*Voyage Lev. tom. ii. lett. 14.*) erroneously asserts, that at Constantinople, a person could appeal from the sentence of a *cadi*; whereas Europeans only enjoy that privilege, when the sum in litigation exceeds 4000 aspres, or nearly the value of 66 livres, supposing the piastre at two livres. In all the towns of Turkey, the molla, the *cadi*, and the naib, judge without appeal; they condemn to fines, to corporal punishment, or to death, without allowing to the delinquent, or person accused, the power of having recourse to another tribunal. Pococke, *Egypt*, p. 170. Volney's *Travels in Egypt and Syria*, vol. ii. p. 389, &c. Olivier's *Travels in the Ottoman Empire*, &c. p. 172, &c.

CADILLAC, or CADILHAC, in *Geography*, a town of France, in the department of the Gironde, and chief place of a canton in the district of Bourdeaux, seated on the banks of the Garonne, and containing a fine castle, with a collegiate church; $5\frac{1}{2}$ leagues S. S. E. of Bourdeaux. The place contains 1326, and the canton 11,200, inhabitants; and the territory includes $97\frac{1}{2}$ kilometres and 16 communes. N. lat. $44^{\circ} 37'$. W. long. $0^{\circ} 15'$.

CADITES, an appellation given by Plott to a kind of figured stone, resembling a cadus or barrel.

The cadites swells in the middle, and goes tapering to both ends, being divided lengthwise, with such equidistant lineaments, as are usually made by the staves of a barrel, but without hoops, nor yet hollow.

CADIZ, in *Geography*, called *Gades* by the Romans, by the Phœnicians *Gadir* or *Gaddir*, i. e. a hedge or fenced place, and by some of the ancients *Tartessus*; a sea-port city of Spain, seated on a promontory in the extremity of a peninsula, and joined to the isle of Leon by a causeway. Towards the east it is washed by the gentle waves of a well-protected road; but towards the west it is open and exposed to the fury of the ocean. Both the harbour and bay of Cadiz are secure and spacious; the entrance being defended by fort Matargordo, and by fort Puntal standing opposite to it on a point of that neck of land on which Cadiz is built. The entrance into the harbour betwixt these forts and the points on which they stand, is reckoned to be about 500 fathoms wide. During the time of ebb, a considerable part of the harbour is dry. The outer and furthestmost bay, which begins between La Rota and San Sebastian, both of which are fortified, and extends to Puerto de Santa Maria, is divided into two parts by the rocks of Los Pueros and Diamante. On the south side Cadiz is inaccessible on ac-

count of the high and steep shore; on the north side also the access is dangerous, by reason of many sand-banks and rocks which lie under the water; and though the south-west side admits of landing, it is defended by fort Santa Catalina, or St. Catharine. On the S. S. W. point is a ridge of rocks, part of which, at full sea, is covered with water; the outermost of these is a small island, on which are a guard and light-house, with two chapels, and also fort San Sebastian. The city, therefore, is susceptible of attack only at the narrowest part of the neck of land lying betwixt it and the S. E. part of the island of Leon; and on this side it is also fortified.

The best view of Cadiz and its environs is that which may be had from the signal tower; and hence you look immediately down upon the houses, whose flat roofs, covered with a white cement, exhibit a singular but very pleasing appearance. Towards the west, you command the ocean, with numerous vessels, leaving or entering the harbour; and on the land side, you discover the four interesting sea-port towns of Rota, Santa Maria, Puerto Real, and Caraca, with the isle of Leon and the connecting causeway; whilst a rich country, verging towards the setting sun, bounds the distant prospect. The streets of Cadiz are narrow, and yet well-paved and clean. The most beautiful part of the city looks towards the Puerto de Santa Maria, where the houses are lofty, built of white free-stone, brought from thence across the bay, and ornamented with painted balconies. In front they have a wide parade, well gravelled, planted with trees, and communicating with the sea-road, where the merchantmen and ships of war find shelter. Two considerable squares, one for the market, the other called Plaza de San Antonio, with the Calle-ancha, or Broad-street, joining to it by way of mall, contribute both to ornament and health; and as the whole city is nearly encompassed by a rampart, this forms an elevated, airy, and delightful promenade, much frequented in the evenings. A small part towards the west is bordered by five rows of elms, forming four avenues, adorned with elegant seats, and constituting the Alameda. Along the ramparts is also a row of houses; and the shaded parts towards the south serve for the lower classes to take their siesta, and enjoy the luxury of the sea-breeze. The inhabitants of Cadiz supply the want of other promenades by parties of pleasure in the environs of the city. With this view they go out in carriages either to Puerto de Santa Maria, where are fine avenues and gardens, or to Chielana, near the isle de Leon, which is almost entirely covered with country-houses, and commands a very fine view of the bay, the town, and the sea. Although the extent of Cadiz is very limited, yet its houses are crowded together and are very lofty, so that the population is estimated at between 75 and 80,000. (Fischer's Travels in Spain.) Townsend (Journey through Spain, in 1786 and 1787), reckons them at no more than 65,987; but he says, that about 10 years since, they were computed at 85,000, besides about 20,000 people who entered daily from the sea and from the adjacent country. The most distinguished buildings are the two cathedrals, the ancient and the new; the former is chiefly remarkable for some good pictures, and for its treasure, consisting of gems, silver candlesticks, and lamps, numerous and bulky; three custodias, one of which, constructed of the finest silver, weighs 51 arrobas, or more than half a ton; and another consists mostly of solid gold. The new cathedral is a huge pile, with large and lofty domes, and many well-proportioned pillars; but upon the whole heavy and disgusting. Near the cathedral is the Plaza de Toros, appropriated to the bull-feasts, built entirely of wood. At a small distance are the observatory, ill provided with instruments, and the academy for painting, sculp-

ture, and architecture. In the contents are some few good pictures. Of the three hospitals, one called the Royal or Military Hospital, is designed for soldiers, and accommodates 80 students, who are maintained and educated at the king's expence. It has a good botanical garden, and a theatre for dissections, furnished with subjects from among the patients. The other two, one set apart for women, and the other for men, are distinguished for their neatness. Besides these hospitals for the sick, Cadiz has a retreat for 47 widows, founded by a Turkey merchant, who died in 1756. But the most interesting establishment in this city, and the best conducted of its kind in Spain, is the hospicio, or general workhouse. It accommodates (at an average of the year 1787) 855 paupers of every nation, age and sex; who are either pait labour, or instructed and employed in useful arts; and encouraged in proportion to the amount of their labour.

The heat of the climate at Cadiz is moderated by the sea-breeze; so that even in summer it enjoys a happy temperature, and few places are more healthy; but it becomes more intense whenever the solano or south-east wind prevails. This passes to them over the scorching plains of Africa; and such is its effect, that all the passions are inflamed, and during its prevalence, the inhabitants, who are most irritable, commit every species of excess.

This city abounds with almost all the necessaries and luxuries of life. Its fruits are cheap, and its most remarkable wines are sherry and paretti, both of which are procured from Xeres and its vicinity. But they are much distressed for want of fresh water, which they are obliged to fetch from Puerto de Santa Maria; and their ice, which is used for cooling it, is brought from Sierra, at the distance of 13 leagues. For domestic purposes, such as washing, &c. they collect their water in subterraneous cisterns, but being subject to waste by evaporation, it is procured with difficulty, and consumed with great economy. For preventing a scarcity of corn, and in order to ensure a profit by the sale of it, the city has established a public granary, from which the bakers are supplied at a given price; and according to that the magistrates regulate the assize of bread. The theatre at Cadiz is large, elegant, and commodious; the principal actors are Italians; and the inhabitants are chiefly attracted to it by the comedies called Saynetes, and the whimsical dances denominated Voleros. In Lent, whilst the most polished orators confine themselves to churches, other preachers harangue the multitude in the market-place, with a vehemence of voice and gesture suited to their congregations. Among the Franciscans, when the penitential sermon is finished, the lights are extinguished, and instantly scourges are applied. When the market-place is not occupied by orators, the scribes take possession of it with their benches, at which they sit with pen, ink, and paper, to write and read letters of all sorts, and to execute every kind of deed. In the year 1720, the commerce, which for two centuries had proved a source of wealth to Seville, was translated to Cadiz; and from that period its merchants have carried on a very considerable trade, which, however, has ebbed and flowed, according to incidental circumstances. Indeed, this port has been the emporium of commerce to the West Indies and America. Townsend informs us, that its whole trade employs about one thousand vessels, of which nearly one-tenth is Spanish. In 1784 the value of exports to America amounted, in Spanish and foreign produce, to 3,621,443 pounds sterling; and the value of imports in money and jewels was 8,297,164 l. and in merchandize 2,990,757 l. The articles of merchandize are cochineal, indigo, cacao, sugar, hides, Vicuna wool, cotton, copper, tin, tobacco, different kinds of wood, &c, which are distributed

distributed into different countries. Among the foreign merchants of all nations are many Germans, from Hamburg, Bohemia, and Augsburg. The former constitute the class called Hanseatics, and according to ancient convention enjoy considerable privileges. To foreigners indeed Cadiz is much indebted for various means of literary intercourse and improvement, as well as for the wealth resulting from an extended commerce. The manufactures of Cadiz are principally restricted to ribbons and linen; and several persons are employed in knotting silk, and marking stockings received from Nîmes, and intended to be shipped for the American settlements. The most interesting branch of industry in the environs of Cadiz is the manufacture of salt; produced by the numerous salt-pools of the isle of Leon, with little labour or expence, because the sun and air quickly cause the water to evaporate, and leave the salt crystallized. Cadiz is the see of a bishop, suffragan of Seville.

The old *Gaddir* was built by the Tyrians; from them it was transferred to the Carthaginians; and afterwards it fell under the dominion of the Romans. It was recovered from the Moors in 1260. In 1596 Cadiz was taken and plundered by the English; and an unsuccessful attempt was again made for seizing it in 1702. During the late and present war it has been held by the English, at different periods, in a state of blockade. In some of the old Spanish chronicles, this city is denominated *Calis*, and hence English seamen usually call it *Cales*. The tide runs here N.E. and S.W.; and it is high water at spring tides at half past four o'clock. N. lat. $36^{\circ} 31' 7''$. W. long. $6^{\circ} 11' 50''$.

CADIZ, a town on the north coast of the island of Cuba, in a bay of the same name, about 164 miles E. of Havannah, and 50 N. of Spiritu Santo. Nat. lat. $23^{\circ} 2'$. W. long. $79^{\circ} 55'$. A river of this name runs into the sea, 10 miles E. from the town of Cadiz.

CADIZADELITES, a sect among the Mussulmen, resembling the ancient Stoics, who avoid all feasting and diversion, and affect an uncommon gravity in all they do or say. Those of them who inhabit the frontiers of Hungary, &c. agree in many things with the Christians, and drink wine even in the fast of the Ramazan.

They read the Slavonic translation of the Bible, as well as the Alcoran. Mahomet, according to them, is the Holy Ghost, which descended on the apostles at the feast of Pentecost.

CADLOCK, in Botany. See *SINAPIS*.

CADMA, in Entomology, a species of *PAPILIO* found in America. The wings are indented, fulvous; disk of the posterior pair beneath white, with two ocellated spots, the pupil of which is double and blue. Drury, &c.

CADMA, in rural Economy, a term applied to the smallest of the pigs which a sow has at one farrowing, and which is commonly much less than any of the others in the same litter.

CADMEAN Letters, the ancient Greek or Ionic characters, such as they were first brought by Cadmus from Phœnicia; whence Herodotus also calls them *Phœnician letters*. See *CADMUS*.

According to some writers, Cadmus was not the inventor nor even the importer of Greek letters, but only the modeller and reformer thereof; and it was hence they acquired the appellation *Cadmean*, or *Phœnician letters*: whereas before that time they had been called *Pelagian letters*. See *LETTER* and *WRITING*.

CADMIA, in Chemistry. This term is entirely obsolete; as, however, it is of frequent occurrence in the writings of the older chemists, it may be proper to explain its meaning. Cadmia, according to Pliny, (*Hist. Nat. lib.*

xxxiv. ch. xxii.) was the common name given to that earthy substance which was employed by the Cyprian artists in the manufacture of brass: hence it is plain that it contained zinc, and was probably no other than the calamine of the moderns. The same word is also applied by the above-mentioned author to the metallic foot or ashes which collected in the chimnies of the brass founderies. It was an article of considerable use in the Roman pharmacopœia, and three varieties of it were distinguished by separate names: that called *Copnitis* resembled ashes, was the lightest and best esteemed, and was deposited at the farthest extremity of the chimney; the second kind, named *Betryitis*, depended in clusters from the central and lower part of the chimney, and was in high esteem for disorders of the eyes; the third variety, called *Placitis*, was a metallic scoria adhering to the sides of the furnace, and was used for wounds and cutaneous eruptions; its colour was either blue, or black, and, no doubt, contained a considerable quantity of copper.

Succeeding chemists injudiciously ranked as *sessil cadmia* not only calamine, but the arsenical and bismuthic cobalt ore, and under the term *Cadmia fornacum* included all the kinds of metallic sublimes that are deposited in the chimnies of smelting houses, whether of copper, brass, lead, tin, &c.

CADMUS, q. d. *a man from the east*, in *fabulous History*, is reported to be a native of Sidon in Phœnicia, son of Agenor, king of that country, and brother of Europa. Having been sent by his father's order in quest of his sister Europa, who had been transported by Jupiter to the Isle of Crete, and being forbidden to return without her, he wandered for a long time to little purpose, and at length, despairing of success, he settled at Tanagra upon the river Ilmeme in the Grecian province of Bœotia. He afterwards built Thebes, and laid the foundation of his new kingdom. The fable, however, says, that the walls of the city were raised by the harmony of Amphion's lyre, and that he only erected a citadel to which was given his own name, and merely laid the foundation of Thebes. When the city was finished, he married Hermione, or Harmonia, the daughter of Mars and Venus; and his nuptials were graced with the presence of all the gods and goddesses, Juno excepted, each of whom conferred some gift upon the bride. His kingdom is said to have been very flourishing, and in the progress of his reign he was much beloved and respected by his subjects; though the anger of Juno, who envied his felicity, occasioned many misfortunes, which harassed and grieved him before its termination. By his wife Harmonia, he had a son named Polydorus, who succeeded him in the sovereignty of Thebes, by whom it was transferred to his son Labdacus, the father of Laius, to whom it descended, and who was the husband of Jocasta, the mother of Œdipus. He had also four daughters, viz. Ino, who threw herself into the sea together with her children; Agave, whose son Pentheus was torn in pieces by the Bacchantes, for profaning the rites of Bacchus; Autonoe, the mother of Œtæon; and Semela, the mother of Bacchus by Jupiter, who afterwards slew her with his thunderbolt. After having experienced many distressing vicissitudes, Cadmus is said to have retired with his wife Harmonia to the coast of Illyria, where they were both changed into serpents, or as some interpret the fable, where they degenerated from their pristine civility into barbarians. The fable also reports, that he fought with a mighty dragon, whose teeth he afterwards strewed on the ground, and from them was produced an army of men, who fought against one another, till they were all killed except five: whence a dearly-bought victory obtained the appellation of "*Victoria Cadmea*." Some say that he

he was driven from the throne of Thebes by his grandson Pentheus; and that having commanded the Enchelæ who were at war with the Illyrians, he subdued the latter, and surrendered the government to his son Illyrius, who was born after his retreat to this country. To Cadmus, Greece is supposed to have been indebted for the first introduction of letters; which are said to have been of Phœnician origin, and 16 in number. Four others were afterwards added by Palamedes, and four by Simonides. He is also said to have been the first who established schools, and who taught the Grecians trade and navigation; and the epithet Cadmean, given to brass, is ascribed to him, because he was the inventor of it, and because he first introduced the use of it into those parts. Wherever he came he also introduced the religion of his country, which consisted in the worship of Dionusius, and in the rites denominated by the later Greeks the Dionusiaca. They seem to have been much the same with the Cabiritic mysteries, which Cadmus is said to have established in Samothracia.

The arrival of Cadmus in Greece is placed by Dr. Blair about 1493 years B. C. and his death, at the age of 112 years, is said to have happened in the year 1432 B. C. The arrival of Cadmus, and the foundation of Thebes, are dated in the Arundelian marbles the 64th year of the Attic æra, 1519 B. C. But Sir Isaac Newton, and those who adopt his chronology, allow Cadmus to have flourished but 1045 years before the Christian æra. Sir Isaac imagines, that the emigration of the Phœnicians and Syrians was occasioned by the conquests of David. "These people," says he, (Chren. p. 13.) "fleeing from Zidon and from David, came, under the conduct of Cadmus, and other captains, into Asia Minor, Crete, Greece, and Lybia, and introduced letters, music, poetry, metals and their fabrication, and other arts, sciences, and customs of the Phœnicians. This happened about 140 years before the Trojan war. It was about the 16th year of David's reign that Cadmus fled from Zidon. At his first coming into Greece, he sailed to Rhodes, and thence to Samothrace, an island near Thrace, on the north side of Lemnos, and there married Harmonia, the sister of Jasius and Dardanus, which gave occasion to the Samothracian mysteries."

Bochart has, with great ingenuity and learning, attempted to solve the enigmas, under which the history of Cadmus is represented. He supposes, that Cadmus was a fugitive Canaanite, who fled from the face of Joshua; and that he was so called from being a Cadmonite, which is a family mentioned by Moses. Gen. xv. 9. These Cadmonites were the same with the Hivites, and were called Cadmonim, or Easterlings, because they inhabited mount Hermon, the most eastern part of Canaan; and Bochart supposes, that Harmonia derived her name from that of this mountain. The fable of Cadmus and Harmonia being transformed into serpents he ascribes to their having retained the common name of Hivites, which in the Syriac signifies serpents. He explains the rest of the fable, concerning the teeth of the dragon, which were sown, and the armed men which sprung from them, upon the same principle. The learned Bryant (Anal. Anc. Mythol. vol. ii. 138.) differs from Bochart in a variety of particulars. Indeed, he controverts the existence of such a person as Cadmus, and suggests several objections against the account given by Herodotus and others of the Cadmians having brought letters from Phœnicia into Greece. See LETTERS. The rites of Bacchus, he says, could not have been brought by Cadmus into Greece, if Bacchus was his descendant, or the son of his daughter Semele. It is said, that Cadmus was a Phœnician; but Diodorus Siculus (lib. i. p. 20.) speaks of him as

an Egyptian, and a native of Thebais. Pheracydes Syrus also represents him as an Egyptian; and by others he is said to have been the son of Antiope, the daughter of Belus, and consequently of Babylonish extraction. It was from the same part of the world that the mysteries, in which Cadmus was so well skilled, were imported; and here it was, that he was taught hieroglyphics, and the other characters, which are ascribed to him. These arts he carried first to the coast of Sidon and Syria; and from thence he is supposed to have brought them into Greece. Mr. Bryant having stated the origin and country of Cadmus, proceeds to show that the accounts which are given of him by Herodotus, Diodorus, Strabo, and Pausanias, are insufficient to prove the reality of such an adventurer. It is not credible, he says, that a person should so often rove upon the seas amid such a variety of nations, and reside among them at his pleasure; much less that he should build temples, found cities, and introduce his religion wherever he listed; and that he should do all this in the course of his transient visits to different places. "Is it credible, that any person could have penetrated into the various regions, whither he is supposed to have gone? to have founded colonies in Phœnicia, Cyprus, Rhodes, Thera, Thafus, Anaphe, Samothracia? to have twice visited the Hellespont? to have worked the mines in the Pangæan mountains, and in other places? to have made settlements in Eubœa, Attica, Bœotia, and Illyria? and, above all, to have had such territories in Afric? He is represented as heir to the kingdom of Egypt: this he quitted, and obtained a kingdom in Phœnicia. He leaves this too; and after much wandering arrives in Greece; where he founds several cities, and reigns 62 years. After this, hard to conceive! he is made king in Illyria. He must also have reigned in Afric; and his dominions seem to have been considerable, as he founded an hundred cities. He is represented as a king in Armenia; and had there too no small territory. Sure, kingdoms in those times must have been very cheap, if they were so easily attainable. But the whole is certainly a mistake; at least, in respect to Cadmus. No person could possibly have effected what is attributed to him. They were not the achievements of one person, nor of one age. And place Cadmus at any given æra, and arrange his history, as may appear most plausible; yet there will arise numberless inconsistencies from the connexions he must have in respect to time, place, and people; such as no art nor disposition can remedy."

Should it be asked, if there were no such man as Cadmus, what did the ancients allude to under this character, and what is the true purport of these histories? The answer of Bryant is, that the travels of Cadmus, like the expeditions of Perseus, Sesostris, and Osiris, relate to colonies, which at different times went abroad, and were distinguished by this title. Cadmus, he says, was one of the names of Osiris, the chief deity of Egypt. Both Europa and Harmonia are of the like nature. They were titles of the deity; but assumed by colonies, who went out and settled under these denominations. Cadmus was one of those deities. He was the same as Hermes of Egypt, called also Toth, Athoth, and Canathoth; and was supposed to have been the inventor of letters. He was sometimes stiled Cadmilus, another name for Hermes; under which he was worshipped in Samothracia and Heturia. Lycophron (v. 219.) speaking of the prophet Prulis in Lesbos, tells us, that he was the son of Cadmus, and of the race of Atlas. And he was the person who was supposed to give information to the Greeks, when they were upon their expedition to Troy. Harmonia, the wife of Cadmus, who has been esteemed a mere woman, seems to have been an emblem of nature, and the fostering

nurse of all things. Harmonia was supposed to have been a personage, from whom all knowledge was derived. Accordingly, Hermon, or Harmonia, was a deity to whom the first writing is ascribed; and the same is said of Hermes. Cadmus is said not to have brought letters into Greece, but to have been the inventor of them; from whence we may fairly conclude, that under the character of Hermon, Hermes, Taut, Thoth, and Cadmus, one person is alluded to. The deity called by the Greeks Harmonia, was introduced among the Canaanites very early by people from Egypt; and was worshipped in Sidon, and the adjacent country by the name of Beal Hermon. Europa was likewise a deity; the same, according to Lucian, as Astarte, who was worshipped at Hierapolis in Syria. Cadmus, says Bryant, may principally be esteemed Ham, who by his posterity was looked up to as the sun, and worshipped under his titles; a circumstance, which was common to all, who were styled Baalim. His name favours this conjecture; for according to the etymological system of this writer, the sun was styled Achad, and Cadmus is a compound of Achad-Ham, rendered by the Greeks Acadamus and Academus, and contracted Cadmus. Upon the whole, if instead of one person Cadmus, traversing so much ground, and introducing the rites of his country at Rhodes, Samos, Thera, Thalus, Samothrace, and building so many cities in Libya, we suppose those things to have been done by colonies, who were styled Cadmians; all will be very right, and the credibility of the history not disputed. Many difficulties will be solved; and great light will be thrown upon the mythology of the ancients. The story then of Cadmus and Europa relates to people from Egypt and Syria, who went abroad at different times, and settled in various parts. They are said to have been determined in their place of residence by an ox or cow; which denotes that they were directed by an oracle; and this leads us to the Egyptian Apis. The Cadmeans, according to Bryant, were a two-fold colony, which came both from Egypt and Syria; from Egypt first, and then from Syria and Canaan. In their progress westward, they settled in Cyprus, Rhodes, Samos, Lesbos, and Thrace; also in Euboea, Attica, and Boeotia. In process of time they formed settlements in other parts; particularly in Epirus and Illyria; and occupied some considerable provinces in Italy, as high up as the Padus. Wherever they passed or settled, they left behind them a variety of memorials; and especially such as related to their rites and worship. See CUTHITES.

CADMUS MILESIUS, in *Biography*, an ancient historian, who, according to Moreri, lived about the time of the Trojan war. Pliny, in speaking of the invention of things, informs us, (lib. vii. c. 56.) that Ptolemydes Syrus taught the compilation of dictionaries in prose, during the reign of Cyrus; and Cadmus Milesius to write history: and in another place (lib. v. c. 29.) he says, that Cadmus Milesius was the first who wrote in prose. He composed "The Antiquities of Miletus and of all Ionia," in 2 books: a work on this subject, mentioned by Dionysius of Halicarnassus, and attributed to this historian, was thought by the best judges, as he informs us, to have been supposititious. — Another Cadmus, also a Miletian, was, according to Suidas, much younger than the former; and wrote "The History of Attica," in 16 books.

CADMUS, in *Entomology*, the name under which Cramer figures the Brazilian species of PABILIO, called by Fabricius Acheronta. The wings of this insect are indented, and furnished with tails; anterior pair red at the base, the tip black, spotted with white. *Fair.*

CADOEPAN, in *Geography*, an island in the Indian Ocean, S.E. of Bouton, and near the islands of St. Matthew and Touran-Bellis, in which many cloves are produced.

CADOGAN, WILLIAM, in *Biography*, educated at Oriel College, Oxford, took his degree of master of arts in 1755; and the same year was made bachelor and doctor in medicine. He had previously, viz. in 1750, published a small treatise on the nursing and management of children, which was much esteemed, and contributed toward abolishing some improper treatment, both in feeding and dressing infants. They were first adopted by the managers of the Foundling Hospital, and by degrees became general. His next publication was "Dissertations on the Gout, and all Chronical Diseases," 1764, 8vo.; written in a popular manner, and so generally read, that several large impressions were sold of it. The three principal causes or sources of gout, he says, are indolence, vexation, and intemperance. The book was much cavilled at, and was answered by two or three different writers. It is, on the whole, well written, and the regulations given for the conduct of gouty patients, with the view of mitigating the fit, and preventing frequent relapses, or returns of the complaint, are judicious, and well deserving attention. He was fellow of the college of physicians, and, which is by no means usual, spoke two Harveian Orations, the one in the year 1764, the other in 1793. They were both published. He died at a very advanced age, at his house in George-street, Hanover-square, April 26, 1797.

CADOGNA, in *Geography*, a town of Naples, and province of Principato Ultra; 15 miles N.N.E. of Conza.

CADOLZBURG, a town of Germany, and prefecture of the same name, in the circle of Franconia, and Margraviate of Anspach; the town is surrounded with walls, and defended by a castle; 18 miles N.E. of Anspach.

CADORE, or PIEVA DI CADORE, a town of Italy in the Trevisan, and capital of the Cadore, or Cadorin, belonging to the states of Venice, and famous for the birth of Titian the painter; 42 miles N.E. of Trent. N. lat. 46° 25'. E. long. 13° 45'.

CADORE, or CADORIN, a small and mountainous district of the Trevisan, or Trevigiana, belonging to Venice; bounded on the north by the bishopric of Brixen; on the east by Friuli; on the south by the Bellunese; and on the west by the Bellunese and bishopric of Brixen; about 25 miles long, and from 10 to 15 broad.

CADOUIN, a town of France, in the department of Dordogne, and chief place of a canton, in the district of Bergerac. The place contains 603, and the canton 5833 inhabitants; and the territory includes 152½ kilometres, and 12 communes.

CADOURS, a town of France, in the department of the Upper Garonne, and district of Toulouse. The town contains 826, and the canton 6962 inhabitants; the territorial extent comprehends 172½ kilometres, and 17 communes.

CADRITES, a kind of religious among the Mahometans; whose founder was Abdul Cadri, a great philosopher and lawyer; whence they take their name, *Cadriles*.

They live in common, and in a kind of monasteries, which, however, they are allowed to quit, if they request it; and to marry, on condition of their wearing black buttons on their garments to distinguish them from the rest of the people.

In their monasteries, they pass the greatest part of every Friday night in running round, holding each other's hands, and

and crying incessantly, *bhai, living*, one of the names of God: one of the number plays all the time on a flute, to animate them in this extravagant dance.

CADSAND, in *Geography*, an island on the coast of Dutch Flanders, at the mouth of the Scheldt, situated on the south side of the entrance into the West Scheldt opposite to Flushing, so as to command the navigation of that river. It is preserved by elevated dykes constructed at great expence, from the inundations of the sea; and, nevertheless, exposed to danger, when the north-west wind blows with violence. The land is fertile, and yields excellent corn; the meadows are luxuriant, and the farmers make a considerable quantity of good cheese. The persecuted French and Saltzburghers found an asylum in this island. The chief town is Cassandria.

CADUCEATOR, in *Antiquity*, a denomination given to heralds or messengers of peace. See CADUCEUS.

CADUCEUS, or CADUCEUM, Mercury's rod or sceptre; a wand entwisted with two serpents, worn by that deity as the ensign of his quality and office; and given to him, according to the fable, by Apollo, for his seven-stringed harp.

The poets attribute wondrous virtues to the caduceus: as that of throwing people into a sleep, raising the dead, &c. It was also used by the ancients as a symbol of peace and concord: the Romans sent the Carthaginians a javelin, and a caduceus, offering them their choice, whether of war or peace.

Among that people, those that denounced war were called *seciales*, and those who went to demand peace, *caduceatores*; because they bore a caduceus in their hand.

The caduceus found on medals is a common symbol signifying good conduct, peace, and prosperity. The rod expresses power, the two serpents prudence, and the two wings diligence.

Wedelius has given a dissertation expressly on *caduceated* medals. Böttiger in his "Griechische Vasengemählde, &c." or "Grecian Paintings on Vases" illustrated (vol. i. p. 2.), Weimar, 1798, has suggested some new and ingenious ideas with respect to the origin of the caduceus. According to this writer, the deity called Hermes by the Greeks, and Mercury by the Romans, owed his imaginary existence entirely to the commercial intercourse of the Phœnicians with the Greeks. At some remote period, the former had mines and factories in many places of Greece. There Hermes was worshipped as the tutelar deity of the industrious Phœnicians; and all the arts, by which the articles of trade are produced, were ascribed by the Greeks to his invention. The Phœnicians, of course, in order to converse with the rude natives, employed interpreters. Hence Hermes was considered as the inventor of articulate sounds, and of numeral figures and signs. The interpreters and heralds were called his sons, and the race of *ἑρμῆες* is said to have descended from him. The Phœnician traders, wherever they first approached the rude Pelasgic inhabitants of the Grecian coasts, found it necessary to use some manifest token of their having arrived with peaceful intentions; not as pirates, but as merchants and barterers. In such instances, the most natural sign of peace among all nations, even among the inhabitants of the Friendly Islands in the South Seas, has ever been a green branch. The Phœnicians, however, soon found it more convenient, as well as more ornamental, to carry with them a decorticated or even a gilt staff; and, as occasion required, to wind round it green leaves. Such is the wand of Mercury in Homer. (Hymn. in Mercur. 529—532.)

CADUCEUS is also a name given to a kind of staff covered with velvet, and decorated with *fleurs de lys*, which the French heralds of arms bear in their hands on solemn occasions. That borne by the king at arms has a golden *fleur de lys* at the end, and is by some called sceptre.

CADUCOUS, in *Botany*, a term employed to express the short duration of one part of a plant compared with another: thus, a caducous calyx falls off before the petals, as in poppy and celandine; a caducous corolla falls off immediately after its expansion, and before the anthers have shed their pollen, as in *actæa* and *thalictrum*. A stipule is caducous, when it falls off before the leaf; and a bracte, when it does not continue as long as the flower. A leaf is also said to be caducous, when it does not remain till the end of the summer. It always implies a shorter duration than is intended by the term deciduous.

CADUCUS *Morbus*, or FALLING SICKNESS, in *Medicine*. See EPILEPSY.

CADURCI, in *Ancient Geography*, a people of Gaul, who inhabited the town of Divona. Ptolemy. They are mentioned by Cæsar, Strabo, and Pliny. Their territory is the present Quercy, the capital of which is Cahors.

CADUS, an ancient liquid measure of capacity, containing ten, sometimes twelve, *congi*; and sixty, or according to others, seventy-two *sextaries*.

The cadus is the same with what is otherwise denominated *metretes* and *cerameon*. See AMPHORA.

CADUSIA, in *Ancient Geography*, a country of Asia, being part of Atropatene, according to Strabo.

CADUSII, or CADUSIANS, a people who inhabited the district lying to the south of Babylon, between the Tigris and the Euphrates. They were a powerful people, and enemies of the Assyrians; and their alliance was sought by Cyrus, in his war against the king of Assyria.

CADYNA, or CADERIA, a town of Asia Minor, in the mountains of Lycaonia, according to Strabo.

CADYTIS, a town of Asia in Syria, mentioned by Herodotus, and supposed by Reland to have been Gath. As it was near the sea, it could not have been Jerusalem, as M. D'Anville conjectures. Others have supposed it to have been the Cedassa of Josephus, and others refer it to Gaza.

CÆCA, in *Ichthyology*, a species of *MURÆNA*, apterygious, with the snout somewhat acute. Found in the Mediterranean Sea.

CÆCA, in *Zoology*, a species of *NAIS*, with lateral setose warts, and without eyes. Found in the bays of Iceland and Christiansand, in Norway.

CÆCA, a species of *NEREIS*, sub-convex, with two very short tentacula, and the lamellæ of the pedunculi duplicæ and ciliate. Fabr.

CÆCÆ *Glandulæ*. See GLANDS.

CÆCIA, in *Ancient Geography*, the name of two isles, which Pliny places in the vicinity of the Spirean promontory.

CÆCILIA, in *Entomology*, an African insect of the *PAPILIO* genus, the wings of which are white in the middle, with black dots; posterior ones margined with black, dotted beneath with white. Fabr.

CÆCILIA is also a synonymous name of *PAPILIO AMYNTOR* of Fabricius, in the works of Cramer.

CÆCILIA, in *Ichthyology*, among old writers, the fish denominated by modern naturalists *syngnathus acus*.

CÆCILIA, in *Zoology*, a genus of serpents distinguished by having wrinkles on the body and tail, and two tentacula on the upper lip.

There

There are only two species of this genus at present known, namely *tentaculata* and *glutinosus*.

CÆCILIA, the general name under which several creatures have been described by old writers. *Lacerta chalcides* is called *Cæcilia major* by them; *Anguis fragilis* of the Linnean *Fn. Suec.* is named by different writers *Cæcilia vulgaris*, *Cæcilia Gæfneri*, and *Cæcilia typhlus*. *Aldrovandus*, Ray, &c. *Cæcilia maculata* of Catesby is the *Anguis ventralis* of Gmelin, &c.

CÆCILIA CASTRA, in *Ancient Geography*, probably the *Cæciliana* of Antonine, now *Caceres*, a place of Spain in Lusitania, according to Pliny and Ptolemy.

CÆCILIANA, in *Botany*, a name used by Pliny and some other authors for the *tutjan*, or *androsemum*. Ger. Hæc. Ind. 2.

CÆCILIUS STATIUS, in *Biography*, a Latin comic poet, the contemporary and companion of Ennius, was a native of Isubrian Gaul, or, as some say, of Milan, and lived at Rome in a servile condition about the year 177 B.C. As a writer of comedy he was eminent, though Cicero finds fault with his Latinity. Some fragments of his works are collected by Robert Stephens, and published in the "*Corpus Poetarum*," Lond. 1714. *Nouv. Dict. Hist.*

CÆCIMACULA, in *Entomology*, a species of *PHALANA* (*Næssa*), with dentated grey wings, two black points at the base, and two cinereous streaks. Fabr.

CÆCINA, in *Ancient Geography*, a river of Italy, in Etruria.

CÆCINUM, a town of Italy in Brutium, watered by the river *Cæcinius*.

CÆCUM, in *Anatomy*. See **CÆCUM**.

CÆCUS, in *Zoology*, a species of **COLUBER**, dusky-red, having its scales marked with a white spot.

CÆCUTIENS, in *Entomology*, a species of **APIS**, brown, with a smooth ferruginous abdomen, spotted on both sides with black. Fabricius. Found in the gardens of Leipzig.

CÆDIUS, in *Ancient Geography*, a river of Sardinia. Ptolemy.

CÆLATURA, or **CÆLATURA**, the art of engraving on metals, stones, woods, or the like, with instruments of steel, diamond, &c. See **SCULPTURE**.

CÆLEBS, in *Entomology*, a species of **CIMEX** (*Rotundatus*), brownish grey, with three points on the scutellum, and the apex yellowish. Fabricius. Found in New Holland.

CÆLESTIANS, the followers of *Cælestius*, a monk, who flourished under the empire of Arcadius, about the year 405, and taught much the same doctrines as Pelagius.

The native country of *Cælestius* is not certainly known; some say it was Ireland; others, Scotland; and others say that he was a native of Campania in Italy. This, however, is certain, that he was descended of an illustrious family, and that, after having applied for some time to the study of the law, he retired from the world and embraced the monastic life. He accompanied Pelagius into Sicily in 408 or 409, and afterwards, in 411, into Africa; from thence he went to Asia, Rhodes, and the neighbouring islands, disseminating the doctrines of Pelagius, so that those who embraced them derived from him the appellation of *Cælestians*. Having been constrained to leave Constantinople in the year 416, he returned to Rome in the following year, and ingratiated himself with pope Zosimus, and obtained a letter in his favour to the African bishops. In 418, however, he was banished from Rome by virtue of a law enacted by the emperor Honorius against the Pelagians; but he afterwards returned, and was again ordered to depart from Italy. Accordingly

he repaired to Constantinople, where for some time he met with a more favourable reception. At length, about the year 431, a memorial was presented against him and his accomplices, by Marius Mercator, to the emperor Theodosius, and they were ordered to depart from the city. Of his subsequent history, and the termination of his life, the ancients have furnished no records. Cave, *Hist. Lat. t. 1. p. 385*. See **PELAGIANS**.

CÆLESTINE. See **CELESTINE**.

CÆLESTINI, in *Ancient Geography*, a people of Italy, in Umbria.

CÆLESTINUS, in *Entomology*, a species of **CURCULIO**; ceruleous, with the antennæ and legs sanguineous. Found in Germany.

CÆLETÆ, in *Ancient Geography*, a people of Thrace, separated by the Hebrus. Some of them lived near mount Hæmus, and others near mount Rhodope.

CÆLIA, an episcopal city of Africa, in Numidia.

CÆLIA, or **CÆLIUM**, a town of Italy in Apulia.

CÆLINA, a town of Italy on a river of the same name.

CÆLIUS MONS, a place of Vindelicis, N.E. of *Lacus Brigantius*, and S.W. of *Augusta Vindeliciorum*.

CÆLIUS MONS, the name of one of the seven mountains on which the city of Rome was founded, so called from *Cælius*, an Etrurian general.

CÆLIUS AURELIANUS, the only remaining writer of the sect of the Methodists in medicine, is supposed to have been a native of Sicca in Africa, although, as Haller observes, no reference is made to that country in his work. From his style, which is harsh and barbarous, Le Clerc supposes he lived in the 15th century. The work by which he is known is a translation into Latin of the writings of Soranus, an Ephesian physician, the head of the methodic sect, to which he has added observations collected from other writers and some from his own practice. It consists of eight books, three on acute and five on chronic diseases. They were first printed, "*Celerum vel acutarum Passionum Libri Tres*," Paris, 1529, and "*Tardarum Passionum Libri Quinque*," Basilee, 1529, both in folio. Dalechamp, in 1567, published the work complete with notes, at Lyons, 8vo. It also enters into the "*Medicæ Artis Principes*," by Stephens and by Haller. The work has the merit of preserving fragments from the writings of several ancient authors in medicine, which would otherwise have been lost, as well as of imparting a knowledge of their doctrines. The author is very free in his censures on the works he examines, and appears to have been an intelligent and attentive practitioner. He treats of several diseases not mentioned by any earlier writers, and has some observations in surgery peculiar to himself. He mentions an instance of hydrophobia occurring in a person who had not been bitten by any rabid animal, and of hydatids in some kinds of dropsy. He had seen a fit of the gout terminate in apoplexy, in consequence of the too liberal use of bitter and acrid substances. He recommends injections of oil for the cure of ascariæ, or to destroy those worms; and has numerous other observations equally pertinent and ingenious. Le Clerc *Histoire de Med.* Haller. *Bib. Med.*

CÆMENT, in a general sense, any composition of a glutinous or tenacious nature, proper to bind, unite, or keep things in cohesion.

The word is also written *cement*, and even *ciment*. It is formed from the Latin *camentum*, of *cado*, I beat. Though M. Felibien observes, what the ancient architects called *camentum* was a very different thing from our *cement*. The name *cement*, with them, signified a kind of masonry, or

C E M E N T.

manner of laying the stones, and even the quality of the stones; as when the walls were built of rude, unequal stones. In reality, the stones were cut for such work, but not squared or uniform; so that *cementa* stood opposed to *quadrati lapides*.

CEMENT is particularly used in *Architecture*, for a strong binding sort of mortar, used to bind or unite bricks or stones together, for some kind of mouldings; or to make a block of bricks, for the carving of scrolls, capitals, &c.

It is of two sorts: the *hot cement*, which is the most common, is made of resin, bees-wax, brick-dust, and chalk, boiled together. The bricks to be cemented are heated, and rubbed one upon another, with cement between.

The *cold cement* is less used; and is made of Cheshire-cheese, milk, quick-lime, and whites of eggs.

Mortar, folder, glue, &c. are *cements*. The BITUMEN brought from the Levant is said to have been the *cement* used in the walls of Babylon.

Equal quantities of powdered glass, sea-salt, and iron filings, mixed with loam, made a very hard and durable *cement*.

Mr. Boyle informs us, that the best method to close and repair pipes of subterraneous aqueducts is with tobacco-pipe clay pulverized, and mixed with a large quantity of pulverized flocks, and carefully beat up with linseed oil into a stiff paste. See MORTAR and TARRAS.

CEMENT is also used among *Goldsmiths*, *Engravers*, *Jewellers*, &c. for a composition of fine brick-dust, well sifted, resin, and bees-wax; in use among those artificers to keep the metals to be engraven, or wrought on, firm to the block, &c. as also to fill up what is to be chiselled.

The receiver of an air pump may be fastened to a metal-plate by means of a cement of bees-wax and turpentine, made with equal parts, for the winter; and three parts of the former to two of the latter, for the summer. We have various receipts for making cements to mend broken china and glasses: one of the finest, and at the same time strongest cements for this purpose, is the juice of garlick, stamped in a stone mortar; this, if applied with care, will leave little or no mark. Another cement for broken glasses, china or earthen ware, may be prepared by beating the white of an egg very clear, and mixing it with fine powdered quick-lime; or isinglass; powdered chalk and a little lime may be mixed together, and dissolved in fair water; with which the glasses, &c. are to be cemented, and then set in the shade to dry.

Drying oil with white lead is also frequently used for this purpose; but where the vessels are not exposed to heat or moisture, isinglass glue, with a small quantity of tripoli, or chalk, is better.

Some have recommended a cement made by tempering quick-lime with the curd of milk, till it become of a proper consistence for use; but as cheese has a greater degree of tenacity than milk, the following composition will be preferable. Let the thin shavings of sweet cheese be stirred with boiling water; and when the tenacious slime has been worked with other hot water, let it be mixed on a hot stone, with a proper quantity of unslaked lime, into the consistence of a paste, and it will prove a strong and durable cement for wood, stone, earthen-ware, and glass; and it has this advantage, that when it is thoroughly dry, it will receive no injury from water. C. Pajot, of Charmes, lately transmitted to the Philomathic Society and the National Institute of France, small bits of glass, which he had joined and foldered so firmly that the glass would rather break close

to the junction than in the fracture; but he concealed his process for this purpose. However, it is not difficult to be ascertained. By interposing between the broken parts a glass ground like a pigment, but more easily fusible than the pieces to be joined, and then exposing them to such a heat as will fuse the cementing ingredient, the pieces will be made to agglutinate without being themselves fused. A glass fit for the purpose of cementing broken pieces of flint glass may be made by fusing some of the same kind of glass, previously reduced to a powder, along with a little red lead and borax, or with the borax only.

A cement may be prepared for chemical glasses that will bear the fire, by mixing equal quantities of wheat-flour, fine powdered Venice glass, pulverized chalk, with half the quantity of fine brick-dust, and a little scraped lint, in the whites of eggs; this mixture is to be spread upon a linen cloth, and applied to the cracks of the glasses, and should be well dried before they are put into the fire.

Old varnish will likewise answer the same purpose. A very useful cement for joining alabaster, marble, porphyry, and other stones, may be prepared in the following manner. Melt two pounds of bees wax, and one pound of resin; add a pound and a half of the same kind of matter pulverized as the body to be cemented is composed of, and stir them well together; let the mass be kneaded in water, and heated when applied to the heated parts of the body to be cemented. The colour of this mass may be adapted to that of the body on which it is employed, by varying the proportion of the powdered matter added to the mass of bees-wax and resin.

Jewellers, in joining pieces of precious stone that are accidentally broken in the operation of setting, employ a small piece of gum-mastic applied between the fragments, previously heated so as to melt the interposed gum. They are then pressed together so as to force out the redundant quantity of it. The Turkey cement for joining metals, glass, &c. is prepared by dissolving five or six pieces of mastic of the size of peas in a sufficient quantity of spirits of wine, and dissolving as much isinglass (previously softened in water) in brandy or rum, as will make two ounces by measure of strong glue; and adding two small bits of gum-galbanum, or ammoniacum, rubbed or ground till they are dissolved; let the whole be mixed with sufficient heat, kept in a stopped phial, and when used set in hot water.

Kastellyn recommends a cement for filling up cracks and fissures in iron vessels, which consists of six parts of yellow potter's clay, one part of the filings of iron, and a quantity of linseed oil sufficient to form the whole into a paste of the consistence of putty. A durable cement for joining the flanches of iron cylinders, and other parts of hydraulic and steam engines, may be formed by boiling linseed oil, litharge, red or white lead, duly mixed, and applied on each side of a flannel filling the joint, which should be put between the pieces before they are closely united by screws or other fastenings. Another cement that will stand the action of boiling water and steam, may be prepared by rubbing in a mortar and thus mixing together two ounces of sal-ammoniac, one ounce of flowers of sulphur, and 16 ounces of calc iron filings or borings. When this cement is wanted for use, one part of the above powder, and 20 parts of clean iron borings or filings, should be intimately blended by grinding them in a mortar, and when used, moistened with water, and applied to the joints with a wooden or blunt iron spatula.

Copper-smiths often apply to the rivets and edges of sheets of copper in large boilers, and in order to secure cocks from leaking, &c. a mixture of pounded quick-lime

lime with ox's blood. This must be used when fresh made: and it is both cheap and durable.

For an account of Higgins's water cement for building, repairing, and plastering walls, and for other purposes, see STUCCO.

The best cement for electrical purposes is made with two parts of resin, two of bees-wax, and one of the powder of red ochre. These ingredients are melted, and mixed together in any vessel over the fire, and afterwards kept for use. This adheres well, is less brittle than resin, and insulates as well. A strong cement for such purposes may be made by melting one pound of resin over a slow fire, and adding to it as much plaster of Paris, as is necessary to sufficiently harden it; and then adding a spoonful of linseed oil, stirring it during the mixture. A cement for glass-grinders may be prepared by melting fine sifted red ochre with linseed pitch, and adding a little tallow, as may be found necessary. Shell-lac is a good cement for holding metals, glass, or precious stones, while they are cut, turned, or ground. Flour paste is used as a cement by book-binders and paper hangers; and they sometimes mix with the wheaten flour a fifth or sixth of its weight of powdered resin or alum, and if it be desired of a more tenacious consistence, they add gum-arabic, or any kind of size. Japanese cement or rice glue, is made by well mixing rice-flour with cold water, and greatly boiling it. This is extremely useful on a variety of occasions; particularly in the preparation of curious paper articles, as tea-trays, dressing-boxes, and other such things, which require layers of papers to be cemented together. With this composition models, busts, statues, and basso-relievos, may be formed; and they admit of a high polish.

For the manner of preparing a cement to bind together the various embellishments of grottos, see GROTTTO. See also GLUE, LUTE, PASTE, PUTTY, SIZE, and SOLDER.

CEMENT, for gilding fish. See GILDING of fish.

CEMENT, in Chemistry. See CEMENT.

CEMENT, calcareous. See CEMENTS, calcareous.

CEMENT, or ziment copper, is copper precipitated from vitriolic waters by iron. The name is derived, it is said, from a vitriolic water in Hungary, called ziment.

CEMENT-pots, in Assaying, are vessels made for the cementation of metals. See CEMENTATION.

CEMENTARIUS, in Entomology, a species of CATERPILLAR, (*Alysius*), with a smooth cylindrical thorax, obtuse front, and aculeated hind claws. This kind is frequent in the rivers of Chili. Hist. Nat. Chili.

CEMENTATION. See CEMENTATION.

CAEN, Lat. *Cadomus*, in Geography, a city of France, before the revolution, the capital of Lower Normandy, now the capital of the department of Calvados, seated in a vale at the conflux of the rivers Orne and Odon, and communicating, at the distance of about seven miles from the sea, with the English channel. Its northern and southern suburbs contain 30,900, and its two cantons 36,817 inhabitants; its whole territorial extent comprehends 87½ kilometres, and 12 communes. The four towers of its castle were built by the English; its town-house is a large building with four towers; its royal square, or place royale is spacious and regular, having fine houses on three sides of it, and in the middle an equestrian statue of Louis XIV. in a Roman habit. The abbey of St. Stephen was erected by William the Conqueror, and he was buried in it. The university of Caen was founded by John, duke of Bedford, regent of France, by the authority of his nephew Henry VI. in 1431, and its establishment, together with the privileges granted by him, was confirmed in 1439, by two bulls of Pope Eugenius IV. Its academy of literature was instituted in 1706.

This city has had good trade, which has principally consisted in cloths and fine linen.

Caen, as a part of Normandy, was formerly subject to the kings of England. In the year 1104 it was seized by Philip the August, king of France, and remained under the dominion of that crown till the year 1346, when it was captured, after a long and destructive siege, by Edward III. In 1417, it was again taken by the troops of Henry V. and remained in the possession of the English till the year 1448, when it was taken by Charles VII. king of France. N. lat. 49° 11' 10". W. long. 0° 21' 47". High water at spring tides at 9 o'clock.

CAEN, is also the chief city of Cayenne in South America. See CAYENNE.

CAENE, or CÆNOPOLIS, in *Ancient Geography*, a town of Peloponnesus in Laconia, placed by Paulanias at the distance of 40 stadia from the promontory of Tænarus, and anciently denominated Tænarum. It had two temples, one dedicated to Ceres, and another to Venus.

CAENE, or CÆNOPOLIS, the *Cæne emporium* of antiquity, a town of Egypt in the Panopolitan nome, mentioned both by Herodotus and Ptolemy, and supposed to be the present *Ghenné* or *Kenné*; which see.

CAENE, a small island in the Mediterranean, between Sicily and Africa. Pliny.

CAENE, or COENÆ, *Senn*, a town of Asia in Mesopotamia, on the bank of the Tigris, over against the mouth of Zabub Minor.

CÆNEUS, in *Entomology*, a species of PAPILIO with very entire subfuscous wings; posterior pair beneath with a red orb consisting of nine spots. This is a native of South America. Linn. &c.

CÆNI, in *Ancient Geography*, a people of Thrace mentioned by Livy and Steph. Byz. and called *Canici* by Pliny. They are supposed to have inhabited that part of Thrace, which is contiguous to the Propontis. Their country was called *Canica regio*, and Pliny places it in the colony Flavio-polis.

CÆNINA, a town of Italy on the confines of Latium, and the country of the Sabines, whence some geographers make it a city of the Sabines, and others refer it to the ancient Latium. Cluverius places it on the banks of the Anio next to Rome; but Holstenius thinks that it stood on the opposite bank in the vicinity of the present Monticelli. Festus says, that it derived its name from Cenis its founder; and Dionysius of Halicarnassus informs us, that it was one of the first cities which declared against Romulus. In the contest its king was slain, and the Cæninenses defeated. Their city was rased, and the inhabitants removed to Rome, where they enjoyed the privileges of the most ancient citizens. It afterwards became a Roman colony.

CÆNIS, or SENSIS, a town and promontory of Italy, in Brutium, upon the straits of Sicily, N. of Rhegium, and opposite to Messina or Messina.

CÆNITARUM *insula*, an island mentioned by Arrian in his Periplus of the Erythrean sea, and supposed to be the Kavathra of Ptolemy.

CÆNON, a place of Asia in Armenia Minor, mentioned by Strabo and Plutarch.

CÆNON *Hydreuma*, a place of Egypt, in the route from Coptos to Berenice.

CÆNOPHURURIUM, a place of Thrace in the road from Constantinople to Heraclea, according to the Itinerary of Antonine. Here the emperor Aurelian was slain. It is placed by M. d'Anville N.W. of Selympria.

CÆNOPOLIS. See CÆNE.

CÆNOPTERIS, in Botany, (from *καλός*, new, and *πτέρις*, a fern),

a fern) Berg. Aët. Petrop. 1782. p. 248. Schreb. 1634. (Darea, Juss. 15). Class and order, *Cryptogamia Filices*.

Gen. Ch. Fructifications in lateral, nearly marginal, lines; covered with a membrane opening on the outside.

Sp. 1. *C. rhizophylla*, Smith ic. ined. 2. 50. "Frons bipinnate, rooting at the tip; pinnules inversely egg-shaped, somewhat sickle-shaped, petioled; primordial leaves lobed." *Stipe* round, brown; common peduncle or rachis round, brown, smooth, elongated at the tip, leafless, bulbiferous, rooting; partial peduncles green, flattened, sometimes winged; pinnules alternate, on short petioles, inversely egg-shaped, one-nerved; fructifying, slightly sickle-shaped, often toothed at the tip, even, the upper ones usually confluent; all dusky green. *Fructifications* in short, solitary lateral lines, beginning at the nerve towards the base of the pinnules, and covered with an entire scarious brown membrane opening always on the outside, at length turned back and permanent. When the capsules have emerged from the fructifying chink, numerous forked, brown, glossy threads stand out, which are the expanded rings of the capsules. Found by Thiery in the island of Dominica. 2. *C. japonica*, Thunb. Linnæan Trans. v. 2. p. 341. (*Trichomanes japonicum*, Thunb. Flor. japon.) "Frons super-decompound; pinnules cut in three divisions, acute." 3. *C. cicutaria*, Smith (*Asplenium cicutarium*, Swartz.) See ASPLENIUM 39.

CÆNURGIA, in *Geography*, a town of Thrace, placed by Procopius in the province of Rhodope.

CÆNUS, a river of Gallia Narbonensis, supposed to be the *Ore*, which see.

CAER, in *British Antiquity*, a term which, like the Saxon *Chester*, denotes castle, and is prefixed to the names of places fortified by the Romans.

CAERDIFF, in *Geography*. See CARDIFF.

CÆRE, in *Ancient Geography*. See AGYLLA.

CÆRESI, a people of Germany, placed by Cæsar (Bell. Gall.) between the Condrusi and Pæmani, and referred by d'Anville to the vicinity of the river Chiers, which runs from Luxemburg into the Meuse.

CAERFILLY, CAERPHILLYON, or CAERPHILLY, a small town of Glamorganhire, South Wales, formerly by traditionary account much larger than it is now, is only remarkable for the ruins of its once extensive castle, and the historical events connected with it. The name *Caerphili* signifies castle of haste, and it is said that great numbers of hands were employed to raise this fortress with expedition. Its ground plan covered an area of two acres, and its foss was crossed by thirteen drawbridges. At present the ruins, says Mr. Evans, "more resemble the remains of a city, than a single edifice; and when undilapidated, exceeded the enormous site of Windsor castle." The citadel, with circular bastions, a range of apartments round the inner court, the grand hall, some towers, &c. are still remaining, and whether viewed as objects of picturesque beauty, or specimens of ancient castellated architecture, they are highly interesting. Within two moats is the citadel, appearing like a separate castle, with a high Gothic arch, the centre supported by two circular bastions. This great gateway, the western entrance of the ruin, is grand and perfect, and leads to the stupendous structure of the inner court from the west, as the gate with the hexagonal towers does from the east. The inner court is surrounded by a range of noble apartments, communicating with a long gallery, to which there is an ascent from the mint; and affording a ready intercourse between the guards, who occupied the embattled towers. This corridor remains entire from the extent of about 90 to 100 feet, on the south side, except in the breaks of the stair-cases. The great hall,

which is spacious and complete, exhibits a fine specimen of Gothic grandeur; and the ornamented outline of its four windows and chimney-pieces are hardly to be paralleled, together with several light pillars in triplets, that go round the room, which is about 70 feet by 30, and 17 feet high. The north window of the chapel is not only perfect, but uncommonly light and elegant. The mint is underneath, near the inclining tower, arched in a curious manner, and furnished with two furnaces for melting metal. In the interior court, at the east end, is the *leaning tower* an object of considerable curiosity and general admiration. It is of a circular shape, about 70 feet high, and inclines full 11 feet out of the perpendicular. About half way down from the summit a fissure divides it, which was probably made, when it was undermined. A similar instance of a leaning tower exists at Bridgenorth, others at Corfe castle, and the most considerable we have heard of is that at Pisa in Italy. The immense pile of Caerphilly castle appears to have been erected at different times, and the style of building displayed in some of the exterior works indicates the time of Edward II. Here that ill-fated monarch fixed his dernier resort, when pursued by his unnatural and brutal queen. With his favourite the younger Spencer, he retreated here from the forces belonging to the queen and barons, who besieged the castle, A. D. 1327, but the monarch, however, afterwards escaped. The late Mr. Daies Barrington has offered, in the first volume of the *Archæologia*, some reasons for supposing that Caerphilly castle was built by Edward I. and in his authority many late modern writers have acquiesced. But Mr. Malkin (*ubi infra*) has suggested a variety of circumstances, which invalidate this account; and particularly that of king Edward having no jurisdiction at that time in Glamorgan. From some historical documents, deduced from Welsh authors, it is inferred, that this castle was built, or rebuilt and fortified, in 1221, by John de Bruse, who married the daughter of Llewelin-ap-Jorwerth, prince of North Wales; and that, after it had been taken and partly ruined, in 1270, at which period it first obtained the name of Caerphilly in the Welsh history, it was rebuilt by Ralph Mortimer, who married Joan of Acres in the time of Edward I. and settled this castle on him and his heirs; and that, in process of time, it was again greatly augmented and strengthened by Hugh Spencer the younger, whose wealth appears to have been fully equal to such an undertaking. Many important public events are connected with the history of this once formidable fortress. The trade of Caerphilly has lately improved in consequence of the establishment of three woollen manufactures; the effect of which is observable in traffic on the roads, and population in the town. "Evans's Tour through South Wales," 8vo. 1804; and Malkin's "Scenery, Antiquities, and Biography of South Wales," 4to. 1804.

CÆRIANA, a town of Spain, placed by Ptolemy in Bætica, in the country of the Turdetani.

CÆRITES, *CÆRITUM tabula*, in *Antiquity*, denote the censors' tables, wherein were entered the names of such persons as, for some misdemeanour, were to lose their right of suffrage in elections at Rome.

The original of the appellation arose hence; that during the captivity of Rome under the Gauls, the Cærites, or inhabitants of Cære, a city in Etruria, preserved their sacred books, and other matters belonging to the worship of the gods; in gratitude for which, the Romans dignified the Cærites with the appellation of Roman citizens, but without admitting them into any part of the administration. See AGYLLÆI.

CAERLEON, in *Geography*, a small town of Monmouthshire, England, is more celebrated for its ancient, than

for its modern importance. Under the Anglo-Roman dynasty, it was *Ica Silurum*, the *Caer Legionis Secundi* of Antoninus, and the seat of government in that division of this island called *Britannia Secunda*. During the height of Roman splendour and dominion, this place continued a scene of pomp and luxury, as may be fairly inferred from the following description, by Gyraldus Cambrensis, who wrote in the 12th century. "Many remains of its former magnificence are still visible. Splendid palaces, which once emulated with their gilded roofs the grandeur of Rome, for it was originally built by the Roman princes, and adorned with stately edifices; a gigantic tower, numerous baths, ruins of a temple, and a theatre, the walls of which are partly standing. Here we still see, both within and without the walls, subterraneous buildings, aqueducts and vaulted caverns, and stoves so excellently contrived, as to convey their heat through secret and imperceptible pores," &c. In confirmation of the monk's account, various antiquities discovered at different periods bear ample testimony. Earthen vessels of curious workmanship, tessellated pavements, phials, brass fibula, Roman bricks inscribed "*Leg. II. Aug.*;" an altar to the emperor Aurelius Antoninus; another to Jupiter, under the appellation of *Dolichenus*, as the patron of iron mines; another, as supposed, to the goddess *Altræa*; and many other votive altars, monuments, statues, inscriptions, and Roman coins from Cæsar to Valentinian inclusive; with most of the intermediate emperors.

In several places the walls are still visible, but scarcely sufficient to point out the original extent of the city. While the name of the parish, *Llangattock juxta Caerleon*, seems to favour the opinion that the old city was westward of the present town, perhaps most of the buildings on that side were extra mœnia, and formed suburbs, as appears from the direction of the western wall. Several bagnios and sudatories have been found, with pillars formed of circular bricks, not unlike those used by Palladio in some of the public structures at Venice. North of the town is a high mount of earth, called the *Keep*, said to have had formerly a strong tower on its summit; and a variety of stones lying at its base strengthen the assertion. It was probably a Roman edifice. On a rising ground about half a mile distant, is a large square encampment, and seven smaller ones are in the vicinity.

Caerleon appears, on a superficial view, to occupy a flat position; but in reality, that portion of the present town, which is inclosed by the Roman walls, is placed on a gentle rise, connected at one extremity with the lower part of the eminence on which the encampment of the Lodge is situated. This rise shelves on the west and south sides towards the *Ust*, and on the east towards the *Avon Llwyd*, and seems to have formed a tongue of land, which, before the draining of the meadows, was probably a kind of peninsula. Hence, the fortress, from its position on a rise between two rivers, and almost surrounded with marshy ground, was a place of considerable strength, and well adapted to become the primary station of the Romans in *Britannia Secunda*. The era in which this Roman fortress was built cannot be precisely ascertained; but Horsley supposes, that the Romans first settled here in the reign of Antoninus Pius. It is mentioned in Antonine's Itinerary; and the numerous coins of the early emperors, which have been discovered here, seem to confirm this opinion. The walls, however, appear to have been constructed under the lower empire.

According to Richard of Cirencester, Caerleon was a Roman colony, and the primary station in the country of the *Silures*. In a field close to the banks of the *Ust*, and near the south-west side of the wall, is an oval concavity, measur-

ing 74 yards by 64, and 6 in depth. The natives call it "*Arthur's round table*;" but it is, without doubt, the site of a Roman amphitheatre. Within the memory of many persons now living, stone seats were discovered on opening the sides of the concavity; and in 1706 a figure of *Diana*, with her tresses and crescent, moulded in alabaster, was found in this place.

When the Britons had submitted to the Roman power, Caerleon, under the auspices of Antoninus, became the seat of learning and devotion. Three Christian churches were quickly erected; one accompanied by an order of nuns, another by a house of regular Cistercian canons, and a third was honoured with the metropolitan see of Wales; and, according to the annals of the church, Dubricius, the great opponent of the Pelagian heresy, was the first archbishop. The remains of the monastery may be traced in an old house, and the quadrangle round which the different buildings were arranged is still visible. This city was the birth-place of the great Amphibalus, tutor to the martyr St. Alban, and the burial-place of St. Julius and St. Aaron, who preached the gospel here, and suffered martyrdom under the persecuting reign of the sanguinary Dioclesian. After that period, Caerleon increased in learning, piety, and consequence. When the Saxons invaded this country, the university was in such a flourishing condition, as to contain, among numerous other students, two hundred philosophers well skilled in geography and astronomy. (*Vid. A. Elfenensis.*) Near the river are the ruins of a castle, probably erected about the time of the Norman invasion, on the site of a British fortress. We do not, however, hear of it till 1171, when Henry took the town, dispossessing Jorwerth-ap-Owen, lord of Gwent. In 1173, after a noble stand, it was retaken by Owen, and given up to the Welsh in exchange for the prisoners. After several sieges, it was retained by Llewelyn-ap-Jorwerth, and his descendants, till the time of Edward I. *Vide Powel's History of Wales.*

The present town consists of two or three small streets, and many of the houses are in a state of dilapidation. The most decent building is a charity-school, for maintaining and educating 30 boys and 20 girls, till they attain the age of 14, when they are apprenticed with a bounty of seven pounds to the former, and four to the latter. They are clothed in a dress of blue cloth, with a badge of white, containing the initials C. W. alluding to the founder, who, as appears from an inscription on the building, was Charles Williams, esq. a native of the town. The spirit of the place seems in unison with its appearance; being chiefly inhabited by a poor indolent set of people; alike unaffected by the greatness of the past, as inattentive to the advantages of their present condition. The town consists of 148 houses, contains about 660 inhabitants; has a weekly market on Tuesday; and is situated 14.6 miles W. from London. *Evans's Tour through South Wales*, 8vo. 1804. *Coxe's Historical Tour in Monmouthshire*, 4to. 1801.

CAERMARTHEN is the county town of Caermarthenshire, South Wales. It is large, populous, and tolerably well built; the streets are spacious, but some of them steep and irregular, and many of the houses good; they are generally whitened, and the chimnies are constructed of red brick, which present an unpleasant glare to the eye. Among the public buildings are a handsome church at the end of Prior-street, and a new elegant county-hall built of free-stone, with colonnades of the Ionic order; the upper part of which is for the transaction of public business, and the under is used as a covered market. Situated upon a small elevation, on a fine navigable river, in the midst of a fruitful vale, and having no town of note in its vicinity; its markets are large

and well supplied; provisions in general are cheap, and fish exceedingly reasonable. A considerable iron foundery and tin-plate manufactory furnish employment to a number of hands. The smelting houses for lead ore, dug in the northern part of the county, belonging to lord Cawdor, are now shut up. Here are a small port and quay for coasting vessels, principally to Bristol and London. The tide rises at the bridge from eight to twelve feet; but, owing to the shallows in the bed of the river below, vessels of much burthen find a difficulty in coming up to the quay. Since the decline of the trade at Kidwelly, that of Caermarthen has increased; and with spirit and property much more might be done. Here is a rope-walk; and a few vessels are built for sale. Adjoining Llamas-street are the walls of a priory of *Fratres Grisei*: this was a cell in the custody of the abbey of St. Augustine at Bristol. In Priory-street the shell of another religious house is still standing, which was appropriated to Black Friars, or canons of St. Augustine, and founded before the year 1148. The entrance into the court is by a bold gateway, over which are the arms of the founder. The principal apartments are still distinguishable, and the tracery of some of the windows almost entire. Gyraldus mentions it as being, in his time, surrounded with brick walls; some remains of which, towards the river, are still extant. This town is famous for having given birth to Merlin Ambrose, the reputed magician, of whom many fabulous stories have been related. Selden considers Merlin or Merdhin (whence *Caerfyrddin*) as having derived his name from the town; but the general opinion is, that Caer-Merdin, or Merlin's town, was so called from Merlin's being found there. Not far from the town is a hill, called Merlin's Hill, near the brow of which is a rock, known by the name of Merlin's Chair, in which, it is said, that famous prophet used to sit, when he uttered his prophecies. Caermarthen lays claim to Roman origin. It was the *Maridunum* of Antoninus, and long the seat of the South-Wallian princes, where they held their great national councils, or occasional parliaments. Nor is it less conspicuous on the subsequent page of history. It was esteemed of so much importance as to become an enviable object with every hostile party, and repeatedly sacked, pillaged, and burnt, by both friends and enemies. By whom it was fortified, and its castle built, there are no authentic documents to show; nor do we hear much of it, till the era of difficulty and conflict to the Welsh, occasioned by the unjustifiable invasion and unprecedented cruelty of the Anglo-Normans. On the accession of Henry I. to the throne, Wales became a new theatre for the display of iniquity; and the oppressive measures and alienations of property, which before were chiefly confined to the borders, were extended to the interior: in consequence of which the royal residence was removed to Dinevor, and Caermarthen was rendered a strong fortified post. In 1116 we find it in the hands of the English, held for the king by Owen ap Caradoc. But Gryffydd ap Rhys, who well knew the importance of this place, sent spies to survey the works and ascertain their strength: having received a favourable account, he suddenly marched at night, rushed on the town, and by a coup de main took possession. The governor was killed, the garrison fled; and Gryffydd, having burnt the place, and dismantled the castle, returned with his spoils to his residence at Strata Tywy. It was again laid in ashes, in 1137, by Owen Gwynedd; rebuilt and fortified by Gilbert earl of Clare, about the year 1143; taken by Cadell son of Gryffydd ap Rhys; and again in possession of the English under William Tuberville, who, when it was besieged by Rhys, in 1158, destroyed the bridge, at that time of wood, for its better security and de-

fence. Though Rhys was unsuccessful at this time, he took and despoiled it in 1195, after quelling the unnatural rebellion of his sons. In the reign of John, 1215, it was taken; and the castle was rased in 1222 by Llewellyn, who, taking advantage of the absence of the earl of Pembroke, the governor, took this fortress and Cardigan, putting the garrisons to the sword. We find it soon afterwards in the possession of the English, when the same earl of Pembroke, having confederated with the Welsh, blockaded it ineffectually for three months. The remains of this important fortress are still visible on a rocky eminence: additions have been lately made, and it is now used as the county gaol. When this territory was erected into a principality by the crown of England, the chancery and exchequer courts were held here. Caermarthen was created a borough town, 38 Henry VIII. with the privilege of returning one member to parliament. It contains 945 houses, and 5548 inhabitants, has two weekly markets, Wednesday and Saturday; considerable trade but no internal manufacture; and is situated 226 miles W. from London. Evans's Tour through South Wales, 8vo. 1804.

CAERMARTHENSHIRE is one of the southern counties of Wales, bounded on the north by Cardiganshire, on the east by Brecknockshire, on the west by Pembrokeshire, and on the south by Glamorganshire and part of the sea. Its extent from east to west is above forty-five miles, and only about twenty in the longest diameter from north to south. The general surface of this tract of country is hilly, which in the northern and eastern parts rise into mountains. As in most hilly territories, the vallies are chiefly narrow, and well watered with mountain streams, which in stormy weather rush down in torrents. Among the vales that of the Tovy or Tawy is the principal: this crosses the whole of the county, and in some places is above two miles in breadth, and abounds with beauties.

The principal rivers are the Tovy, the Taw, the Cothy, the Dulas, and Gwilly: the former has its source among the Cardiganshire mountains, and after its entrance into this county, at the northern boundary, is reinforced by a continual succession of those numerous streams which give beauty and fertility to the landscape. Before the Tovy reaches Caermarthen it receives the Cothy and Gwilly; the Cowen brings with it the Towa and Carkenny; and the Taw receives the Morlas and Cair.

The climate and soil of this county are much celebrated, though the lands are not found favourable to wheat. Barley and oats are the most profitable crops, and great quantities of the latter are annually exported to Bristol. Black cattle and horses are bred in abundance on the hills, and are the chief article of traffic in the neighbouring fairs. Wood though still plentiful, has suffered great defalcation of late years. The county abounds with limestone, and coal is obtained in many parts of it. Iron-works, tin-works, and lead mines, also abound, which, combining with the local advantages, and with a supply of butter, stone-coal, bark, and oak timber, render the export trade very considerable.

Caermarthenshire is divided into six hundreds, and includes six market-towns, and eighty-seven parishes, which are within the diocese of St. David's and province of Canterbury. It returns two members to the imperial parliament, one for the county, and one for the principal town. Some vestiges of Roman roads, and other monuments of remote antiquity, are remaining visible in this county. Near Whitland is a circle of upright stones; and between the rivers Cowen and Towa is a remarkable barrow, which inclosed a kistvaen. At Whitland is an encampment supposed to be Roman from the Roman coins that have been found within its vallum.

vallum. The ruins of several castles are still standing in different parts of the county. Malkin's "Scenery, Antiquities, and Biography of South Wales," 4to. 1804. Evans's "Tour through South Wales," 8vo. 1804. Barber's "Tour throughout South Wales," 8vo. 1803.

CAERNARVON, the principal town of Caernarvonshire, is justly the boast of North Wales, for its situation, buildings, harbour, &c.; but above all, for the grandeur of its once magnificent castle. It is situated on the eastern bank of the river Menai, the strait that divides the isle of Anglesea from the other parts of Wales. This was the ancient *Segontium*, mentioned by Antoninus; it was a Roman station in the time of Constantine; and Matthew Paris says, the body of Constantine, the father of that emperor, was found buried here, A.D. 1283. The site of the old city is about a mile distant, by the road to which from Pwllheli it is intersected. The remains of a Roman road are still visible from this place to Dinorwig. It lies on the eastern banks of the Seiont. Some remains of the walls are still to be seen, the cement of which appears as hard as the stone itself. A single stone remains here, with these letters S.V.C. probably for *Segontium Urbs Constantini*; Helen, or her husband Constantine, having built it. It was defended by a fort, erected on the steep western bank of the Seiont, where it forms a curve, about four hundred yards from the present town. The walls are about twelve feet high, and about eighty yards square, with circular parallel holes running the whole length. Where the facings are dilapidated, the peculiarity of Roman masonry is easily discoverable. This town, after the departure of the Romans from the island, was occupied by the Britons, and by them denominated *Caer-ar-fon*, i.e. a strong hold opposite Mona, which with the insertion of *n* for harmony, made Caernarfon. Gyraldus mentions it as a considerable place in 1138; and a charter, dated 1221, issued by Llewelyn the Great, proves that it did not receive this name from king Edward. At a very early period it was the seat of the British princes. Roderic resided here in 750; and by a posterior Roderic the royal residence was removed to Aberffraw in Anglesea. Out of the ruins of the ancient town arose the present, which by a charter of king Edward I. was made a free borough, governed by a mayor, who is pro tempore deputy-governor of the castle, one alderman, and two bailiffs; there are also a town-clerk and two sergeants at mace. The town sends one member to parliament, who is returned by the joint suffrage of Conway, Pwllheli, Nefyn, and Crickaeth; and the right of voting extends to every person resident in these places. An extraordinary privilege was granted to Caernarvon, that no burgesses could be convicted of any crime, committed between the Conwy and the Dovy, but by a jury of his townsmen. The town was originally contained within its present walls, but the suburbs are become of greater extent than the town: the streets are at right angles corresponding with the four gates; the houses are well built, and the streets clean, but, as in all other ancient towns, narrow and confined. It is become a place of fashionable resort, during the summer season; the elegant hot and cold baths, erected by the earl of Uxbridge, having added greatly to its celebrity. On the outside of the walls is a broad and pleasant terrace walk along the side of the Menai, extending from the quay to the north end of the walls, which is a fashionable promenade in fine evenings. Caernarvon is in the parish of Llan-Beblic, and the church is situated about half a mile from the town. It contains nothing remarkable, except a marble monument, with two recumbent figures of sir William and lady Griffith of Penrhyn, who died in the year 1587. The service is always performed here in the Welsh language. There is an

English service every Sunday morning and afternoon, in the chapel of ease to this church, situated on the north-west corner of the town: the former is generally very well attended.

The entrance to the port of Caernarvon is rather dangerous, from the extensive sand-banks near; but the harbour is capacious, and vessels of six or seven hundred tons ride in security; and the quay is peculiarly convenient, as large vessels can come close to it, and deliver and take in their cargoes. The trade has of late years been increasing, though at present it consists more of exports than imports. Slates, &c. are sent to Liverpool, Bristol, and London; copper ore from Llanberis and Paris Mountain to Swansea; flannels, webs, stockings, and an ochre found in Anglesea, to America and the West Indies. The imports consist chiefly of Irish cloth, fine wool, hides, tallow, and grocery goods, for the use of the interior. There is a weekly market on Saturday. The county assizes are occasionally held here; and the room over the eastern gateway, formerly used as a custom-house, is converted into the sessions-house, where all the county business is transacted. This was done, as an inscription in front informs us, by the munificence of sir William Wynne, and his nephew Thomas Wynne, esq. A.D. 1767. A new custom-house is erected within the walls on the Menai, much more convenient for the commerce. The port is subject in its customs to the comptroller of Beaumaris. Caernarvon is distant from London 244 miles N.W.

CAERNARVON is also a township of America, in the county of Lancaster and state of Pennsylvania; containing 942 inhabitants.

CAERNARVON *Castle* is the most magnificent fortress in North Wales. It is well situated for natural strength; one side bounded by the Menai, another by the æstuary of Seiont, a third by a creek of the Menai, and the fourth isolated by art. The site was admirably calculated for a strong post, and could not fail to strike a prince of military talents, like Edward, as a proper place to erect a curb for his newly conquered, and consequently dissatisfied, subjects. As the conqueror of the country, there is great reason for supposing that monarch to be the founder of the present edifice, (perhaps on the ruins of one more ancient,) to check the spirit of insurrection that might arise in Snowdonia, as he did on the Denbighshire side by the castles of Conway and Rhuddlan. The observation of Mr. Barrington seems well founded, that the plans of the Welsh castles, erected by Edward I. were borrowed from the Asiatic fortresses which that prince had seen in the Holy Land, because they appear precisely similar to many copied and inserted in the valuable extracts of Le Brun. After the conquest was nearly completed, in 1282, the castle was begun; and in a little more than a year this immense building was finished. For still further to subdue the haughty people, already mortified by a foreign yoke, he imposed on them the hateful task of forging chains for their country, and putting the last fatal hand to its independence. The peasantry were compelled to perform the required labour, and their chieftains to defray the expence incurred. It is built of a mixture of lime and grit-stone: some of the materials were furnished by the ruins of the old town, and some were brought from Vaenol. It forms a bold and striking object, and the shell is nearly entire. The entrance into the castle is grand, between two massy towers; in front of which, over the gateway, is placed a statue of the royal founder, with a dagger in his hand, in a menacing posture. This was defended by four portcullises. The form of the castle, inclosing an area of about three acres, is oblong: the towers are elegant, some pentagonal, some hexagonal, and others octagonal; two of these

these are pre-eminent: and of these, the eagle tower, so called from a figure of that bird placed at the top, is peculiarly beautiful, three small angular turrets issuing from it. A magnificent apartment is shewn in this tower, where, by the well known artifice of Edward I. his queen Eleanor was delivered of her son Edward, the first prince of Wales, April 25, 1284. The walls of the eagle tower are ten feet thick, and those of the fortrefs in general eight. A gallery runs all round, with frequent openings for the discharge of arrows on the besiegers. A short time after the erection of the castle, the strength and importance of it were to be tried. A general insurrection was excited in different parts of Wales, in 1294, on occasion of a subsidy levied on the new subjects. Madoc, an illegitimate son of the unfortunate Llewellyn, styling himself prince, put himself at the head of the insurgents of North Wales, and proceeded to Caernarvon, which was crowded with people attending an annual fair. The unarmed multitude were barbarously slaughtered, the town reduced to ashes, and the castle taken. In 1404 this fortrefs was blockaded by Owen Glyndwr's adherents, but was so bravely defended for the king, that the besiegers, finding their efforts fruitless, thought proper to retire. In 1644 the town was taken by captain Swanley, a parliamentarian, who pillaged it of the stores, arms, and ammunition, making four hundred prisoners: the royalists afterwards disposed of him. While lord Byron was governor, it was besieged by general Mytton in 1646, and surrendered on an honourable capitulation. In 1648, general Mytton and colonel Mafon were blockaded by sir John Owen, who, hearing that colonels Carter and Twisleton were advancing to relieve the town, raised the siege, and marched to oppose them. The parties met at Llandegai; sir John was defeated and made prisoner, and North Wales soon after submitted to the parliament. This castle, like its rival in strength and grandeur, Conway, is going fast to decay; and the dilapidating hand of time promises soon to deprive the country of one of its principal architectural ornaments. Evans's "Tour through North Wales," 8vo. 1802. Bingley's "North Wales," 2 vols. 8vo. 1804.

CAERNARVONSHIRE, is the name of one of the counties of North Wales. It is the most mountainous district in the whole principality, and assumes a truly rugged and alpine appearance. The most central part of it is occupied by that vast eminence, named Snowdon, with several other subordinate hills. This county is very irregularly shaped, and is bounded by the sea on the west and south, the straits of the Menai, which separate it from Anglesea, to the north, and the counties of Merioneth and Denbigh to the east. This area of country measures about forty miles from north to south, and twenty from east to west. It is divided into seven hundreds, which are again subdivided into seventy-one parishes. The principal places in the county are the city of Bangor, the town of Caernarvon, and the town of Conway. According to the population reports, published by the house of commons, the whole district contains 8433 houses, and 41521 inhabitants, of whom most are employed in agriculture and mining.

All the mountains in this county, as well as some of the low grounds on the western side, are commons; the former are chiefly depastured by sheep, and the latter by black cattle. It is a custom among the farmers to meet annually, and determine what number of sheep each shall send to the mountains; yet in spite of any argument, the pasturage is generally overstocked. It is common with some persons to sell this privilege at 4d. per head for the season, which is commonly from May, when the sheep are driven up, until Michaelmas, when they are brought down. In most de-

scriptions of this county, it is stated, that the families go up and wholly live on the mountains in the summer season, to attend their flocks, to make cheese, &c. but this is denied by Mr. Kay in his "General View of the Agriculture of the County," who says, that no such custom prevails. The wethers only are sent up, and the ewes are always kept in the low grounds with their lambs. When the latter are weaned, the ewes are milked for about two months; and the produce of these is mixed with the cows' milk for making of cheese.

The exportation of slates is the principal trade from this county. These are shipped in large quantities from Caernarvon; and it is calculated by Mr. Kay, that above 35,000l. worth are annually sent from this part of the country. Wool is also an object of considerable importance to the farmers and peasantry, many of whom are employed in manufacturing it into cloths, flannels, &c.

Of the rivers in Caernarvonshire, the Conway is the principal. This bounds the eastern side of the county, and is navigable for about 12 miles from the sea up into the interior of the country. Increased by various mountain torrents, it sometimes swells itself into a vast expanse, and in the early part of its course forms some grand cascades. Many of the rivers of this county either proceed from, or form in their course, lakes of various sizes. These are chiefly in the declivities of the mountains, and most of them are abundantly stocked with fish, among which, the char, and the gwyniad, are very prevalent.

The most considerable mountains are Snowdon and Penmaen-Mawr. The former is estimated to measure 3456, or, according to other statements, 3568 and 3600, feet above the level of the sea at Caernarvon Quay. It is connected with a chain of other hills ranging through the county in a direction from N.E. to N.W., extending from Aberconway to the sea, at Aberdaron. The rocks composing the higher part of this chain, are principally porphyry, granite, and granit of Kirwan; the secondary rocks are chiefly hornblende, schiller-spar, toadstone, schistus-mica, schistus-clay, mixtures of quartz, feld-spar, and mica, with argillaceous schistus in all its varieties. On the western side are a number of basaltic columns on a bed of hornstone, or chert; and large coarse crystals, cubic pyrites, and various mineral bodies are found in the fissures. In the schistose rocks are several slate quarries; and great quantities of stones are cut, and annually sent hence to London, Dublin, &c. Many rare and curious plants are found on these mountains, and on the borders of the lakes. The whole of the county was formerly known by the name of Snowdon, and a great part of it is still distinguished by the appellation of Snowdonia. The mountains between Conway and Caernarvon seem embosomed in one another, and from the Anglesea shore are seen to rise, range after range, in three gradations. The lower valleys and bases are generally very fertile and temperate, and consequently are chosen as the scenes of habitation and cultivation. The second range affords some pasturage and fuel, such as long grass, peat, and furze. The highest ridge is nearly divested of vegetation, and partakes of the temperature of the frigid zone. Snow remains here nearly three quarters of the year; and is often found at the latter end of June.

The scenery of Caernarvonshire is peculiarly grand, romantic, and picturesque. Its narrow glens, expanded lakes, roaring cascades, and "tempest-torn rocks," conspire to render it eminently attractive to the painter, whilst its mineralogical and botanical productions are equally enticing to the mineralogist and to the botanist. For further particulars relating to the history and antiquities of particular places in

his county, see under the heads BANGOR, CONWAY, CAERNARVON, &c. This county returns two members to parliament. It is in the diocese of Bangor, and province of Canterbury. Kay's "View of the Agriculture of North Wales." A Sketch of the History of Caernervonshire. Evans's Tour through North Wales. Aikin's Journal of a Tour through North Wales.

CAERSWS, at present a small hamlet, situated on the Severn, above New Town, in Montgomeryshire, North Wales, but formerly a town of considerable antiquity, and probably a Roman station, as is inferred from the fine hewn stones for building, and several bricks common in Roman cities or places possessed by the Romans when in Britain. It had also a castle and a church, and the form of three camps is still discernible in its vicinity. The Roman road, or causeway, called Sarn-Sws, runs here towards Meifod, and may be traced to the banks of the Tyrnwy, near Llylin.

CÆRULATA, in *Entomology*, a species of PHALÆNA, (*Geometra*) with obscurely green wings, banded with brown, and two cæruleous bands. Fabricius.

CÆRULEA, a species of CHRYSOMELA, of a blue colour with violaceous thorax. Geoffroy. Inhabits France.

CÆRULEA, a species of NECYDALIS, cæruleous, with the hinder thighs clavated and arcuated. Fabricius.

CÆRULEA, is a species of CICINDELA, of a shining blue colour, with the mouth white. Inhabits the great sandy deserts of Siberia. Pallas.

CÆRULEA, a species of PINELIA, (*Sepidium*), cærulefcent, with a roundish thorax, and striated elytræ. Fabricius.

CÆRULEA, in *Ichthyology*, a species of CORYPHÆNA, wholly cæruleous. Bloch. Found in the American ocean, clothed with large scales, compressed, and above convex.

CÆRULEA, in *Ornithology*, a species of ARDEA, called by Latham the blue heron, and blue bittern of Catesby. The back of the head is crested; colour of the body blue. Brisson calls it *canerophagus cæruleus*. It is the black and blue gaulding of Ray and Sloane.

There are several distinct varieties of this bird, one of which is blue, with the head and collar of a rufous brown colour; and another has the blue of the body tinged with green, with the chin and throat white. Inhabits America.

CÆRULEA, the species of ALCEO called by Latham the white-collared king's-fisher; *ispida indica torquata* of Brisson. This bird is of a blue colour, beneath rufous, with the eye-brows and collar white. Length seven inches. Inhabits India.

CÆRULEA, a species of PROCELLARIA, bluish cinereous, beneath white, with the beak and legs cinereous; the blue trel of Latham.

CÆRULEA, a beautiful bird of the CERTHIA, or creeper, genus from Cayenne. The prevailing colour of the plumage is blue, with the band across the eyes, chin, wings, and tail, black. Gmelin, &c.

CÆRULEA, a species of COLUMBA, cæruleous; the beak, legs, and covers of the wings, red; the blue pigeon of Latham, and the tlacapoiltl of Ray. Found in New Spain.

CÆRULEA, the species of MUSCICAPA, called by Latham the azure fly-catcher, cæruleous; with a black spot on the occiput and breast; the abdomen and vent bluish-white, and the feathers of the wings and tail bluish-black. Found in the Philippine Isles.

CÆRULEA, in *Zoology*, a species of NEREIS, smooth and cærulefcent. Fabricius.

CÆRULOCEPHALA, in *Entomology*, a species of CANTHARIS, (*Malachius*), described by Thunberg. The

thorax is red, emarginate; wing-cases fuscous; anterior part of the head red; posterior blue-black. Inhabits Europe.

CÆRULOCEPHALA, a species of BOMBYX, common in various parts of Europe, and in England known by the trivial name of the figure-of-eight moth. The wings are greyish, varied with brown, with a large double irregular whitish spot. Linn. &c. The larva feeds on apple and on other fruit trees.

CÆRULOCEPHALA, in *Ornithology*, a species of ALCEO, or king's-fisher, found in the island of Madagascar. The prevailing colour is blue above, beneath rufous; throat white; quill-feathers blackish.

The length of this bird is four inches, and it has the bill and legs of a red colour. Buffon calls it *martin-pêcheur à tete bleue*, and *petit martin-pêcheur du Senegal*. It is the blue-headed king's-fisher of Latham.

CÆRULOCEPHALUS, in *Entomology*, a species of CURCULIO, violet coloured, with the thorax and elytræ testaceous. Found in Saxony.

CÆRULOCEPHALUS, in *Ornithology*, a species of PSITTACUS, cæruleous, with the belly, rump, and tail green, crown yellow, and feathers of the wings and tail red; the red and blue parrot of Willughby and Latham. Found in Guiana.

CÆRULESCENS, in *Entomology*, a species of CANCELLER, abundant in the seas between the tropics. The colour is bluish; thorax smooth; beak advanced, subulate, and furnished with two teeth. Fabricius. A crab of a small size.—Also, a species of CRYPTOCEPHALUS (*Cifela*), black, with the striated elytræ cærulefcent. Found in Barbary.

CÆRULESCENS, a species of CERAMBYX (*Saperda*) that inhabits Germany. The thorax is unarmed, cylindrical, white-blue; three lines on the thorax and scutell pale. Scopoli, Schrank, &c.

CÆRULESCENS, a species of CHRYSOMELA (*Alicea*) of a greenish blue colour, and very glossy; thorax smooth; antennæ and legs rufous; posterior thighs black. Degeer.

CÆRULESCENS, a species of CARABUS, of a blackish blue colour, with the base of the antennæ red. Fabricius. Inhabits Europe.

CÆRULESCENS, a species of NECYDALIS, with a roundish thorax, and cæruleous sub-opaque body. Fabr.

CÆRULESCENS, in *Ornithology*, a species of ANAS, called by Latham and other English writers the Blue-winged-geese. This kind inhabits North America; the colour is fuscous, beneath white; wing-coverts and posterior part of the back bluish. Brisson calls it *anser sylvestris freti* Hudsonis; Buffon, *Poie des Esquimaux*. Obs. The bill and legs are red; crown yellowish, rest of the head, with the collar, white; shoulders and tail waved with white and grey.

CÆRULESCENS, a species of RALLUS, light-red, beneath bluish, the beak and legs red, the vent white, with black transverse stripes on the abdomen; the blue-necked rail of Latham. Found at the Cape of Good Hope.

CÆRULESCENS, in *Zoology*, a species of COLUBER, found in South America and India, smooth, cærulefcent, and an acuminate lead-coloured head.

CÆRULEUS, in *Entomology*, a species of CIMEX, described by Linnaeus in his *Fauna Suecica* as being entirely of a blue colour and without spots.

CÆRULEUS, an European species of CARABUS, described by Müller. The colour is black, with cyanous wing-cases; antennæ, feelers, and legs fulvous.

CÆRULEUS, a species of RHINOMACER, cærulefcent, with the base of the antennæ and legs yellow.

CÆRULEUS, a species of **SCARÆÆUS**, oblong and wholly cyaneous. Found in Siberia.

CÆRULEUS, a species of **CUCAYUS**, black, with a fulcated thorax, striated cæruleous elytræ, and red abdomen. Fabr. Found in Germany.—Also, a species of **CRYPTOCEPHALUS**, azure, with brown antennæ. Found in the equinoctial part of Africa.

CÆRULEUS, in *Ornithology*, a species of **CUCULUS**, with a roundish tail and blue body. The beak, legs, and claws, are black; the remiges and tail are green and violet. Found in Madagascar. This is the blue cuckow of Latham, and taitson of Buffon.

CÆRULEUS, the name of a small species of **PARUS**, called in England the blue-titmoufe. The quill-feathers of this bird are bluish; primaries whitish at the outer margin; front white; crown blue. Linn. Fn. Suec.

This kind inhabits Europe. Its length is about four inches, frequents gardens, and does considerable damage by bruising the young buds in quest of insects, on which it feeds.

CÆRULEUS, a species of **ORIOIUS**, black or cinereous, with the head, wings, and tail cæruleous. This is the *Xanthornus cæruleus* of Brisson, the small blue jay of Ray, and blue oriole of Latham. The beak is red.

CÆRULEUS, a species of **RAMPHASTOS**, cæruleous with a mixture of cinereous; the blue toucan of Latham; found in New Spain.

CÆRULEUS, in *Zoology*, a species of **COLUBER**, found in America, cærulescent, with the scales white on one side, and beneath white.

CÆRULEUS is also a name given by Solinus to the "great Indian worm," described by Pliny and others as inhabiting the Ganges. It is conceived with much probability that all the accounts we have of this monstrous animal are only false descriptions of the crocodile.

CAERWENT, in *Geography*, a village of Monmouthshire, England, about 4 miles from Chepstow, in the road to Newport, was a place of great importance in the Roman times and is distinguished in the Itinerary of Antoninus by the name of *Venta Silurum*. This station was found, like many Roman military works, with a fortification, assuming in ground plan the parallelogramic shape, with the corners a little rounded. Such figures were called *terriata castra*. Each corner nearly corresponded with the four cardinal points. At the south-west side are three pentagonal bastions; from which circumstance some writers have inferred that the town was founded under the lower empire, as flanking projections were not in use before that period. Other authors refer the building of the walls to the Saxons, but from the mode of constructing them, the size and quality of the bricks, and other evidences, this seems very improbable. The circuit of the rampart, nearly a mile in extent, may still be traced, and in most places is surrounded by a deep foss. The present walls are about nine feet in thickness at the top, and twelve feet at the base. The inclosed area is laid out in fields and orchards; and a few cottages, with the church, parsonage, &c. occupy the site of Roman mansions and Roman temples. Foundations of these, projecting above the level, and concealed under green hillocks, rise in many places, and columns, tessellated pavements, and coins, are continually discovered in ploughing and digging. A curious tessellated pavement was discovered about 40 years ago, and preserved under a shed constructed for that purpose. It is seven yards long and six broad, within a border of variegated stones; it contains three rows of three circular and spiral figures, not unlike those in many of our Turkey carpets, but

formed of tessellæ of various colours, neatly put together. Some have supposed, that the exploits of Arthur were performed at this place; and that when this was totally destroyed, they were transferred through ignorance or flattery to the other Caerwert or Winchester, at a time when it was one of the most important cities of the island. *Venta Silurum*, afterwards *Caer Gwent*, is supposed to have possessed sufficient consequence to give name to the county of Monmouth, and those parts of Herefordshire and Gloucestershire, which long retained the appellation of *Gwent-Land*. In a MS. of Llandaff, *Caer-Gwent* is mentioned as a place dedicated to learning, and far famed for its academy, which a disciple of St. Germanus governed with great commendation. Evans's Tour through South Wales, 8vo. 1804. Barber's Tour throughout South Wales, 8vo. 1803.

CAERWENT, or **CAER-GWENT**; q. d. *white city*, is also a name given by the first Celtic settlers in South Britain to the present city of Winchester, on account of the chalky cliffs that encompassed it. Under this appellation it has been recognized by the most ancient writers, domestic and foreign, who have recorded the early state of Britain. It was then no more than a collection of long cabins, built of mud, covered with reed and sheltered by the large spreading bows of the contiguous forest, and surrounded with a rampart and ditch for protection from the assault of neighbouring tribes. The adjoining fields were devoted to the fattening of flocks and herds, on the flesh and milk of which the inhabitants subsisted, before they were acquainted with the luxury of bread, and whilst they were averse from the labours of tillage. It was afterwards occupied by the Belgæ, who practised agriculture, and raised corn for the purpose of making both bread and beer, made cheese of their milk, and wore manufactured cloathing instead of the raw hides with which their predecessors were covered. When they took possession of it, it was called "*Venta Belgarum*." In 516, it was taken and almost totally demolished by Cerdic the Saxon commander; and afterwards denominated "*Wintanceaster*," or Winchester, which name expresses its former importance as a Roman station. Miller's Hist. of Winchester, vol. i. p. 6. See **WINCHESTER**.

CAERWYS, a small town of Flintshire, North Wales, appears to have been a Roman station, and also a place of judicature, or the *eisteddfod* of the ancient Britons. The town now consists of four spacious streets, crossing each other at right angles. Several Roman coins, and an inscribed stone have been found here. In the vicinity of the town are many tumuli; but Caerwys is principally celebrated for its *eisteddfod*, where the sessions of bards and minstrels were held for many centuries. Judges were appointed, and bards of acknowledged merit, and minstrels were admitted as competitors for the prize of fame. The judges were nominated by a commission from the provincial prince, till after the conquest of Wales by Edward I., when the English monarchs sanctioned this *eisteddfod*, as an institution calculated to soften the manners of a fierce and warlike people. Previous to this, we find that Gruffydd ap Cynon, contemporary with king John, enacted that no person should follow the profession of a bard, or minstrel, who was not regularly admitted by the *eisteddfod*, which was alternately held at the three royal residences, of Caerwys, Aberfraw, and Mathravel. In 1568, a commission was granted by queen Elizabeth, for holding an *eisteddfod* at this place, when 55 degrees were conferred on the most eminent candidates; 17 in vocal, and 38 in instrumental music. From this period the *eisteddfod* was neglected, till 1798, when a meeting was assembled by a public notice from

from the Gwyneddigion, or Vendotian Society instituted in London for the encouragement of Welsh literature. On this occasion the town hall was prepared for the reception of a numerous and respectable company. Twenty bards, eighteen vocal performers, and twelve harpers, assembled here, and each exhibited specimens of his respective profession and talents. The present town consists of 162 houses, contains 773 inhabitants, has a small weekly market on Tuesday, and is 212 miles N. W. from London. Evans's "Cambrian Itinerary," 8vo 1802.

CÆSALPINIA, in *Botany*, (named by Plumier in honour of Cæsalpinus, chief physician to pope Clement VIII.) Linn. Gen. 515; 516. Schreb. 701. 703. Willd. 815. Juss. 349. Vent. 376, 377. Gart. 442. 467. Class and order, *decandria monogynia*. Nat. ord. *Leguminosæ*, Linn. *Leguminosæ*, Juss.

Gen. Ch. Cal. perianth of one leaf with five divisions; tube short; segments oblong, deciduous, the lowest longer than the rest, slightly vaulted. Cor. petals five, inserted into the throat of the calycine tube, unequal. Stam. filaments ten or five, inserted into the throat of the calyx, thread-shaped, woolly or hairy at the base, declining; anthers oblong, decumbent. Pist. germ superior, linear-oblong, compressed, attenuated at the base; style thread-shaped, stigma blunt. Peric. legume oblong, compressed, one, two, or many-celled. Seeds rather egg-shaped, compressed, flat.

Eff. Ch. Calyx with five divisions; the lowest segment longer and slightly vaulted. Stamens woolly or hairy at the base. Petals five. Legume compressed.

Obs. These characters are so drawn up as to include Tournefort's Poinciana which has been admitted as a separate genus by Linnæus, Jussieu, Ventenat, Gærtner, La Marek, Bosc, and Poiret, the successor of La Marek in the botanical part of Encyc. Methodique; but as, according to La Marek, Poinciana differs from Cæsalpinia chiefly in the great length of its stamens, and the deep divisions of its calyx, the two genera have been incorporated by professor Martyn and Willdenow.

Sp. 1. *C. brasiliensis*, brasil-wood or brasiletto, Linn. Sp. Willd. Brown Jam. 227. "Stem and leaves without prickles." Linn. "Without prickles; leaflets ovate-oblong; rachis pubescent; calyx downy; stamens shorter than the corolla." Swartz. Observ. 166. This is said by Linnæus and Miller to be the tree which furnishes the brasil-wood, so well known in commerce and the arts. But La Marek, who has entirely omitted this species, asserts that the true brasil-wood is the next species which does not occur in any of the works of Linnæus; and it is worthy of notice that Mr. Miller, in direct opposition to the specific character of Linnæus, describes his *C. brasiliensis* as armed with recurved prickles corresponding with the descriptions of the brasil-wood given by the older botanists, all of which are quoted by La Marek as synonyms of his *C. echinata*. The synonym of Brown is however an original authority for the existence of a species without prickles; and on this account we have followed Willdenow in admitting the *brasiliensis* of Linnæus as well as the *echinata* of La Marek. 2. *C. echinata*, La Marek, Willden. Pseudo-santalum rubrum, five Arbor Brasilia: Bauh. Pin. 393. Rai Hist. 1736. Acacia Gloriosa Spinis armata, cujus Lignum Brasilia dictum Tinctoria; Pluk. Alm. 5. Ibra Pitanga, Marg. Pison. "Stem and branches prickly; leaflets egg-shaped, obtuse; legumens echinated." A large tree. Branches long and spreading. Leaves alternate, twice-winged; leaflets resembling the leaves of box. Flowers in simple racemes, variegated with yellow and red, sweet-scented. Legumes, dark-brown, oblong, compressed, beset with small points. Seeds reddish brown, smooth. The

interior wood is of a red colour, and is covered with so thick an alburnum, that of so vast a tree only a very small part is fit for the use of the dyer. It cannot be used without alum and tartar, and produces only a fugitive colour. Boiled in beer, wine, or vinegar, with the addition of alum, it makes a red ink. By the means of acids it becomes a kind of carmine; and, with different modes of treatment, is the basis of various pigments. It takes a good polish, is very hard and dry, crackles in the fire, and burns with very little smoke. A native of Fernambucco and other parts of Brasil. 3. *C. bahamensis*, La Marek. (Pseudo-santalum croceum, Sloane, Jam. Hist. 2. p. 184. Catefb. Car. 2. p. 51. t. 51.) "Branches prickly; leaflets inversely egg-shaped, emarginate; flowers white." A shrub or small tree. Branches and common petioles armed with short, scattered prickles, which are turned upwards. Leaves twice-winged; leaflets smooth on both sides; pale beneath, and of a delicate green above; have 5 at their base, and at the base of each pinnule, from two to four small, straight prickles. Flowers whitish, in straight racemes. Legumes oblong, pointed, peduncled, compressed. Seeds small, roundish. La Marek observes, that on account of the prickly branches, it cannot be referred to the *brasiliensis* of Linnæus, under which that author quotes the synonyms of Sloane and Catefb. A native of Bahama and Jamaica, whence it is brought to Europe for the use of the dyer. Large quantities of it were formerly cut down in some of the Bahama islands, but it is now nearly extirpated. 4. *C. vesicaria*, Linn. (Coluta Vera-crucis, Pluk. tab. 165. Senna spuria fabine odor, Sloan. Jam. Hist. 2. p. 50. t. 181. f. 2, 3. Rai dend. iii. No. 18.) "Stem prickly; leaves inversely egg-shaped; racemes spiked, flowers yellow. La Marek. "Leaves inversely heart-shaped, roundish." Linn. A tree. Stem about fifteen feet high, nearly the thickness of a man's thigh, rather crooked, covered with an even, whitish bark. Branches crooked, prickly. Leaves alternate, twice-winged; leaflets obtuse, a little emarginate, those at the summit of the wing a little larger than the rest; with a few hooked prickles at the base of each pair of leaflets, and each pair of wings. Flowers yellow in several distinct spikes. Legumes oval, nearly obtuse, blackish, furrowed. Seeds two or three. La Marek. Legume without valves, nearly filled with a spongy substance; two-celled, with a single seed in each cell. Gærtner, 442. tab. 144. Obs. Professor Martyn and Willdenow quote Poinciana bijuga of Linnæus, as a synonym of this species, and suppose that it has inadvertently been described twice, under different names, and placed in distinct genera. Poiret, who retains the genus Poinciana, though, as he himself acknowledges, without sufficient reason, takes no notice of *bijuga*, and therefore seems to be of the same opinion; but in that case he ought to have noticed the omission, as his predecessor La Marek, when he wrote the article Cæsalpinia vesicaria, had certainly no idea that the Poinciana *bijuga* is the same plant. Martyn and Willdenow prefer the trivial name *bijuga*, and give the following specific character, "Prickly; leaves doubly-pinnate with two pairs of obcordate leaflets; they and the calyxes smooth; stamens equalling the corolla." A native of the West Indies. 5. *C. crispa*, Linn. Sp. Pl. *C. polyphylla aculeis horrida*, Plum. gen. 26. t. 68. "Prickly; leaflets oval; racemes simple; calyx smooth; petals egg-shaped, shorter than the calyx; stamens longer than the calyx." A small tree, or rather shrub, about four feet high. Bark rather thick, ash-coloured without, red within. Wood solid, heavy, easily cleft, of a red colour, with a white alburnum. Trunk divided near its summit into several branches, nearly the size of a man's arm; and armed

with numerous, scattered, short, hooked, strong, blackish prickles, each situated on a tubercle. *Leaves* alternate; leaflets smooth, of a pleasant green colour. *Flowers* pale green or whitish, with only five stamens, in upright racemes forming a pyramid. La Marck, from Plumier's MSS. A native of the Antilles, where it is called *brasil-letto*, from the resemblance of its wood to that of brazil. 6. *C. sappan*, Linn. Sp. Pl. Roxb. Corom. 1. p. 17. t. 16. Gært. tab. 144. f. 1. La Marck Illust. Pl. 335. fig. 1. (Ligno brasiliano simile, Bauh. Pin. 393. Rai Hist. 1737. Lignum Sappan, Rumph. Amb. 4. p. 56. t. 21. Thiampongam, Rheed. Mal. 6. p. 3. t. 2.) "Prickly; leaflets oblong, not equilateral, obtuse, a little emarginate." A small tree. *Trunk* from ten to fifteen feet high. *Leaves* large, twice-winged; pinnules from twelve to fifteen; leaflets numerous, crowded, smooth, finely striated, obliquely truncate at the base. *Flowers* yellow, sweet-scented, in racemes. *Legume* somewhat woody, thick, short, somewhat rhomboidal, beaked, and one-celled, two-valved. *Seeds* about four, large, ovate-oblong, smooth. A native of the East Indies, Siam, the Molucca Islands, and Japan. Its wood is used for cabinet work; and being very durable in sea water, is excellent for trenails in ship-building: when boiled in water, it yields a blackish colour, which, with the addition of alum, becomes red, and is much used for dyeing woollens and cottons of a beautiful red colour. 6. *C. mimosoides*, Willd. La Marck Pl. 335. f. 2. (Kal-tod-da-waddi, Rheed. Mal. 6. p. 15. t. 8. Mimosa malabarica, Rai Hist. 1740.) "Stem, petioles and peduncles prickly; leaflets oblong, obtuse, small: legumes woolly." A shrub about four feet high. *Leaves* twice-winged, resembling those of several species of acacia, sensitive, with two or three large prickles at the base of each wing. *Flowers* large, yellow, in a long raceme; petals unequal, rather longer than the stamens. *Legumes* containing one or two seeds. A native of Malabar, communicated to La Marck, by Sonnerat. 7. *C. pulcherrima*, Barbadoes flower-fence, or Spanish carnation, Willd. Martyn, (Poinciana pulcherrima, Linn. Sp. Pl. Reich. La Marck Pl. 333. Bosc. Nouv. Dict. Pl. M. 26. Poiret Encyc. Meth. v. 5. p. 447. Brown. Jam. p. 225. Jacq. Americ. 122. Tourn. Inst. 619. t. 391. Crista pavonis, Breyn. Prod. 2. p. 37. Cent. 61. t. 22. Rai. Hist. p. 991. Erythroxylon ind. Herm. Prod. 333. Senna spuria flore ex luteo & rubro, Sloane Jam. 2. p. 49. Acacia orientalis, Plukn. Al. 5. Tsietti mandaru, Rheed. Mal. 6. 1. t. 1.) "Prickly; leaflets oblong-oval, emarginate, smooth; calyx smooth; corymbs simple; petals fringed; stamens very long." A shrub about twelve feet high, with a grey, smooth bark. *Branches* spreading, armed at each knot with two short, strong crooked spines. *Leaves* alternate, twice winged; leaflets from five to ten pairs, a little narrowed at the base, smaller on the upper leaves; emitting, when bruised, a strong odour like favin; with one gland at the base, and another on the upper part of the common petiole, and two small sharp joints a little above the base of the partial petiole. *Flowers* in a terminal, loose corymb, sometimes approaching to an umbel; on simple, smooth peduncles, two or three inches long; leaves of the calyx egg-shaped, concave, deciduous; petals beautifully variegated with red and yellow; stamens at least three times as long as the petals. *Legume* oblong, compressed, coriaceous, many-celled, two-valved; partitions rather thick, composed of rigid bristles, thickly matted together. *Seeds* one in each cell, ovate-quadrangular, thick, flat on both sides, smooth, a little polished, of a chestnut colour. A native of the East and West Indies. In Barbadoes it is planted in hedges, and makes a beautiful fence. In Jamaica its leaves are used as

a purgative, instead of senna. All its parts are thought to be powerful emmenagogues, and are frequently used for that purpose by the negroes. Its wood is said to afford a good dye. 8. *C. elata*, Willd. (Poinciana elata, Linn. Sp. Pl. Forsk. Flor. Egypt. 86.) "Unarmed; leaflets linear, obtuse, with a point, corymbs compound; calyxes coriaceous, downy; petals fringed; stamens very long." A shrub or small tree. *Branches* pubescent. *Leaves* alternate, twice-winged; leaflets in about twenty pairs, minute, almost smooth. *Flowers* in terminal corymbs, on short, stiff, thick, alternate peduncles; leaves of the calyx united at their base, lanceolate, pubescent, a little reflexed. *Legume* almost smooth, often depressed between the seeds, sharp at each end. A native of the East Indies. 9. *C. coriaria*, Willd. (Poinciana coriaria, Jacq. Amer. 123. t. 175. f. 136. Siliqua arboris Guatapanæ, Breyn. Cent. p. 58. f. 5.) "Unarmed; leaflets linear, obtuse; racemes panicked; calyxes smooth; stamens twice as long as the corolla." A shrub from twelve to fifteen feet high, much branched, with dark-coloured spotted bark. *Leaves* alternate, twice-winged; leaflets small, smooth, about three lines long. *Flowers* small, yellow, in a terminal, close, spikelike raceme, on short, simple, peduncles, with little smell. *Legumes* elongated, obtuse, short, a little bent, spongy. A native of Curaçoa and Carthage; in salt marshes. The Spaniards and natives use the ripe pods for tanning leather, and call them libidibi.

Propagation and Culture. As all the species are natives of warm climates, they are cultivated in Europe only as ornamental plants; and though none of them have hitherto flowered in our stoves, the elegance of their foliage, and the singularity of their habit, give them a distinguished place in collections of exotic plants. They can be raised only from seeds sent in the pod from their native country, and afterwards steeped in water till they are swollen, and their envelope a little softened; but if kept dry will preserve their vegetative power several years. The seeds, when taken from the water, must be sown in pots filled with a mixture of common mould and bog-earth, in nearly equal proportions, and plunged into a hot-bed of tanner's bark, kept at a moderate warmth. The plants, if sown at the end of March or beginning of April, will appear in the course of May or June, and when they are three or four inches high, should be transplanted singly into separate pots, with a larger proportion of good mould. In autumn they must be removed from the hot-bed into the stove, and during the first winter must be carefully preserved from cold, humidity, and insects, and furnished with fresh air in the day-time, when the weather is favourable. They succeed better in a light, than a strong argillaceous earth.

CÆSALPINIA, Fl. Zeyl. 157. See GUILLANDINA Bonduc.

CÆSALPINOIDES. See GLEDITSCHIA Triacanthos.

CÆSALPINUS, ANDREW, in Biography, born at Arezzo in Tuscany, in the early part of the 16th century, was educated under Luke Ghines, director of the public garden at Pisa, whence he appears to have taken his taste for botany, which he cultivated with assiduity and success. But he became still more eminent for his skill in anatomy and medicine, and for his intimate acquaintance with the works of Aristotle, whose philosophy he explained and defended, in his "Questionum Peripateticarum Libri Quinque," against the doctrines of Galen, then generally followed. This was published at Venice in 1571, 4to. After taking his degree of doctor, he was made professor in medicine and anatomy in the university at Pisa, and continued in that office several years, until invited to Rome, and made first physician and archiater to pope Clement VIII. He died at Rome, aged 84 years, in 1603. His works are numerous, and give equal proofs of genius and learning.

"De

"De Plantis Libri xvi" Florent. 1583, 4to. He compares the seeds of plants to the eggs of animals; the seed sowing, he says, to defend and nourish the germ until it has taken root in the earth. He also formed a system of arrangement, dividing the plants into classes, from the fructification; but as there are no engravings, or delineations of the plants, and he only gave the trivial names, the work is of little value at this time. He left a *hortus siccus* of 760 plants, which is said to be now in being. His speculations in anatomy are still more ingenious. He describes very clearly the circulation of the blood through the heart, and was acquainted with the uses of the valves. Douglas thinks him entitled to equal praise with Harvey, who only completed what he had nearly achieved. He clearly, Douglas says, describes the contraction and dilatation of the heart, which is shewn from the following passage from his fourth book, "*Questionum Peripateticarum*." "*Vasorum in cor defluentium quædam intromittunt contentam in ipsis substantiam, ut vena cava in dextro ventriculo, et arteria venalis in sinistro; quædam educunt, ut arteria aorta in sinistro ventriculo, et vena arterialis in dextro; omnibus autem membrana sunt appositæ et officio delegatæ ut oscula intromittentium non educant et educentium non intromittant, contingit corde contrahente, seu arterias dilatari, et dilatantes contrahere; dum enim dilatatur cor, claudunt vultu ostia educentium, ut ex corde non influat tunc substantia in arterias, contrahente autem se, influere dehiscuntibus membranis.*" The pulse, he thinks, depends on an effluence of the blood in the heart. His works on the practice of medicine have also their portion of merit. "*Questionum Medicarum Libri ii.*;" "*De Facultatibus Medicamentorum Libri duo.*" Venet. 1593, 4to. Bleeding can only be advantageously used in the beginning of fever. In putrid fever the cure is to commence with clearing the stomach and bowels. "*Speculum Artis Medicæ Hippocraticæ, exhibens diagnoscendos curandosque morbos, in quo multa videntur, quæ a præclarissimis medicis intacta relicta erant.*" Lion. 1601-2-3, 3 vols. 8vo. treating of the *Materia Medica*, fevers, lues venerea, &c. in which disease he very much extols the use of guaiacum. Douglas. Bib. Anat. Specimen. Haller. Bib. Bot. Med. et Anat.

CÆSAR, in *Roman Antiquity*, was a long time used for the heir intended, or presumptive, of the empire; as *king of the Romans* has been long used for that of the German empire.

The Cæsars were a kind of adjuncts or associates of the empire, *participes imperii*. They wore the imperial mantle, purple, and diadem, and walked with other marks of the sovereign dignity: they were created, like the emperors, by putting on the purple robe.

The dignity of Cæsar remained the second of the empire, till Alexius Comnenus made Nicephorus Melissenus Cæsar by contract, and it being necessary to confer some higher dignity on his own brother Isaacius, he created him Sebastocrator, with the precedence over Melissenus, ordering that in all acclamations, &c. Isaacius Sebastocrator should be named the second, and Melissenus Cæsar the third.

The title took its rise from the cognomen, or surname of the first emperor, C. Julius Cæsar, which, by a decree of the senate, all the succeeding emperors were to bear. Under his successor, the appellation Augustus being appropriated to the emperors, in compliment to that prince, the title Cæsar was given to the second person in the empire, though it still continued also to be given to the first, and hence the difference between Cæsar used simply, and Cæsar with the addition of Imperator Augustus. Authors are divided as to the origin of the word Cæsar, the cognomen of the *Gens*

Julia. The more common opinion is, that the word Cæsar comes à *cæso matris utero*; because his mother's womb was cut open to give him birth.

If this opinion be true, she must have survived the operation; for we are told by Tacitus (*Dialog. de Orat.* 28.) that she took care of his education, and by Suetonius (*in Cæs. c. 26.*), that she died when her son was in the war against the Gauls. It is also known that she was alive when he was married to Pompeia. It has been alledged, however, that the words of Pliny (*H. N. lib. vii. 3. 9.*), upon which this opinion is founded, have been erroneously applied to Cæsar the Dictator; whereas he meant only to express, that the first person who was furnished Cæsar had derived his name from this circumstance.

Some pretend that the laurel crown on medals is never given to Cæsars, but only to Augusti; which is overthrown by a medallion of Maximus; not to mention another medal of the lower empire, wherein Crispus Cæsar is crowned with laurel. See AUGUST.

Card. Norris observes, that the years of the Cæsars were frequently marked on their medals; of which we have instances on the medals of Constantine, Chlorus, and divers others, whose years are expressed on their coins, though they were never more than Cæsars.

CÆSAR, CAIUS JULIUS, in *Biography*, the dictator of Rome and founder of its imperial constitution, was a descendant of the Julian family, which boasted its derivation from Venus by Æneas, the son of Anchises, to whom fabulous history ascribes the origin of the Roman state. See ÆNEAS. From the 10th year of the second Punic war, A. U. C. 546, till the time of Caius Julius Cæsar, the emperor's father, some of the family of the Cæsars enjoyed public offices in the commonwealth. The father of Cæsar died suddenly in early life, after having occupied the station of prætor: his mother's name was Aurelia; and his aunt Julia was the wife of the celebrated Caius Marius. He was born at Rome, on the 12th day of the month Quintilis, afterwards called July, A. U. C. 654, B. C. 100; and though he lost his father in his 16th year, his connections were such as to favour his introduction into life in a manner suitable to his talents. In his youth he was betrothed to Cossutia, a rich heiress; but in his 17th year he broke this engagement, and married Cornelia, the daughter of L. Cornelius Cinna; and at this time he was invested with the dignity of *flamen dialis*. When Sylla succeeded in overthrowing the Marian party, to which Cæsar owed his advancement, he was urged by this powerful dictator to divorce the daughter of his enemy; but Cæsar, resisting the injunction, was deprived of the priestly office, as well as of his own patrimony and his wife's portion, and subjected to a decree of proscription. This decree, however, was afterwards reversed, by the intercession of the Vestal virgins and some distinguished persons of his own family; although in granting their petition Sylla admonished them, that they would repent of their interference, as he foresaw in Cæsar many Mariuses. Cæsar, alarmed at his jealousy, retired from Rome, and after a short interval withdrew to the court of Nicomedes, king of Bithynia, where his conduct gave occasion to some suspicions of an infamous nature. At the siege of Mitylene, in which he was employed by Thermus, who was at this time prætor of Asia, he distinguished himself by his military valour, and obtained from his general the honourable recompence of a civic crown. Having served for a short time in Cilicia, under Servilius Isauricus, the death of Sylla made way for his return to Rome; where, declining to concur in the ambitious designs of Lepidus; he devoted himself to the study and practice of eloquence. The mal-administration of Dolabella,

bella, who had been prætor of Macedon, and who had been honoured with the consulate and a triumph, afforded him an opportunity of gaining distinguished reputation among the best orators of his age, although the defence of Hortensius and Cotta, the two most celebrated pleaders of Rome, prevented his success. As at this same time he does not seem to have formed, or at least to have matured, those ambitious designs which led him to prefer the career of war and politics to that of an orator, he embarked for Rhodes, with a view of gaining improvement in the art of eloquence from the instructions of Apollonius Molon, one of the most eminent rhetoricians of that period. In his passage thither, he was captured by some pirates who infested those seas; and during his confinement he exhibited those peculiar and extraordinary talents, which were afterwards exemplified in the progress of his life. His captors demanded 20 talents for his ransom, but he informed them that they were not duly apprized of the importance of their prisoner, and engaged to pay them 50; and whilst his domestics were deputed to raise the stipulated sum in the neighbouring cities, he remained in custody, accompanied only by one friend and two attendants, and amused himself with reciting to his barbarous auditors, whom he treated with contempt, some orations and verses which he composed for the occasion; and often, between jest and earnest, threatened them with future tokens of his displeasure, if they disturbed his repose. Having been furnished with the promised ransom by the inhabitants of Miletus, he obtained his liberty, and in that city fitted out some ships, with which he pursued and captured the pirates; and, having conveyed them to Pergamus, he there inflicted upon them the punishment of crucifixion, with which he had threatened them. He then proceeded to Rhodes, and pursued his studies. During his residence in this city, he took occasion to pass over to the continent, and though he had no commission, to raise troops, and with this force to check the progress of Mithridates, who was making depredations on the provinces in alliance with the Romans, and to preserve those cities, which were ready to revolt, steady in their allegiance. At this time he was only 24 years of age, and yet conducted this expedition with a prudence and bravery which would have done honour to the veterans in military service. On his return to Rome, the chief object of his policy was to ingratiate himself with the people, and thus to secure his advancement to those public offices, which would serve him in the accomplishment of the purposes of his ambition. Accordingly he concurred with Cicero in promoting the Manilian law, and in thus securing the favour of Pompey. In the several offices of tribune, quæstor, and ædile, he contrived by his general conduct, and by his unbounded liberality, to attach to himself the affections of the people. He testified his respect in a variety of instances to the Marian party, although by so doing he incurred the censure of the aristocracy, who charged him with meditating designs against the government. He also obtained the consulate for L. Julius Cæsar, one of his own family, who, together with his colleague C. Marcus Figulus, under Cæsar's direction and influence, condemned many of the partisans of Sylla either to banishment or to death. Catiline, however, was spared; and Cæsar is even suspected to have concurred in his conspiracy. When this conspiracy was suppressed, and the senate deliberated on the punishment to be inflicted on those that were concerned in it, he delivered an artful speech in praise of clemency, and his oration, which is still extant, and which, as a composition has been much admired, made an impression on the assembly, which the severe eloquence of Cato was hardly sufficient to counteract. Cæsar gave a single vote against the death of the conspirators; and his in-

terference in their favour excited such indignation that he escaped with his life by the seasonable interposition of Cicero, whose testimony contributed to his justification, notwithstanding the charges alledged against him of his concern in the plot. During the progress of this contest, Cæsar indulged in the licentious gratifications of intemperance and gallantry; and Servilia, the sister of Cato, avowed her passionate attachment to him, and he was supposed to be the real father of her son Marcus Brutus. See BRUTUS. The success of Cæsar, in his competition for the office of chief pontiff, against two of the chief persons of the republic, served to augment the jealousy entertained of him by the Senatorian party. Notwithstanding the licentiousness of his own life, his pride would not allow him to submit to the suspicion of domestic dishonour; and therefore, upon the discovery of an intrigue between his wife Pompeia, whom he had married after the death of Cornelia, and P. Clodius, (see *BONA DEA*), he instantly procured a divorce, though he did not succeed so far as to substantiate the charge; alledging in vindication of his conduct, "Cæsar's wife must not be even suspected." At this time he was serving the office of prætor, upon the expiration of which he prepared for assuming the government of Farther Spain, comprehending Lusitania and Bætica, which fell to his lot; but his creditors would have prevented his succeeding to his new province, if Crassus had not satisfied their demands. In his journey, he passed through a miserable village on the Alps; and when one of his companions jocularly inquired, "whether there could be any contentions for power and dignity in such a place?" Cæsar, in token of his ruling passion, replied, "I protest that I had rather be the first man here, than the second in Rome." His rapacious disposition, like that of other Roman governors, was manifested on some occasions no less signally than his ambition. He considered his government as affording the opportunity and means of enriching himself; and, therefore, availing himself of pretexts for disputes, he marched into provinces unsubdued by the Roman arms, for the purpose of plunder; and brought back to Rome, in the following year, a sum sufficient for discharging his debts, though they are said to have amounted to 1,600,000*l.* sterling.

Having passed through the subordinate offices of the state, the next object of his ambition was the consulate. In order to the attainment of this dignity, it was necessary for him to connect himself with one of the two parties that divided the power of the state, that of Pompey or that of Crassus. In this dilemma, he determined on reconciling the two rivals; and accordingly he proposed a triumvirate, in which the whole power of the state should be lodged, and this was the first triumvirate established at Rome. See TRIUMVIRATE. By this artful expedient Cæsar by means of the interest of Pompey and Crassus, secured his election to the consulship. A. U. C. 694. B. C. 60. Cato alone foresaw the consequences of this alliance, and opposed the election; exclaiming, that Rome had lost her liberty; but his opinion was disregarded till it was too late to follow his prudent counsel. The only advantage which he and his party obtained was the election of Bibulus as Cæsar's colleague; and for this purpose they were under a necessity of counteracting Cæsar's interest in favour of another candidate, by outbidding him in the purchase of votes. As soon as Cæsar entered upon his office, he confirmed all the acts of Pompey, and proceeded to use all his endeavours for conciliating the affections of the people. With this view he proposed an Agrarian law for the division of certain lands in Campania among such of the poor citizens as had three or more children; but the senators, though they approved the act, withheld their

their assent, till at length it was passed by the people, and the senators were constrained to sanction it by their assent; inasmuch that it was jocosely said, that, instead of dating any transaction of this year in the usual mode, during the consulship of Cæsar and Bibulus, it would be more proper to insert "the consulship of Cæsar and Julius." This victory over the senate and Bibulus made Cæsar absolute in Rome; and having secured both the people and knights, he governed with an uncontrollable sway.

As Cicero exclaimed against the triumvirate, and thus provoked the resentment of this body, they resolved upon his ruin, and with this view they promoted Clodius to the tribuneship, which proved eventually the cause of his banishment. The marriage of Cæsar's daughter Julia with Pompey, served to strengthen the connection between these two great men; and by marrying Calpurnia, daughter of L. Calpurnius Piso, the consul of the preceding year, he attached him to his cause.

He also contrived by his influence on the senate and people, together with the assistance of Pompey and Crassus, to procure the government of Transalpine and Cisalpine Gaul, contrary to all law, for five years, with the command of four legions.

Having thus established his interest at Rome, Cæsar found it necessary, in the year B. C. 58, to hasten to Gaul, the province which was the scene of those military exploits, by which he acquired a degree of reputation and influence, that served in the progress of his career to subjugate his country. The Helvetians, having abandoned their country, and burnt their towns and houses, were preparing to enter Gaul by way of Geneva. Cæsar, therefore, by forced marches, reached the banks of the Rhone in eight days, and having refused the Helvetians the liberty they solicited of passing through the country of the Allobroges, prepared, by procuring fresh supplies of troops from Italy, to defend himself against the effects of their resentment. Accordingly, whilst they were embarrassed in passing the Arar, (now Saône), he fell upon them and totally defeated them. Upon their again rallying near Bibracte, the capital of the Ædui, and pursuing him in his retreat, a bloody battle ensued, which terminated, notwithstanding the valour and obstinacy of the Helvetians, in their total overthrow; so that they were obliged, after the loss of their baggage and many prisoners, to supplicate his clemency; and to acquiesce in the obligation which he imposed upon them, of laying down their arms, giving hostages, and returning to their own country. This victory was so complete, that Cæsar received congratulations from all parts of the country, and the Ædui, in particular, implored his protection against Ariovistus, king of the Germans, whom he drove back from the frontiers of Gaul to his own territories. Having succeeded in this enterprise, he put his troops into winter-quarters, and crossing the Alps, returned into Cisalpine Gaul, in order to concert measures for the operations of the next year. In the mean while all the nations of Belgium confederated against the Roman republic, and furnished ample employment for his military exertions in the course of the second year of his government. The fame of his exploits in dissolving their confederacy, and subduing them separately, extended beyond the Rhine, and induced several remote nations to send ambassadors to him, with offers of submission. Having dispatched his troops into winter-quarters, he repassed the Alps, and spent the winter in Insubria. By these conquests, Cæsar effaced the remembrance of Pompey's victories in the East, and by the prodigious sums, which he acquired in Gaul, chiefly by plundering the temples of their treasures, he increased the number of

his friends in Italy. The signal successes of this bloody campaign were honoured at Rome with a *supplicatio*, or religious thanksgiving of the unprecedented interval of fifteen days; and Pompey became jealous of a renown that seemed likely to eclipse his own. In the third year of his administration in Gaul, Cæsar, whilst he was in Illyricum, a part of his province, received information that the Veneti, the ancient inhabitants of Vannes, in Brittany, together with some other neighbouring nations, were making preparations for war; upon which he fitted out a fleet, entrusted the command of it to Brutus, who engaged that of the enemy, and gained a complete victory. The Veneti submitted; but Cæsar put their chief men to death, and sold the rest for slaves. Crassus also, his lieutenant, reduced the whole of Aquitaine.

After some other successful expeditions, Cæsar repassed the Alps, according to his usual custom, and resided for some months in Cisalpine Gaul, whence he directed the operations of his party at Rome, and excited Clodius to commit atrocious acts of violence. He likewise concurred with Pompey and Crassus, who aspired to the consulate, and ordered his agents to spare no expence in purchasing the suffrages of the tribes, so that these two chiefs were unanimously chosen. In the year B. C. 55, Cæsar renewed his military exploits in Gaul; and having driven back some German tribes, which had crossed the Rhine with a design of settling in Belgium; and having passed the Rhine, laid waste the country of the Sicambri, and spread a general alarm through the parts adjacent, he returned into Gaul, resolving to pass over into Britain, and to punish its inhabitants for furnishing the Gauls with continual supplies against the Romans. Accordingly, he fitted out a fleet, crossed the channel, and dispersed the natives who opposed his landing. This expedition, however, though the senate decreed him a supplication of twenty days in honour of it, was merely preparatory to that of the following year, in which he collected 800 vessels, and embarked with 5 legions, and 2000 horse, which landed without opposition on the Kentish coast, at the place of his former descent. His progress was for some time interrupted by a storm which damaged his fleet, and required his drawing his forces towards the sea-coast. But having repaired his shattered ships, and properly secured them, he put his troops again in motion, and advanced, notwithstanding the opposition with which he had to encounter, as far as Cowey, near Walton, where he crossed the Thames, although the enemy occupied the opposite bank, and had driven sharp stakes in the only part of the river that was fordable. The Britons fled in consternation; and Cassivelaunus, finding all his efforts of resistance ineffectual, submitted to Cæsar, who condescended to give him peace; after having exacted a great number of hostages, and imposed a certain tribute to be annually paid to the Roman people. Having thus settled the affairs of Britain, he marched back to the sea-side, where he embarked his troops and hostages, and arrived in safety at the continent. On his return to Gaul, he found the country grievously distressed by a famine, which obliged him to disperse his troops into different quarters for their more commodious subsistence. The natives took this occasion of attacking them in their winter stations; but Cæsar by his singular activity quelled the insurrection, and after the most difficult and glorious campaign of any he had made in Gaul, passed the winter in this country.

The death of Julia during Cæsar's expedition into Britain dissolved the alliance that had subsisted between him and Pompey, and hastened the revolution which was now approaching. Pompey, however, was not thoroughly ap-

prised of Cæsar's designs, and dispatched to him two legions in order to recruit the losses which he had sustained. The two next campaigns in Gaul furnished Cæsar with incessant employment, and by completing the work which he had already begun, he reduced the whole country to the state of a Roman province, and extinguished every spark of its independence. The war in Gaul lasted till the year B.C. 51; and it has been computed that, during his several campaigns there, Cæsar took 800 cities or towns, subdued 300 nations, and destroyed by the sword a million of men; "titles sufficient to place him high on the list of conquerors!" The crisis of the Roman state was now speedily approaching. The power of Pompey was supreme in the senate, and as Crassus was dead, and his interest was altogether detached from that of Cæsar, he adopted various measures for mortifying his rival. The enemies of Cæsar were advanced to the chief offices of the state; the legions that had been sent to him were withdrawn; and his request of continuing longer in his government was rejected. Cæsar, however, possessed the affections of the people, and to him the best troops of the state were zealously attached. With a moderation, therefore, real or affected, from which no danger could ensue, he proposed to disband his army, if Pompey adopted the same measure. But Pompey, being less feared by the constitutional party than Cæsar, was supported by it in his refusal to acquiesce in any terms of accommodation. The former was continued in his government of Spain, whilst the like indulgence was refused to the latter, who, having marched with a single legion across the Alps to Ravenna, in order to wait the event, was informed that the senate had issued a decree announcing him an enemy of the republic if he did not give up his command within a limited time. Three tribunes in Cæsar's interest, who had protested against this decree, were driven with violence out of the senate-house; and had fled to Cæsar's camp in the disguise of slaves, where their presence inflamed the minds of the soldiers. In the mean time the fatal decree was issued at Rome, which required the consuls, the pro-consul Pompey, and the consular magistrates, to provide for the public safety: which, in effect, was a declaration of war. It was in the year B.C. 50 that these important events took place, and that the civil war commenced. Two powerful parties were now taking up arms; both pretended to have nothing in view but the defence of their common laws and liberty, whilst their chiefs aimed only at establishing their own power on the ruins of that liberty which they affected to defend. Pompey's party had on their side the forms of the constitution; he was acknowledged as the general of the common-wealth, and the whole senate, with the consuls, followed his ensigns. On the other hand, Cæsar seemed to have the more equitable cause, and the people, with their tribunes, took part with him. The poet Lucan, who was of Pompey's party, without absolutely deciding the question between those two rivals, seems to give the advantage to Cæsar, when he says, that Cæsar, could not bear a superior, nor Pompey an equal.

"Nec quenquam jam ferre potest, Cæsare priorem,
Pompeiusvæ parem." *Phars. l. 125.*

Cæsar, as soon as he received the hostile decree, confiding in the attachment of his soldiers, resolved to begin the war. Accordingly he marched to the Rubicon, a small stream that separated Cisalpine Gaul from Italy. On the banks of this river he for some time paused and deliberated; but at length, crying out "the die is cast," threw himself into the stream. Having passed this river, he became the avowed foe of his country; and therefore "this passage of the Rubicon" has been proverbially used to signify a

desperate decision. Having seized the neighbouring town of Ariminum, he ordered his main army in Gaul to hasten to him, and augmented his forces by new recruits in Cisalpine Gaul. In his march he took possession of Corfinium, in which many senators had sought an asylum, and whilst he triumphed in his conquest, he manifested his moderation by granting them their lives and liberty. By this well-timed act of clemency he served his cause almost as much as by the power of his arms. Rome was in the utmost consternation. The people and all the senators were alarmed; and determined, as they had no sufficient force with which to defend themselves, to retire to Capua. After the reduction of Corfinium, Pompey withdrew from Capua to Brundisium, whither he was followed by Cæsar. From thence he withdrew, whilst his pursuer was investing the place and shutting it up by a mole, to Dyrrachium; and by his flight surrendered the whole of Italy to his rival. Whilst the lieutenants of Cæsar were deputed to take possession of Sicily and Sardinia, Cæsar himself advanced to Rome. On his approach to the city, he sent a message to the senators then in Italy, requesting their counsel in the capital, and quartered his troops in the neighbouring municipia. To the assembled senators he gave an account of his conduct and avowed his moderation and desire of compromising all differences; whilst the people crowded to see the famous conqueror of Gaul, and to congratulate him on his return after an absence of 10 years. With a view of providing for the necessary expences of the war, he repaired to the temple of Saturn and seized the public treasure: and thus supplied with money, he raised troops in every part of Italy, and sent governors into all the provinces subject to the republic. The war was now prosecuted with vigour. Cæsar himself undertook the campaign in Spain, and soon subjugated the whole country; and on his return to Rome the prætor Lepidus nominated him dictator by his own authority. Having exercised this dignity with moderation, he changed it for that of consul. He then pursued Pompey into Greece, and landed with five legions in Chaonia: but the destruction of the greatest part of his fleet by the stronger squadron of Pompey, and the formidable force of his antagonist, induced him to propose terms of accommodation, which, though apparently reasonable, were disregarded. Anxious to effect a junction with that division of the army which was commanded by Antony, he made an attempt, the temerity of which has incurred censure. Disguised like a slave he embarked on board a fisherman's bark for the purpose of crossing over into Italy; the vessel, however, after struggling with contrary winds, was obliged to return, notwithstanding the earnestness with which Cæsar urged the crew to risk the dangers of the voyage. It was on this occasion that he is said to have discovered himself to the terrified master, and to bid him dismiss his fears, as "he carried Cæsar and his fortune." This exploit it related by Plutarch, and poetically described by Lucan; but Cæsar himself takes no notice of it in his Commentaries. Having received the expected succours of Antony, he followed Pompey to Dyrrachium, and determined to invest the town, together with Pompey's camp. In this siege his troops encountered a variety of hardships, which, however, their attachment to their leader induced them to endure with heroic patience. Pompey, reduced to the want of forage, and disdaining to be cooped up by his enemy in such a nook of land, determined to break through the barrier, and at length succeeded. Cæsar, mortified by his escape, retired to Macedonia, whither Pompey followed him; and on the plains of Pharsalia the great contest between these two commanders was decided, B.C. 48. The army

of Pompey was totally routed; and Cæsar equally distinguished himself by his valour and conduct in the battle, and by his magnanimity and clemency after the victory. He dismissed the Roman citizens who were made prisoners; and burned, without perusing them, the letters which were contained in Pompey's cabinet. Assiduous and active in pursuing the advantage he had thus gained, he left the plains of Pharsalia on the third day after the battle, and with his cavalry pursued Pompey. Crossing into Asia, and receiving on his passage the submission of a superior fleet of Pompey which he fell in with, he hastened to Rhodes, and embarked for Egypt.

At Alexandria he was informed of Pompey's murder; and the head of his rival, wrapped up in a veil, was presented to him as a token of his final success. He turned his eyes from viewing the bloody spectacle, and reflecting on the fate of this eminent personage, once his friend and his kinsman, shed tears on the occasion; and dismissing the messenger with expressions of displeasure, ordered the head to be buried with due solemnity. As a farther tribute of respect for his deceased rival, he set at liberty all his friends who had been taken on the inhospitable shore of Egypt, and imprisoned by order of the ministers of king Ptolemy. At Alexandria he took up his residence in the royal palace; but by exacting with rigour a sum of money, pretended to be due to the Roman people for their services in restoring to the throne Ptolemy Auletes, father of the present minor king, and also by undertaking to reconcile young Ptolemy with his sister Cleopatra, who, by the will of Auletes, was to have reigned jointly with her brother, but who had been expelled the kingdom, he exercised an authority which offended the Alexandrians. Accordingly they besieged him in his palace, and thus commenced the *Alexandrian war*, in which Cæsar failed to acquit himself either with prudence or justice. In this war part of the famous *ALEXANDRIAN library* was burnt in consequence of a conflagration of some ships of the Alexandrian fleet. Cæsar, who had possession of Ptolemy's person, was at length so hardly pressed as to be obliged to surrender him in order to obtain a cessation of hostilities; but he was relieved by Mithridates, king of Pergamus. Ptolemy, however, continued the war, till he was defeated in two actions, and lost his life in the Nile by attempting to make his escape. In consequence of this event Cæsar settled the affairs of Egypt, by conferring the crown jointly on Cleopatra and a younger brother of Ptolemy. Fascinated by the allurements of this enchanting woman, by whom he had a son, he remained in Egypt in a state of inactivity, till he was called away by the progress of Pharnaces, son of Mithridates the Great, who was expelling the Romans from Asia Minor.

When the news of Pompey's death reached Rome, the senate and people concurred in accumulating honours and prerogatives on Cæsar, the only surviving master of the empire. He was proclaimed consul for five consecutive years, made tribune of the people, and created dictator for a whole year. Having defeated Pharnaces in Asia, whom he pursued with a celerity, emphatically expressed in a laconic epistle to a friend, "*Veni, vidi, vici; I came, I saw, I conquered*"; and settled the affairs of this province, he returned with only one legion through Greece to Rome, and by the moderation and placability which he exercised on this occasion, dissipated the fears of the vanquished party, and founded the basis of his usurpation without shedding one drop of blood. His views were next directed towards Africa, where the remains of Pompey's party maintained a formidable strength under Cato, Scipio, and other renowned leaders; but whilst he was preparing for his expedition into this country, a mutiny

broke out in his favourite tenth legion, which afforded occasion for a display of his distinguished talents as a commander. Having summoned them to the Campus Martius, with no other arms besides their swords, he required them to state the grounds of their complaints. After some pause, occasioned by the awe of his presence, they began tumultuously to demand their discharge, and the rewards to which they were entitled. "Your demands," said he, "are just; you shall have your discharge. Nor shall you be deprived of your rewards, as soon as I shall have subdued the rest of my enemies. Go then, *citizens (quirites)*, return to your houses and families." Grieved and mortified at being addressed with an appellation, which implied that they were no longer *soldiers*, they made a fresh tender of their services, and supplicated the honour of being still the companions of his victories. After some suspense, and a suitable speech, he pronounced their pardon, and again addressed them as *fellow-soldiers*. This legion, from this time, uniformly distinguished itself by the ardour of its attachment to him. The *African war* commenced in the year B. C. 46, and was for some time attended with dubious success on the part of Cæsar. However, by the celerity of his operations, he completely defeated the armies of Scipio, Labienus, and Juba; but the town of Utica was still defended by Cato and his "little senate." This true patriot, perceiving that resistance was ineffectual, secured his own freedom by a voluntary death. When Cæsar had settled the government of Africa, and issued orders for the re-erection of Carthage, he returned in triumph to Rome, and was received by the senate and people with unbounded adulation. To the dictatorship, extended to ten years, was added the censorial office. A double guard was assigned him, and his person was declared sacred and inviolable. A thanksgiving of 40 successive days, and four distinct triumphs, were decreed for his victories. His triumphs over Gaul, Egypt, king Pharnaces, and Juba, were conducted with singular splendour: he treated the people with shows, feasts, and donatives, and conferred ample rewards on his soldiers. He also directed his attention to the reformation of the government, and enacted several salutary laws; but he reserved to himself the nomination to all offices and employments. At this time he availed himself of the assistance of Sosigenes, and other men of science, in the correction of the calendar (which see), and in the establishment of the "Julian year."

Whilst Cæsar was thus employed at home, the two sons of Pompey were collecting a considerable force in Spain, and his presence was necessary to restrain their progress. Accordingly, in his fourth consulship he departed for the *Spanish war*, and having reduced several places, he marched to the plains of Munda, where the elder Pompey was encamped. Notwithstanding the superiority of the enemy, he advanced to the attack; and in the battle which ensued, contended for a long time, as he himself acknowledges, not for victory, but for life. So desperate were his circumstances, that, at one period of the conflict, he thought of killing himself: but recovering his self-possession, he exerted himself with such valour as to turn the fortune of the day, and in the event of the contest to annihilate the relics of Roman liberty. After having completed the reduction of Spain, he returned to Rome and received new honours. The dictatorship was established for life: and the title of "Imperator," as head of the empire, and denoting the highest monarchical rank, was conferred upon him, and from him it was transmitted through his successors. Notwithstanding all these accessions of rank and honour, Cæsar retained the affable manners of the first citizen of the republic, and studied to ingratiate himself with the nobles and people.

people. He pleased the latter by dismissing his guards, restoring the statues of their former favourite, Pompey, and treating them with shows and largesses; and he secured the attachment of the nobles, by the multiplication of offices of dignity and profit. However, he offended the senators, by increasing their number from 300 to 900, and by admitting several persons of low origin to this honourable class. The Romans, who entertained an inveterate prejudice against the name of *king*, were further offended by Antony's offering to Cæsar a royal diadem; for though he refused the gift, he was suspected of being privy to the design. See ANTONY. It has been suggested, indeed, that as Cæsar had formed extravagant schemes of conquest, comprehending an expedition against the Parthians, Hyrcanians, Scythians, and Germans, and was emulous of imitating the exploits of Alexander, he and his friends had imagined that the title of king would be serviceable to him in the execution of these grand and extensive designs, and command reverence among remote and barbarous nations. This and a variety of other circumstances contributed to excite envy, jealousy, and resentment in the minds of several of the first men of Rome; and to concur, with some remains of an attachment to liberty, in producing a conspiracy against Cæsar's life. Cæsar himself was warned of it by his friends; intimations had been circulated, for some time, of the persons concerned in it, and of the time of its execution: and so fully possessed of the reality of the danger was Calpurnia, Cæsar's wife, that she earnestly urged him not to quit his house on the ides of March, the day appointed for the meeting of the senate. In compliance with her intreaties, he determined to remain at home. But Decimus Brutus representing to him the importance of the matters which were to be proposed in the senate, diverted his purpose, and they set out together. In their way thither, a person named Artemidorus put into Cæsar's hand a paper, containing a discovery of the whole plot; but though he was desired to read it, he was prevented by the crowd which surrounded him. On his arrival in the hall of the senate, a number of the conspirators beset him, under the pretext of uniting their supplications with those of Metellus Cimber, on behalf of his banished brother: at this instant Cimber gave the signal, by taking hold of his robe, and pulling it from his shoulders, upon which Calpurnia stabbed him in the neck. The enraged Cassius wounded him deeply in the head; and many others concurred in stabbing him on all sides. Till Brutus appeared, he is said to have resisted his assassins; but upon the sight of the dagger aimed at him by Brutus, he exclaimed, "What! my son Brutus too!" and covering his face with his robe, fell, pierced with 23 wounds, at the pedestal of Pompey's statue. Such was the catastrophe that terminated Cæsar's career, in the 56th year of his age, March 15th, A. U. C. 710. B. C. 44. His death was amply revenged, and his memory was honoured among the tutelary deities of his country; as he left no direct lineage, his adopted heir was the grandson of his sister Julia. See AUGUSTUS.

The person of Cæsar was tall, slender, and fair, and his countenance was sensible and expressive. To the delicacy of his form his first character, which was that of a man of pleasure and gallantry, seems to have been better adapted than his later occupation as a warrior. To this purpose Cicero says of him, "I discovered in all his enterprises, and in his whole conduct, a plan continually pursued for raising himself to the tyranny. But when I saw him so soft in his dress and manner of living, with effeminate gestures, and his hair in such nice order, I could not believe that such a man was capable of forming and executing the design of subverting the Roman commonwealth." But he possessed,

however, a variety of talents, which rendered him capable of attaining to distinguished excellence in any pursuits, to which he chose to devote his time and attention. In the department of oratory, if he had restricted himself to this object, he might have rivalled Cicero; and his knowledge of other branches of literature and science enabled him to publish works on grammar, astronomy, religious polity, history, and poetry. But of his writings, none are extant besides some "Epistles" preserved among those of Cicero, and his "Commentaries on the Gallic and Civil Wars." The latter is reckoned a model of the plain style, and is highly valuable as a repository of facts, and as a directory in the use of the Latin language. Asinius Pollio, at a period when the events which it records were recent, questioned its accuracy and veracity; and it is not improbable that the writer might have accommodated the detail of facts to the advancement of his own reputation. We have various editions of this popular work, the best of which are the "Variorum," by Elzevir, 1661; "Grævius's," Amlt. 1697; "Davis's," Camb. 1727; "Clarke's," fol. Lond. 1712; "Oudendorp's," L. Bat. 1737; "Barbous's," Paris, 1755.

In the exercise of his talents, Cæsar possessed such versatility of application, and such a facility of directing his attention to different subjects, that he is said to have dictated dispatches to three secretaries at once. But whatever excellence he might possess as an orator or general scholar, his ruling passion was "ambition;" and to the gratification of this he devoted, in the maturer years of his life, all his mental and corporeal faculties. The influence of this passion marked and discriminated his character; and whilst it exhibits him to view as a successful warrior and useful legislator, possessing many qualities, and performing many services, which entitle him to admiration and respect, it throws a shade over his most illustrious talents and actions, and excites an abhorrence of usurpation and tyranny. "Without pretending to palliate the excesses of his youth, or to justify the schemes of his ambition, he was," says one of his biographers, "one of the most accomplished heroes that ever lived. With the most shining talents for war and legislation, he possessed a liberality of spirit, an elegance of taste and manners, a generosity of heart, a greatness of mind, and an humanity of disposition, which distinguished him from all the other great men of that republic, who were generally cruel, ferocious, and implacable." "Julius Cæsar," as the same writer proceeds, "is accused of having overthrown the liberties of his country. But what liberty did it enjoy before he appeared on the stage, while Rome was desolated by the civil butcheries of Marius and Sylla? and what liberty did she retrieve, when Cæsar, the supposed obstacle, was removed? The truth is, the Romans were become so profligate, vicious, and venal, and such universal corruption of morals prevailed, that they neither deserved to enjoy, nor were they capable of relishing, the blessings of genuine liberty; and Cæsar was the only person, when living, who could restore peace, order, and security, give consistency to their government, and stability to their empire." "He was born," says another writer, "to command mankind, if great qualities were alone sufficient, and superior to right. Had his birth or a regular election placed him on the throne, he would have been an example to be imitated by all sovereigns. But his private conduct would be a very bad model; his whole life being a continued scene of rapine and extortion, luxury, and profusion, and a devotedness to all kinds of scandalous debaucheries." Sueton. Cæs. Plutarch, C. Cæsar, oper. t. i. p. 707, &c. Cæsar's Comment. Anc. Un. Hist. vol. xi. Rollin's Rom. Hist. vols. viii. ix.

CÆSAR, in *Entomology*, a species of *MUSCA*, described by Linneus

Lionæus as being of a shining green, with black legs. This is a common European insect.

CÆSAR Augusta, in *Ancient Geography*, a town of Hither Spain, seated on the river Iberus, formerly called Salduba, and which afterwards became a colony. Augustus gave it to the veteran soldiers of his army, after the war of the Cantabri, whence it obtained its name, the epithet of *immunis*, and the right of coining money; now *Saragossa*.

CÆSAREA, a name given to several ancient cities. There were two cities in Palestine of this name, viz. *Cæsarea-Panias* or *Cæsarea-Philippi*, and *Cæsarea-Stratonis*. The former was built by Philip the tetrarch, son of Herod the Great, and made the place of his residence, as it was conveniently situated between Ituræa and Trachonitis. Luke, iii. 1. He built it, says Josephus, (*Antiq.* l. 18. c. 3. l. 20. c. 8.) at Paneas, by the springs of Jordan, and called it *Cæsarea-Philippi*, and *Nerodiada* in honour of Nero. It was seated at the springs of Jordan the Less, not far from Libanus, in the Midland Phœnicia, says Ptolemy, and was a Decapollitan city called *Cæsarea-Panias*, or *Sub-Panias*, from the name of the mountain Panias, mentioned by Josephus and Eusebius, under which it lies. It is mentioned *Matth.* xvi. 13. *Mark.* viii. 27. and was first called *Lais* or *Lashem*, *Josh.* xviii. 7; and when subdued by the Danites, *Dan.* ib. v. 29. The latter, *Cæsarea-Stratonis*, or the town of Strato, was the metropolis of Palestine, after its re-union to the Roman empire, and the seat of the Roman proconsul. As it was a mart-town, with a very incommo- dious haven, Herod the Great built on the site of it a large city, with many stately marble buildings, a theatre of stone, a capacious amphitheatre, and an admirable haven, with marble edifices and towers. Herod also constructed, on an eminence, a beautiful and magnificent temple of Augustus, and placed there a colossal statue of this prince, on the model of the statue of Jupiter Olympius; and a statue of the city of Rome, equal to that of Juno at Argos. Herod, according to Josephus, called the port *Sebaste*, and the city *Cæsarea*, in honour of Cæsar Augustus, which he annexed to the province of Syria. He also established quinquennial games, and distributed a great number of prizes at the first celebration of them, A. U. C. 743. The city was afterwards given to Agrippa, the grandson of Herod the Great, by the emperor Claudius. Judæa and the city of *Cæsarea* were re-unioned to the Roman empire, at the death of king Agrippa, A. D. 44; nor were they separated till the invasion of the Arabs, in the 7th century. *Cæsarea* was situated between Doron and Joppa, 35 miles from Jerusalem, and was inhabited partly by the Jews, who had their schools there, but chiefly by the Greeks or Syrians, betwixt whom there were feuds concerning equal privileges; so that the *Cæsareans* killed a great number of Jews, when Florus was procurator of Judæa. In this city Peter converted Cornelius and his kinsmen. *Acts.* x. Here lived Philip the evangelist, *Acts.* xxi. 8; and here Paul defended himself against the Jews, and their orator Tertullus. *Acts.* xxiv.

CÆSAREA, in more ancient times called *Mazaca*, and afterwards *Eusebia*, and denominated *Cæsarea* by Tiberius, in honour of Augustus, was the metropolis of Cappadocia, and the residence of its kings. It continued in a flourishing state under the Greek emperors. When it was besieged by Sapor, king of Persia, about A. D. 260, it was supposed to contain 400,000 inhabitants. At this time Demosthenes commanded in the place; and when the city was betrayed by the perfidy of a physician, he cut his way through the Persians, who had been ordered to exert their utmost diligence for taking him alive, whilst many of his fellow-citizens were involved in a general massacre. Sapor is accused

of treating his prisoners with wanton and unrelenting cruelty. Deep vallies were filled with the slain; and crowds of prisoners were driven to water like beasts, and many perished for want of food. Zonaras, l. xii. p. 630. After the reign of Heraclius, when the empire was divided into different military departments, Cappadocia, together with *Cæsarea*, its capital, which had surrendered to the Saracens, was comprized in the department of Armenia; but it was, at a period not ascertained in history, ruined by an earthquake. In the 13th century, it was rebuilt about $\frac{1}{4}$ of a league more to the north than the old city, by a sultan of the Selgioucidæ race. It is now called *Kaifarieh* and *Kefaria*, and is a city of some note. It is the stage of all the caravans of the east, which here disperse themselves to their respective cities. The bazars are handsome and well stored, and the inhabitants in a considerable degree polished. It was the see of St. Basil, and its archbishop holds the first rank among the prelates who are under the patriarch of Constantinople.

CÆSAREA, is also a town of Armenia Minor.—Also, a town of Asia Minor, in Bithynia, according to Ptolemy, who places it between the river Rhyndacus and Mount Olympus, near the sea.—Also, a large and famous town of Africa, in Mauritania, which was formerly a royal city, and had a magnificent port on the Mediterranean. It gave the appellation *Cæsariensis* to one of the districts into which Claudius divided Mauritania, and it was anciently called *Jol*. It was the residence of king Juba, who enlarged and embellished it, and called it *Cæsarea* in honour of Augustus. Claudius made it a Roman colony. It has been ruined for many ages. It was reduced to ashes A. D. 373, by Firmus, who assumed the title of king among the Moors, but who was made to submit by Theodosius, sent to Africa by Valentinian. When it was just recovering itself, it fell under the power of the Vandals, who burnt it. After the destruction of the Vandal government in Africa, it remained in a tranquil state for more than a century under the Greek emperors. This city was encompassed by mountains to the south, east, and west, and Procopius says, that there was no access to it but by the sea. According to Mela, it was situated at the confluence of the rivers *Mulucha* and *Amphaga*. Sanson, and other geographers, place *Julia Cæsarea* at *Tniss* or *Tennis*; but Shaw, (*Travels*, &c. p. 18.) adduces several arguments to prove, that it is the present *Shershell*, which see.—*Cæsarea* is also a name said to have been formerly given to the island of *Jersey*, which see.—*Cæsarea* was also a town of Italy, in *Cisalpine Gaul*, not far from *Ravenna*.

CÆSAREAN SECTION, in *Midwifery*, an operation by which a fœtus is extracted from the uterus of the mother, through a wound, made for the purpose, in the abdomen. The term, *cæsarean*, is said to be derived from the operation "*cæso matris utero*;" and Pliny even deduces the title of Cæsar, given to the Roman emperors, from one of them having been brought into the world by means of it. Whether this was the case, or not, it seems not improbable, from the prevalence of the opinion, that the operation had been performed prior to his time, although no account of it is to be found in the works of Hippocrates, Celsus, Paulus Aegineta, or Albucasis, who all of them treat largely on the mode of assisting in difficult parturition. The only method recommended by these writers, for extracting the fœtus when it was too large to pass entire by the natural passage, was to diminish its bulk with scalpels, or other cutting instruments, and then to draw it away with hooks, or crotchets; a method, in fact, which is now followed, but with instruments more artificially constructed,

and thence less likely to injure the women, than the more rude ones contrived by the ancients.

The earliest account we find of the cæsarean section in any medical work, is in the *Chirurgia Guidonis de Cauliaci*, published about the middle of the fourteenth century; but the author only speaks of it as resorted to after the death of the woman, as was practised, he says, on the birth of Julius Cæsar. "Si autem contingeret mulierem ipsam esse mortuam; et suspicaveris quod fœtus esset vivus; quia vetat lex regia mulierem pregnantem humari, quousque fœtus vixerit; tenendo mulieris os, et matricam apertam, ut volunt mulieres, aperiatur mulier secundum longitudinem, cum rasorio, in latere sinistro; quia pars illa est magis libera quam dextra propter hepar; et digitis interpositis extrahant fœtum. Ita enim extractus fuit Julius Cæsar; ut in gestis legitur Romanorum." vide Cap. de extractione fœtus. Vigo, who was born towards the end of the 15th century, in the short chapter he gives on difficult birth, takes no notice of this mode of delivery; and Paré, who greatly improved the practice of midwifery, thinks the operation only allowable on women who die undelivered. He had heard, he says, not without astonishment, of women who had been more than once subjected to the cæsarean section, it not being practicable to deliver them by any other means; but he considered the operation as much too dangerous to be adopted, "cæterum non possum satis mirari eos qui sibi visas mulieres affirmant, quibus non semel novacula abdomen cum subjecto utero rescissum sit ad fœtum, nunquam alioqui proditum, extrahendum. Id enim, salva matre, fieri posse mihi persuadere nunquam potui," &c. "De Hominis Generatione," cap. 31. But Roussel, who was contemporary with Paré, having collected accounts of a number of cases in which the operation was said to have been successfully performed, published in 1581, 8vo. "Traité nouveau de l'Hysterotomotomie, ou Enfantement cæsarien, qui est l'extraction de l'enfant par incision laterale du ventre et de la matrice de la femme grosse, ne peuvent autrement accoucher; et ce sans prejudicier a la vie de l'un et de l'autre, ni empêcher la seconde naturelle par apres." But though Roussel speaks with great confidence of the safety of the operation, and is warm in its recommendation, it does not appear that he had ever seen it performed, or that more than one of the six persons, whose cases are related by him, were known to him. The book, however, soon became popular, and being some years after, viz. in 1601, translated into Latin by Caspar Bauhine, with additional cases and observations, it was quickly circulated over Europe. From that time, the operation began to acquire a certain degree of vogue, and to be resorted to in cases of extreme difficulty, particularly on the continent, where it is said to have been not unfrequently performed with complete success. Not so in this country. In five cases in which it has been performed at Edinburgh, three of the children were extracted through the aperture alive, but the women all died. In England, where the operation has been performed ten times, one of the women only recovered. This gives little encouragement for repeating the trials here. But as this almost uniform fatality may be in part attributed to the extremely debilitated state of the women, who had been in labour several days before the operation was determined on, it has been observed, and with apparent reason, that if it had been performed earlier, before the strength of the women had been exhausted, and a feverish indisposition induced, or before the bladder and other soft parts had been injured by distension and pressure, a more favourable termination might have been expected; as to that circumstance, viz. a more speedy, or prompt determination, may be attributed

the superior success with which the operation has been performed on the continent.

Having given this sketch of the history of the Cæsarean section, it remains to state the causes rendering it necessary, and to describe the manner of performing the operation.

Whenever any insurmountable impediment exists, rendering it impracticable to bring the child through the natural passage, recourse must be had to the cæsarean section, or the woman, and child, must inevitably perish.

The most common impediment is, such a deformed and altered shape of the bones constituting the pelvis, as to leave too small a space for admitting the fingers of the accoucheur to pass between them; disabling him from introducing and directing the necessary instruments for opening and lessening the head, or other part of the child that may happen to present, or lie over the orifice of the uterus.

Abroad, particularly in France, the cæsarean section has been performed where no such impediment existed, or, at the least, not to the degree that would be required in this country; as is evident, by the accounts published of women, who after being subjected to the operation, have borne living children by the natural passage, which could not happen, if the pelvis was considerably distorted, or misshapen.

Cases requiring the cæsarean section, are very rare in this country; that is, there are very few women whose pelvises are so distorted as not to allow a passage for the fingers of the accoucheur to conduct the necessary instruments for opening the head of the fœtus sufficiently to allow its contents to be squeezed out, and its bones to collapse so far as to allow the operator to fix a hook or crochets, with which it may be gradually drawn down, and extracted. Through how very narrow a space this may be done, we have a remarkable instance related in Dr. Osborne's "Treatise on Laborious Parturition."

Authors mention other causes of impediment to the birth of the child, as coalescence of the os uteri, or of the sides of the vagina; or large tumours filling up that passage; but these may be all removed by operations much easier and less hazardous than the cæsarean section.

Whenever on repeated examination of a woman in labour, the accoucheur finds the pelvis distorted to the degree described above, he should apprise the husband of the dangerous state of the woman, and desire the assistance of one or two of the most experienced persons in the profession, and if on a consultation it should appear that it is impossible to bring the child by the natural passage, the husband should be made acquainted with the nature of the impediment, and informed there remains no hope of preserving the life of the woman and child, but by opening the abdomen of the woman, and extracting the child through the wound. At the same time acquainting him, that the operation, though hazardous, is not necessarily fatal, many women who submitted to it having recovered. That the hope of a favourable termination depends on its being performed early, before fever comes on, or any material injury is done to the uterus or neighbouring parts.

If the husband should be satisfied of the necessity of the operation, the woman should then be apprised of her situation, in the most cautious manner, and having obtained her consent, a glyster is to be thrown up to evacuate the contents of the bowels, and the bladder emptied through a catheter, and a few drops of the tincture of opium given to quiet pain as much as possible, prior to the operation, the manner of performing which, is thus described by Mr. Thompson, late surgeon to the London Hospital. "Medical Observations and Inquiries," vol. 4. p. 271.

An incision is to be made on the right or left side of the navel, whichever happens to be most prominent, six inches in length; the middle of the incision to be about level with the navel, from which it should be distant a hand's breadth. First cut through the skin, then through the tendinous expansion of the abdominal muscles, and the peritonæum. The uterus being now brought to view, a small opening must be made, to enable the operator to pass his forefinger as a guide for the knife, in extending it to the size of the external wound; an assistant must then introduce his hand, and bring away the child, and the placenta. This being effected, an assistant must keep in the bowels, which would otherwise protrude, while the operator makes the gastrotomy, or future of the belly. Proper bandages are then to be put on, and the woman put to bed. The cure to be conducted in the same manner as after other operations. The subject of the cæsarean section is treated in an ample and ingenious manner by Dr. Denman in his "Introduction to Midwifery," and by Dr. John Hull, physician at Manchester, in his "Defence of the Cæsarean Operation," 8vo. 1798.

CÆSARIA, *river*, in *Geography*. See COHANZY.

CÆSARIANA, in *Ancient Geography*, a place of Italy, on the Appian way, situate, according to the Itinerary of Antonine, in the route from Rome to Columna, 36 miles from Nerulum, in Lucania.—Also, a place of Pannonia, which, in Antonine's Itinerary, is situate on the route from Sabaria to Acincum.

CÆSARIANS, or CÆSARIENSES, in *Antiquity*, were ministers or officials of the procurator *Cæsar*, to whom belonged the keeping of the fiscal accounts, and taking possession of effects devolving or cheating to the emperor. These were also called *cæsariciarii*. From the appellation *Cæsar* some deduce the modern word sergeant. See SERGEANT.

CÆSARODUNUM, in *Ancient Geography*, a town of Gaul, assigned by Ptolemy to the Turones; now *Tours*, which see.

CÆSAROMAGUS, a town of Gaul, which, according to Ptolemy, was the capital of the Bellovaci; now *Beaune*, which see.—Also, a station in the 5th route of Antonine, 28 miles from London; the position of which cannot now be exactly ascertained; but by the distance from London, and the direction of this route, it is supposed to have been at, or near, Chelmsford.

CÆSENA, CESENA, a town of Italy, in Gallia Cispadana, on this side of the Eridanus, with respect to Rome, according to Strabo and Pliny.

CÆSIA *Sylvæ*, the Cælian forest, was part of the Hercynian, placed by Cluverius, partly in the duchy of Cleves, and partly in Westphalia, between Wesel and Koefold. Germanicus traversed this forest in his march to attack the Marci, whom he found in a defenceless state, and attacked with great slaughter, A. D. 15. Tacitus.

CÆSIAS, or *Kavias*, in *Meteorology*, denotes the north-east or N. E. wind; called in the Mediterranean, *vento Græco*, or *Græco levante*. Pliny calls this wind Hellespontias, as blowing from the Hellespont. See EUROCLYDON.

CÆSTUS, or CESTUS, a large leathern gantlet, or glove, made of straps of leather, and plated with brass, lead, or iron, withinside, used in the combats, or exercises of the ancient athletes, to strengthen the hands of the combatants, and to add violence to their blows. It was called *cestus*, à *cedendo*, from *cedo*, to strike, or beat.

The cestus originally consisted of many thongs of leather, or raw hides of bulls, wound about the hand and arm up to the elbow, and seems to have been invented, as well for a

safe-guard to those parts that were most exposed in the first fury of the combat, as for an offensive weapon; though, when it was lined with plates of lead or iron, as it sometimes was, according to Virgil, (*Æn.* v.) it seems to have been intended chiefly for the latter purpose. It is observable, however, that the Greek poets, who have given us a description of the cestus, have not mentioned plates of lead or iron. By thus binding up the hands of the combatants with thongs of leather, they might also design to prevent their laying hold of each other, or with their fingers and nails ripping open the belly; a circumstance, which occurred in the Nemæan games, and which gave occasion for bringing the straps of the cestus over the fingers, and fastening them upon the wrist; whereas, before this accident, they were tied in the palm, or hollow of the hand. See PAUSANIAS, l. viii. c. 40. This author applies the epithet *μειλχος*, or soft, to the ancient cestus, probably, because it was composed of raw hides. But it is not unlikely, that as the Grecians began to refine upon the gymnastic exercises, and the science of the athletes became a kind of profession, the cestus should from time to time receive several additions: and, that at length, it should be improved by the Romans, who delighted in bloody spectacles, into that terrible weapon described by Virgil. This conjecture will account for the difference observable between that in Virgil, and those described by the Greek poets. The combat of the cestus was very ancient, and is said to have been invented by Amycus, king of the Bebrycians, who was contemporary with the Argonauts, as we are informed by Clemens of Alexandria, Stromat. I. It was revived in the 23d olympiad, B. C. 688. But we are informed by Plutarch, (in Alex.) that Alexander never admitted either the cestus or the pancratium among those games which he exhibited during his war in Asia. Lycurgus also banished these exercises from Sparta, because he would not allow the people to accustom themselves to yield the victory to those with whom they contended, not even in sport. Besides, the combatants in the cestus fought after, and cherished corpulence, or polysarcia, (fleshiness) as the Greeks called it, as a sort of covering and defence of their bones and muscles against blows and buffets; but this mode of life was improper for a soldier; for, as Epaminondas observed to a fat fellow, whom for his bulk he turned out of the army, it would require three or four shields to cover and defend a belly that hindered a man from seeing his own knee. However, it was practised by the heroes of the Iliad, and it was one of the games exhibited by Æneas in honour of his father Anchises; and Amycus valued himself so much upon his superiority in this combat, as to compel all strangers who touched upon his coast, to take up the cestus, and make trial of his strength and skill in the use of this rude instrument of death. See WEIL's dissertation on the olympic games, prefixed to his "Odes of Pindar, &c." vol. iii. § 10.

CÆSULIA, in *Botany*, Willd. 1467. Rox. Cor. 1. p. 64. Class and order, *syngenesia equalis*.

Ess. Ch. *Receptacle* chally; chaff involving the seeds. *Dosum* none. *Calyx* of three leaves.

Sp. 1. *C. axillaris*. "Leaves lanceolate, narrowed at the base, serrated, alternate. Perennial. Stem herbaceous, creeping; branches ascending. Flowers axillary, sessile, solitary. Calyx spreading; leaflets egg-shaped, veined, many-flowered. A native of the East Indies. 2. *C. radicans*. "Leaves lanceolate, narrowed at the summit, very entire, opposite." Perennial. Stem creeping, taking root at the knots. Branches ascending, from half a foot to a foot long. Leaves on short petioles; sometimes, but rarely, with

with one or two teeth. *Flowers*, as well as the general habit of the plant, similar to the preceding. A native of Guinea.

CÆSURA, in *Ancient Poetry*, is when, in the scanning of a verse, a word is divided, so that one part seems cut off, and goes to a different foot from the rest; e. gr.

Menti | ri no | li: nun | quam men | dacia profunt.

Where the syllables *ri, li, quam*, and *men* are *cæsures*.

Or, it denotes a certain and agreeable division of the words, between the feet of a verse; whereby the last syllable of a word becomes the first of a foot: as in

Arma virumque cano, Trojæ qui primus ab oris.

Where the syllables *no* and *jæ* are *cæsures*.

CÆSURA, a cut, a separation, a breathing-place, in *Vocal Music*. The Germans have applied this poetical term to music, with no great analogy, and the French are trying hard to naturalize and adopt it. In the supplement to the fol. edit. of the *Encycl. M.* Caillillon has given it an article which in the new 4to. *Encycl. Methodique*, M. Framery has analysed, and controverted in an able manner. The first musical dictionary in which the term occurs, is that of Walther, which, though a small octavo volume only, contains more definitions, explanations, biographical and historical articles, than all the dictionaries that have been published since 1732, when it first appeared in German. Nothing in English expresses so well what the Germans and French mean to enforce by the term *cæsura* in music, as the word *phraseology*, which see. In vocal music, the measure of the verse determines the phraseology of the melody. In instrumental music, a symmetry of phrase, to a certain degree, seems necessary, where either grace or energy is required. As to subject, the first two or three bars give the general cast and character to the whole movement. This is more obvious in Haydn's best symphonies, sometimes even through a seeming wildness and freedom of fancy. If you lose the first idea in the treble, you find it in the base, or subordinate parts, as too much symmetry in the upper part is apt to degenerate into monotony and dulness. An even number of bars, and *cæsurae* at equal distances, however, seldom fail to interest and impress the hearer. Metastasio's measures have suggested to composers, and rendered necessary, a greater variety of air, than the epic poetry of Italy, or any other country possessed before. Grace is often obtained by a succession of *caësures* and regular resting places.

Vö fölcändö ün mär crüdëlä —

Sí üscä sí dicë l'ämïcö dövë.—

See **PHRASE**, **CADENCE**, **REST**, real or understood.

The *cæsura* might have its use in music if well considered and framed into rules; but we pretend not to invent new rules or laws in the arts, so much as to explain those already in use, and established by good authority and successful examples.

CÆSURE, in the *Modern Poetry*, denotes a rest or pause towards the middle of a long Alexandrine verse; by which the voice and pronunciation are aided, and the verse as it were divided into two hemistichs. See **PAUSE**.

CÆTERIS paribus, a Latin term, in frequent use among mathematical, and physical writers.

The words literally signify, *other things being equal*; which expresses pretty nearly their meaning as a term. Thus, we say, the heavier the bullet, *cæteris paribus*, the greater the range; i. e. by how much the bullet is heavier, if the length and diameter of the piece, and the quantity and strength of the powder, be the same, by so much will the utmost range or distance of a piece of ordnance be greater.

Thus also, in a physical way, we say, the velocity and quantity of blood circulating in a given time, through any

section of an artery, will, *cæteris paribus*, be according to its diameter, and nearness to, or distance from the heart.

CÆTOBRIX, in *Ancient Geography*. See **CETOBRIGA**.

CAETSE, in *Geography*, an island in the Adriatic, or Venetian Sea, which affords anchorage for shipping.

CAFARA, a town of Portugal, in the province of Alentejo; 12 miles E. of Moura.

CAFARO, in *Biography*, a Neapolitan composer of great abilities, of the old school, perhaps the best, in the ecclesiastical style, after Leo. He was living in 1774; and at that time was thought by many the best composer for the church in Naples. His style was nervous, yet not rude. In his ecclesiastical productions (says a French writer, before the revolution,) he proved that there is a style for religious rites capable of interesting a devout audience, and redoubling fervour, instead of diverting their attention from sacred concerns.

CAFARTUTHA, in *Ancient Geography*, a town of Asia, in Mesopotamia; placed in the Nubian geography, between Dara and Alchabur.

CAFER, in *Entomology*, a species of **CIMEX**, found in Africa, and described by Thunberg. This insect is of a black colour, with a white band on the thorax: ferruginous wing-cases, and four white spots. See **CAFFER**.

CAFER, a species of **SCARABÆUS**, green, with the margin of the thorax and elytra spotted with white. Fabricius. Found at the Cape of Good Hope.

CAFER, in *Ornithology*, a species of **MEROPS**, with grey plumage, a yellow spot near the anus, and very long tail. This is the grey bee-eater of Ethiopia.

CAFER, a species of **PICUS**, brown above, beneath grape-coloured, dotted with black, the under part of the wings and the shafts of the wing-feathers, and those of the tail vermilion-coloured. Found at the Cape of Good Hope. Gmelin.

CAFERISTAN, in *Geography*. See **KUTTORE**.

CAFFA, in *Commerce*, cotton cloths painted with several colours, and of divers designs; they are manufactured in the East Indies, and sold at Bengal. The length and breadth are not the same in all pieces.

CAFFA, or *Kassa*, in *Geography*, the ancient and modern *Theodosia*, a sea-port town of Crim Tartary, now called *Taurida*, is situated on the south-east side of the peninsula, and forms a harbour of the Euxine, or Black Sea. It was formerly the capital of the Crimea; and the Tartars distinguished it by the name of Half Constantinople. The Genoese, when they attempted to acquire an independent trade with the East Indies, took possession of it about A.D. 1226, maintained it for more than 200 years, and rendered it the seat of an extensive and flourishing commerce. They adorned the port, strengthened and augmented the fortifications, and embellished the city with many stately edifices, the ruins of which are visible even at this day. Having the dominion of the Black Sea, and thus most commodiously situated for trade, they were furnished with the means of expenditure by the riches accruing from their commerce. But in the year 1475 they were deprived of this port by Mohammed the Great, after they had basely assisted in bringing the Turks into Europe, and in reducing Constantinople, against all the rules of true policy, as well as dictates of religion. After the Genoese were dispossessed of the dominion of Caffa, they still carried on, for a long time, as merchants, a very lucrative commerce with the inhabitants, who, by way of the Caspian Sea, found means to conduct a considerable trade in spices, drugs, cotton, silk, and other Indian commodities. At length the Turks became jealous of the intercourse of the Genoese in these parts, and absolutely excluded them, as well as all other nations, from trading to, or even so much

as entering into, the Black Sea. This exclusion, however, did not immediately terminate the commerce between Caffa and Genoa; for the Tartars were so well apprised of the advantages derived from this commerce, that they prosecuted it for some time in their own vessels; and carried the spices, and other Indian goods, which they received by caravans from Astracan, and which had been brought thither from the opposite side of the Caspian Sea, to Genoa; but the Turks soon put an end to this kind of intercourse, and thus secured themselves from the fears of seeing a Christian fleet in those seas, at least from Italy. Nevertheless, Caffa, notwithstanding all the disadvantages resulting from its subjection to the Turkish government, continued to be a place of considerable trade. Sir John Chardin, who visited it, A.D. 1672, relates, that during his residence of 40 days there, he saw more than 400 ships sailing in and out of this port. He observed also several remains of Genoese magnificence. In 1774, Catherine II. obtained for Russia the possession of the straits of Caffa, together with some other local and commercial advantages; and by the convention of 1783, the whole peninsula of the Crimea was added to the Russian dominions, under the name of the province of Taurida, and the Turks having finally ceded their pretensions to the empire, she declared this a free port in her newly acquired territories, under the appellation of Theodosia. Caffa was formerly one of the best built and richest places of its size in Europe. It stands at the foot of a small hill upon the sea-shore; the buildings extending north and south, with long walls stretching on both sides down to the sea; so that from the port which is large, safe, and commodious, it exhibits a very agreeable appearance. On the south side is a castle, which used to be the residence of the Turkish bashaw. The number of houses have been estimated at 5000 or 6000, and the inhabitants have been computed at 20,000. According to M. Peyssonnel, (*Commerce de la Mer Noire*, tom. i. p. 15.) the number of inhabitants amounts to 80,000. The bay is capable of containing several hundred merchant ships; and the inhabitants are the richest, and drive the most extensive trade in the Black Sea. The productions of Crim Tartary, exported from Caffa and the other towns of the peninsula resorted to by the Greek and Armenian merchants, consist chiefly in corn, wine, wool, fine black and grey lamb-skins, and salt. The imports are fine and coarse linens, printed cottons, nankeen, Russian leather, fine cloths, velvets, taffeties, furs, ropes, paper, salted fish, and caviare, tobacco leaves, copper and tin, hardware, gold and silver thread, beads, and corals, earthen wares, a coarse sort of porcelain, and glass ware, &c. N. lat. $45^{\circ} 10'$. E. long. $35^{\circ} 20'$.

CAFFA, *straits of*, the ancient Cimmerian Bosphorus, are the narrow passage, or sound, which forms the communication between the Black Sea to the south, and the sea of Azof to the north. Near the northern entrance of these straits are the fortresses of Kertsch and Yenikalé, which command the passage. They take their name from the port of Caffa. N. lat. $45^{\circ} 15'$. E. long. $35^{\circ} 45'$. See BOSPHORUS and AZOF.

CAFFA, a province or kingdom of Abyssinia, adjoining to the kingdom of Narea, and situate to the south of it. It is wholly mountainous, without any level ground. It is said to be governed by a separate prince, and to have been converted to Christianity in the time of Melec Segued, some time after the conversion of Narea. The inhabitants of these lofty mountains are not so dark in their complexion as Neapolitans or Sicilians. It has been said, that snow has been observed to lie on the mountains of Caffa, as well as on the high ridges called Dyre and Tegla; but the fact is dis-

credited by Bruce; *Travels*, vol. ii. p. 313. About N. lat. 8° . and E. long. 35° . See NAREA.

CAFFABA. See KAFFABA.

CAFFACA, KEFFE-KIL, in *Mineralogy*, or earth of Kaffa, (corruptly called Caffaca) is a very fine grained white tenacious clayey marl, dug in the Crimea, and formerly shipped from the port of Kaffa to Constantinople, in large quantities for the use of the Turkish women. Being mixed up with water to the consistence of thick cream, it was rubbed by hand among the hair, which, when washed again with water, was thus rendered perfectly clean and of a silky smoothness. For this purpose it was greatly preferable to soap, which, though it cleans the hair, is apt to discolour it, and render it harsh and brittle. When the Crimea was conquered by the Russians, this branch of commerce was stopped, and is not likely to be resumed, Constantinople being now supplied with a white clay from Asia Minor, which is equally good with the earth of Kaffa. *Pallas's Travels in the Crimea*, vol. ii.

CAFFARELLI, (GAETANO MAJORANO, *detto*) was one of the greatest singers that Italy ever produced. He came to England in 1738, the year after Farinelli's departure. He sung in two of Handel's operas, *Faramond*, and *Alessandro Severo*. But though he afterwards acquired such celebrity on the continent, he was not in high favour here. For though Farinelli, the last year of his performance in this country, had been neglected, no successor would be listened to of inferior fame, or indeed talents; for Caffarelli was never in voice or in good humour, all the time he was in England. The seeds of caprice with which nature seems to have furnished him, began early in life to spring up, and in his riper years, and fame, grew to an amazing height: Many traits of his character were current in Italy, long after he had quitted the stage.

When Gizziello first sung at Rome, his performance so far enchanted every hearer, that it became the general subject of conversation, which not only contributed to spread his fame through that city, but to extend it to the most remote parts of Italy; it is natural to suppose that the account of this new musical phenomenon soon reached Naples, and equally natural to imagine that it was not heard with indifference in a place where so powerful a propensity to musical pleasure prevails. Caffarelli, at this time in the zenith of his reputation, was so far piqued by curiosity, perhaps by jealousy, that he took an opportunity, the first time he could be spared from the opera at Naples, to ride post all night, in order to hear that at Rome. He entered the pit, muffled up in a pellice, or fur-gown, unknown by any one there; and after he had heard Gizziello sing a song, he cried out as loud as he possibly could, "bravo! bravissimo! Gizziello, é Caffarelli che ti lo dice," 'tis Caffarelli who applauds—and, immediately quitting the theatre, he set out on his return to Naples the same night.

When at his best, Caffarelli was thought by many a superior singer in some respects, to Farinelli: among these Porpora, who hated him for his insolence, used to say, that he was the greatest singer Italy had ever produced. At the marriage of the present King of Sardinia, then prince of Savoy, with the infant of Spain, who had long been a scholar of Farinelli, it was with great difficulty that Caffarelli was prevailed on to go to Turin with the Astrua, to perform at the royal nuptials, in an opera which the King of Sardinia wished to have as perfect as possible. But Caffarelli, who came with an ill-will, by order of the king of Naples, seemed but little disposed to exert himself; declaring before-hand that he had lost a book of clothes on the road,

road, and should be able to do nothing. This was told to his Sardinian Majesty, who was much perplexed how to treat such impertinence. Caffarelli was not his subject, and had been sent by the king of Naples, out of compliment, on occasion of the wedding. But the first night of performance the prince of Savoy, in his nuptial dress, went behind the scenes, just before the opera begun, when entering into conversation with Caffarelli, he told him that he was glad to see him there, though the princess of Savoy thought it hardly possible that any one should sing in such a manner as would give her pleasure, after Farinelli. "Now, Caffarelli," says the prince, clapping him on the shoulder, "exert yourself a little, and cure the princess of this prejudice in favour of her master." Caffarelli was penetrated by this condescension in the prince, and cried out, "Sir, her highness shall hear two Farinelli's in one, to-night." And he is said to have sung, on this occasion, better than any one ever sung before. The Astrua was piqued by his great exertions to display all her talents, which, like the collision of flint and steel, only fired them the more.

In a letter which the author of this article received from Garrick, during his tour through Italy, dated Naples, February 5th, 1764, is the following passage concerning this singer who was then turned of sixty: "Yesterday we attended the ceremony of making a nun, she was the daughter of a duke, and the whole was conducted with great splendor and magnificence. The church was richly ornamented, and there were two large bands of music of all kinds. The consecration was performed with great solemnity, and I was very much affected; and to crown the whole the principal part was sung by the famous Caffarelli, who, though old, has pleased me more than all the singers I have heard. He touched me; and it was the first time I have been touched since I came into Italy."

In 1770, we heard Caffarelli ourselves, sing in a room at Naples. He was then sixty-seven; yet, though his voice was thin, it was easy to imagine, from what he was still able to do, that his voice and talents had been of the very first class. He had been so prudent as to provide for old age during youth; and he was now not only living in ease and affluence, in a sumptuous house of his own building, upon which was this inscription: "Amphion Thebas, Ego domum;" but had purchased a dukedom for his nephew after his decease. Caffarelli died in 1783, at eighty years of age; and the nephew, to whom he bequeathed his fortune, is now Duca di Santi Dorato.

CAFFER, in *Entomology*, a species of CERAMBYX, of a brassy-green colour, with spinous thorax, testaceous wing-cases, and short antennæ. Fabricius. Inhabits the Cape of Good Hope.

CAFFER, in *Zoology*, BOS CAFFER, the Cape Ox an animal of the Ox genus, with horns that are broad at the base, then spreading downwards, next upwards, and curving inwards at the tip: mane short. Sparrmann.

It is, as Dr. Shaw very properly observes, to Dr. Sparrmann, Dr. Forster, and Mr. Masson, that we are principally indebted for the particulars relative to the description and natural history of this animal, which, though long ago imperfectly known, has but lately been accurately described. Dr. Sparrmann published an account of this animal in the Transactions of the Stockholm Academy for 1779, and Masson in the 56th volume of the Transactions of the Royal Society of London. By those writers this animal is described as being about five feet and a half in height, and far superior in strength and fierceness to the European oxen, which renders it a dangerous creature. It encounters men,

horses, and other oxen with ferocity, trampling and crushing them to death with its feet, and is so swift that in running up hill it is not easily overtaken by a horse.

This species inhabits the interior parts of Africa, north of the Cape of Good Hope, where it is found in large herds in the more desert parts, retiring by day into the thick forests, and appearing chiefly towards the evening and morning. It is affirmed of this creature, that it will often strip off the skin of such animals as it kills, by licking them with its rough tongue, as recorded by some ancient authors of the Bifon. The skin is excessively strong, and is on this account in high estimation with the colonists at the Cape, for its superior excellence in making harnesses, and other useful articles, in which the strongest and most durable kind of leather is required.

The body of the Cape Ox is of a black or darkish colour, and the face is covered with long harsh hair: the horns are thick and black, and lie flat upon the head, diverging so widely, that the tips of the two horns are sometimes five feet asunder: the ears are pendulous, and not unfrequently a foot long: tail short, tufted, and black at the tip. The flesh is coarse, and has the flavour of venison.

CAFFETANS, are long vests of gold or silver brocade, flowered with silk, which are presented by the grand signior and the visier, to those to whom they give audience: by the grand signior *before*, and by the visier *after* audience. The caffetans of the attendants are more ordinary.

CAFFILA, a company of merchants or travellers, or both together, who join company, in order to go with more security through the dominions of the Great Mogul; and through other countries on the continent of the East Indies. In Persia, the caffila differs from a caravan; as the former properly belongs to some sovereign, or to some powerful company in Europe; whereas, the latter consists of a company of particular merchants, each of whom trades on his own account. There are also such caffilas, which cross some parts of the deserts of Africa, particularly what is called the sea of sand, which lies between Morocco, and the kingdoms of Tombut and Gago. This is a journey of four hundred leagues, and takes up two months in going, and as many in coming back; the caffila travelling only by night, because of the excessive heat of the country. The chief merchandize they bring back consists in gold-dust.

The caffila is properly what is called caravan in the dominions of the grand signior, and in other parts of the East. See CARAVAN.

On the coast of Guzerat, or Cambaya, it signifies a small fleet of merchant-ships.

CAFFRA, in *Entomology*, a species of APIS, that inhabits the Cape of Good Hope. Fabricius describes it as being hirsute, black, with the posterior part of the thorax, and anterior part of the abdomen, yellow.

CAFFRA, in *Ornithology*, a species of CETHIA, of a fuscous colour, with the breast and abdomen pale, and the middle tail feathers longest. Inhabits the Cape of Good Hope.

CAFFRARIA, or land of the CAFFERS, or KAFFERS, in *Geography*, an undefined district in the south-eastern part of Africa; deriving its name from the Cafres, Caffers, or Kaffers, who inhabit it. The appellation is derived from the Arabic word *Cafir*, which signifies an *infidel*, and is applied by the Arabs, as a term of reproach, to all those who do not profess the Mahometan religion. The Portuguese taking the name in a more general sense, have denominated all those nations of Africa *Caffres*, who have, or seem to have

have no knowledge of a deity. Geographers have not agreed in assigning the boundaries of that country in the southern part of Africa, to which the appellation of Caffria has been appropriated. By some, the name has been applied to the whole country that commences at Cape Negro; extending from thence south-easterly to the Cape of Good Hope, thence, north-east to the river Del Spiritu Sancto, which separates it on the north-east from Monomotapa; reaching on the north, almost to the equator, where it borders on the kingdom of Makoko; and bounded on the north-west by Congo, or Lower Guinea, and the kingdom of Benguela. Accordingly, they have divided this extensive country into the kingdom of Mataman, the country of the Hottentots, Terra de Natal, and Terra dos Fumos. Others have divided Caffria into two parts, viz. Caffria Proper, and the country of the Hottentots. The inhabitants of Caffria Proper are generally taller than the Hottentots, more rebuilt, fiercer, and warlike, and yet their manners are as inoffensive. Their figure is more graceful, their countenances are not so narrow, nor their cheeks so prominent as those of the Hottentots; neither have they the broad flat faces and thick lips of the inhabitants of Mozambique. If it were not for their colour, many of their females would be deemed beautiful even by the Europeans. They tattoo themselves very much, and wear their hair frizzed. In hot weather they are naked; but in winter they throw a "kros" of calf's or ox's skin over their shoulders, which reaches to the ground. Their huts are larger and more regular than those of the Hottentots; their frames are constructed of wood, and they are plastered within and without with a mixture of cow's dung and clay. The women form vessels of clay, and weave baskets of so close a texture as to be capable of holding milk or water. They are more disposed to agriculture than the others; nor would they wander if they were not compelled by an enemy. Their women principally prepare the fields for receiving seed, which is chiefly millet. Notwithstanding the apparent richness of their pastures, their cattle are much inferior in size to those of their neighbours. Their superior knowledge of agriculture, some dogmas of religion, greater industry, and more address in procuring simple necessities, indicate, that the Caffres have made greater progress in civilization than the southern people. They practise circumcision, but not as a religious rite. They have elevated ideas of a supreme power, and believe in a state of future retribution; but imagine that the world is eternal. They never pray, nor have any religious ceremonies; but they have faith in sorcery. They are governed by a chief, whose power is very limited: he is deemed the father of the people, and is often less rich than his subjects; for, receiving no subsidies, and being permitted to have as many wives as he pleases, his finances are not always equal to the support of his retinue; and his honour is hereditary. The Caffres are more courageous than their neighbours: they dare to face the enemy, and disdain the use of poisoned arrows. Le Vaillant's Travels into Africa. For a further account of the country and history of these people, supplied by Mr. Barrow, in his "Account of Travels into the interior of southern Africa," see KAFFERS; see also HOTTENTOTS.

CAFRA, a town of Egypt, 2 miles E. of Siut.

CAFRES. See CAFFRIA.

CAGACO, in *Ancient Geography*, a fountain of Greece, in Peloponnesus, near the town of Gythium, according to Pausanias.

CAGADA, in *Geography*, a small island of the West Indies, near the north-east coast of Porto Rico. N. lat. 18° 33'. W. long. 64° 10'.

VOL. V.

CAGADO *de agua*, in *Zoology*, the name by which the Portuguese in South America call a species of tortoise, common in that part of the world. The Brazilian name is jurua.

CAGADO *de terra*, is the Portuguese appellation of the jaboti of South America, a remarkable species of tortoise. This is the testudo terrestris of late writers. Kil. Stobæus Ad. Litter. et Scient. Succ. 1730.

CAGADOS *rocks*, in *Geography*, are two large rocks that lie between the island of Palmas and Cape Formosa, on the western coast of Africa.

CAGANUS, or CACANUS, an appellation anciently given by the Huns to their kings.

The word appears also to have been formerly applied to the princes of Muscovy, now called CZAR.

From the same also, probably, the Tartar title CHAM, or can, had its origin.

CAGAYAN, or CAGEAN, in *Geography*, a province in the northern part of the island of Luçon or Manila, in the East Indies. It is the largest in the island, being 80 leagues in length, and 40 in breadth. The chief city is New Segovia, which is seated on the banks of a river of the same name, which runs almost across the whole province. In this city is the cathedral church; and here resides the chief Alcayde, with a garrison of Spanish foot. This province commences with the most northerly cape called Del Engano; and after doubling cape Bojador, which is 15 leagues from the capital eastward, and coasting from north to south 20 leagues, the province terminates on the boundaries of that of Illocos. The peaceable Cagayans, who pay tribute, are about 9000, besides those that are not subdued. The whole province is fruitful; the men are robust, employed in agriculture, and of a martial disposition; and the women apply to several works in cotton. In the mountains bees are so plentiful, that the poor burn wax instead of oil; and they abound with brasil, ebony, and other sorts of valuable wood. In the woods are many wild beasts, particularly boars, and also deer, which they kill for their skins and horns, purchased by the Chinese.

CAGE, an inclosure made with wire, wicker, or other matter, interwoven latticewise, for the detention of wild beasts or birds. The word is French, *cage*, formed from the Italian *gaggia*, of the Latin *caveo*, which signifies the same: *a caveis theatralibus in quibus includebantur ferae*. Beasts were usually brought to Rome shut up in oaken or beechen cages, artfully formed, and covered or shaded with boughs, that the creatures, deceived with the appearance of a wood, might fancy themselves in their forest. Those of the fiercer sort were pent in iron cages, lest wooden prisons should be broke through. In some prisons there are iron cages for the closer confinement of criminals. The French laws distinguish two sorts of bird-cages, viz. high, or singing cages, and low, or dumb-cages; those who expole birds to sale are obliged to put the hens in the latter, and the cocks in the former, that persons may not be imposed on, by buying a hen for a cock.

CAGES, *caves*, denote also places in the ancient amphitheatres, wherein wild beasts were kept, ready to be let out for sport. The *caves* were a sort of iron cages different from dens, which were under ground and dark; whereas the *caves* being airy and light, the beasts rushed out of them with more alacrity and fierceness than if they had been pent under ground.

CAGE, in *Agriculture*, an inclosure formed of wire or wicker-work, for the purpose of containing different sorts of poultry or other animals. It also signifies a machine for weighing live animals of the sheep, pig, and other small kinds. See MACHINE.

CAGE, in *Carpentry*, signifies an outer work of timber, enclosing another within it. In this sense we say, the cage of a wind-mill. The cage of a stair-case denotes the wooden sides, or walls which enclose it.

CAGELO, in *Geography*, a town of Italy, in the kingdom of Naples, and province of Calabria Ultra; 6 miles S.W. of Girace.

CAGGAR, or **KENKER**, a river of Hindostan, which rises in the mountains that separate Sirhind from Calhore and Sirinagur, about N. lat. $30^{\circ} 45'$, and E. long. $76^{\circ} 42'$, and pursuing its course to the south-west, and uniting with the Surfooty, and other smaller streams, discharges itself into the gulph of Cutch.

CAGGAW, in *Botany*, a name given by the people of Guinea; to a plant which they boil in water, and use the decoction to wash the mouth with, as a cure for the tooth-ach. The leaves of this are smooth and shining, like those of the laurel, but they are thin, and bend like those of the bay. Phil. Trans. N^o 232.

CAGHNEWAGA, in *Geography*, the name of a small village or district on the north-side of Mohawk river in the township of Johnstown, about 24 miles W. of Schenectady in North America. It might probably have been formerly inhabited by a tribe of Indians of Lower Canada, of the same name, some of whom are found near Montreat.

CAGIT, in *Natural History*, a name given by the people of the Philippine islands to a species of parrot, very common in their woods; it is of a middling size, and is all over of a fine green colour.

CAGLI, in *Geography*, a town of Italy, in the duchy of Urbino, built near the ruins of the ancient Callium, on the Cantiano; the see of a bishop, suffragan of Urbino; 18 miles S. of it. N. lat. $43^{\circ} 30'$. E. long. $14^{\circ} 12'$.

CAGLIA, or **MATAPAN cape**, the south-west point of the Morea. N. lat. $36^{\circ} 33'$. E. long. $22^{\circ} 36'$.

CAGLIARI, **PAOLO**, usually called **PAOLO VERONESE**, in *Biography*, an historical painter, was born at Verona in 1530, and became a disciple of his uncle, Antonio Badiglio, a principal artist at Verona. His talents displayed themselves at an early period; and at Mantua, whither he was conducted by cardinal Hercules Gonzaga, he was distinguished above all his fellow artists. At Venice, the prize of a large gold chain, offered by the procurators of St. Mark for the best picture painted by six eminent artists, was adjudged to Cagliari, by Titian and Sanfovino.

Having executed several subjects, chiefly of the light and rural kind, exhibiting the fertility of his invention, and the brilliancy of his pencil, in the Venetian territories, he engaged in larger works for churches at Venice and Verona, which served further to advance his reputation. At Rome, whither he accompanied Grimani, ambassador from Venice to the pope, he much improved his style by an inspection of the works of Raphael and Michael Angelo Buonarroti; and on his return to Venice, the doge conferred upon him the honour of knighthood. Duly sensible of the honour to which he attained, in his own country, he declined accepting the invitation of Philip II. to go to Spain, and paint at the Escorial, and sent Zuccherro as his substitute. Such was the respect in which he was held by his brother artists, as well as by persons of distinction, that Titian is said to have greeted him with an embrace, whenever they met, and Guido declared, that next to Raphael and Corregio, he would rather be Paolo Veronese than any other painter of his time. By the number and value of his performances he acquired not only fame, but wealth: and yet he disregarded money, and generously parted with it, whenever any suitable occasion offered. Of his generosity, as well as facility in

the exercise of his art, the following instance is recorded. Having been detained on a journey, and hospitably entertained at the house of the Pisani family, he secretly painted, during his stay, a picture of the family of Darius, consisting of 20 figures as large as life; and leaving the canvas rolled up under his bed, he informed his hosts that he had left something behind him towards paying his expences. This artist, whose superior merit has been universally acknowledged, died of a fever at Venice, in 1588, at the age of 58 years, and was buried in the church of St. Sebastian, which he had previously decorated by his own hand. The pictures of this master were rendered singularly beautiful by the excellence of their colouring, by the magic effects of light and shade, and by the grace and harmony of composition. But in order to produce this kind of beauty, which charmed the eye, he sacrificed much expression, correctness of drawing, propriety of costume, and other qualities which satisfy the mature judgment. Of his pictures, which are dispersed all over Europe, some of the principal are in the palace of St. Mark at Venice, and in the churches of that city, and of others in the north of Italy. Among his most celebrated pieces, are the Four Banquets; and of these, the Marriage at Cana, once in the refectory of the convent of St. George at Venice, now in the Louvre, consisting of at least 130 figures, is reckoned one of the most capital performances in Europe. Many of his works have been engraved by the principal artists of their time. For his amusement he etched some few plates, which shew the hand of the master. Among these are "the Adoration of the Magi," and "Two Saints sleeping." His sons, Carletto and Gabriel, acquired, also, eminence as painters. Carletto was born at Venice, in 1570; and possessed a genius, which, under the instruction of his father, manifested itself betimes, and arrived at an early maturity; so that he promised to have equalled, if not to have exceeded his father. But by incessant application, he impaired his constitution, and died in 1596, at the age of 26 years.

Gabriel was born at Venice in 1568, and having talents inferior to those of his brother, he turned his attention to commerce. He died 1631.

These brothers finished works, which had been left imperfect by their father; and several pictures of their own design and execution have been ascribed to him; nor can some of them be easily distinguished from those of this great master. They were assisted by their uncle *Benedicta*, or *Benedetto*, who was born at Verona in 1538, and died in 1598. He resembled his brother Paolo in his style of painting; but his peculiar excellence consisted in the architectural figures, with which he enriched the compositions of his brother. At Venice there are several paintings, designed and executed by himself, which are much admired. D'Argenville. Pilkington. Strutt.

CAGLIARI, or **CALARIS**, in *Geography*, a sea-port city, and capital of the island of Sardinia, is situated in the southern part of the island, on the declivity of a hill, and has a large and secure harbour, screened by a small island called "Pietra Laida," and defended with a castle and fortifications. It is large and populous, the number of inhabitants amounting to about 50,000, and carries on a considerable commerce. It is the see of an archbishop, and the residence of a viceroy; and contains five churches besides the cathedral, and 23 convents. In 1708, it surrendered, upon an attack of the British fleet, to the emperor Charles VI.; but in 1717 it was retaken by the Spaniards, and about two years afterwards ceded to the duke of Savoy in lieu of Sicily, who obtained the title of king of Sardinia. N. lat. $39^{\circ} 12'$. E. long. $9^{\circ} 14'$.

CAGNACCI, in *Biography*. See GUINO.

CAGNANO, in *Geography*, a town of the island of Corsica; 14 miles N. of Bastia.

CAGNANO is also a town of Italy, in the kingdom of Naples, and province of Abruzzo Ultra; 3 miles N.N.W. of Aquila.

CAGNETE, CANETE, or GUARCO, a town of South America, in Peru, and capital of a jurisdiction of the same name, in the archbishopric of Lima, near the sea-coast; 80 miles S.E. of Lima. S. lat. $12^{\circ} 40'$. W. long. 73° .

CAGNETE, or CANETE, a district or jurisdiction of South America, in Peru, beginning at the distance of 6 leagues S. from Lima, and extending along the coast in the same rhumb above 30 leagues. The temperature of the air in this district is the same with that in the valleys of Lima; and the country, being watered by a large river, and other less streams, produces great quantities of wheat and maize. The lands are very much planted with canes, which yield an excellent sugar. In the vicinity of Chilca, situate about 10 leagues from Lima, is found salt-petre, of which gunpowder is made in that city. It has also a good fishery, which affords a comfortable subsistence to the Indian inhabitants of the town, particularly those situated near the sea-coast; together with plenty of fruits, pulse, and poultry; whence a large trade is carried on between this jurisdiction and Lima.

CAGNI. See BOUFFLERS.

CAGNICOURT, a town of France, in the department of the straits of Calais, and district of Bapaume, 3 leagues N.N.E. of it.

CAGNO, a town of Germany, in the country of Tyrol; 10 miles S.W. of Bolzano.

CAGNOLU, in *Ichthyology*. See SQUALUS ZYGÆNA.

CAGOTS, in *Geography*, a name distinguishing a singular class of people, who inhabit some of the vallies contiguous to the Pyrenæes. M. Ramond de Carbonnières in his "Observations faites dans les Pyrénées," &c. 8vo. Paris, 1789, adopts the opinion of M. de Marca, that this miserable race, whose imbecility of mind and deformity of person have so frequently engaged the attention, and exercised the ingenuity, of philosophical travellers, are the descendants of the Goths and Wisigoths, who were persecuted and dispersed on account of their Arian principles. These heretics were treated with cruelty by the Franks, and driven from the borders of the Loire and the Sevre to the most desolate places. After the destruction of the kingdom of the Wisigoths by the children of Clovis, those who were degenerated by intermarriages, and were not able to follow the warlike Goths into Spain, sunk into contempt on account of their religious tenets. They were excommunicated from the church, and refused Christian burial. They were branded with the names of *Cagots*, *Cabets*, and *Cassots*, which signify, according to Gebelin, "polluted" and "infected." They became leprous, he says, by being, through successive generations, exposed to the most extreme poverty, and by being prohibited from intermarriages with any other families than their own. "Their return to the bosom of the church was not sufficient to remove the stigma of their cast: they ceased from being Arians, without ceasing to be leprous; and they afterwards ceased to be leprous, without being freed from all the evils engendered by a vitiated state of the fluids."

CAGUAN, a district of Terra Firma, with a town of the same name, situate in the southern part of New Granada. The town lies in N. lat. 3° . W. long. 76° .

CAGUANABO, a town of the island of Cuba; 60 mile N.N.E. of St. Yago.

CAGUANICO, a town of the island of Cuba; 55 miles N.N.E. of St. Yago.

CAGUATUS, MARSILIUS, in *Biography*, born at Verona, about the middle of the 16th century, was educated at Padua, where he acquired so much reputation, that he was invited to teach medicine at Rome. He continued to reside there to the time of his death, in 1610. He was well read in the ancient Greek fathers of medicine, and employed much of his time in commenting on their works, and correcting many errors which time had introduced, often, Haller thinks, happily enough. His works are "Variarum Observationum Libri duo, cum disputatione de ordine ciborum Libri quatuor," Romæ 1581. 8vo.; consisting principally of critical observations on the works of the ancients. In one case, he had seen the bones of a human fœtus which had been voided by the anus. "De Morte, Causa Partus." He contends, contrary to an opinion held by some anatomists, that the ossa pubis do not separate in parturition. "De Sanitate tuenda," 1591. 4to. "De Aeris Romani Salubritate, de Tiberis Inundatione, et de Epidemia Romana, seu de Populari Ægitudine quæ Anno 1591, et de altera quæ Anno 1593, orta est," 1599. 4to. He contends that the air of Rome is not unhealthy, and modern Rome more healthy than the ancient; that Rome abounds with persons of great age; that though the Tiber frequently overflowed its banks, he had never known any epidemic follow from that circumstance. Haller. Bib. Bot. Med. et Anatom.

CAGUI Minor, in *Zoology*, the name given by Marcgræve to the species of ape described by late scientific writers under that of *simia jacchus*. Edwards after Marcgræve also calls it *cagui minor*, or sanglin. It is the striated ape of Pennant.

CAGUI Major *Brasiliensis* of Marcgræve is the *simia oedipus* of Gmelin, and little lion monkey of Edwards.

CAGURRIA, in *Geography*, a town of Spain, in Navarre, seated on a small river, which almost surrounds it, and discharges itself into the Ebro; 6 leagues N.W. of Calahorra.

CAHA, a town of Persia, in the province of Irak; 40 miles N.E. of Amadan.

CAHAIGUES, JAMES, in *Biography*, born at Caen in Normandy, about the middle of the 16th century, applied early to the study of medicine, in which he took the degree of doctor at the university of Caen, in 1580. In 1583, he published "Elogiorum Civium Cadomensium Centuria 1;" reprinted in 1609, 4to.; "Brevis facilisque Methodus curandarum Febrium," Cadom. 1616, 8vo. "Brevis facilisque Methodus curandarum Capitis Adfectuum," 1618, 8vo.; "De Aqua Medicata Fontis Hebecrevonii," 1614, 8vo. He also published a translation into French of Julien le Paulmier, "De Morbo Gallico." Haller. Bib. Medica. Eloy. Bib. Hist.

CAHIER, or CAHIR, in *Geography*, a small neat port and market town of the county of Tipperary, province of Munster, Ireland, where there is a bridge over the river Suire, and near it, on an island in the river, is a castle, formerly of great strength, which was twice taken, first by sir George Carew in the reign of queen Elizabeth, and afterwards by Oliver Cromwell. On the bank of the river, opposite to the town, are the ruins of Cahier abbey, which was founded in the reign of king John. Distance S.W. from Dublin 85 Irish miles. N. lat. $52^{\circ} 22' 30''$. W. long. $7^{\circ} 54'$.

CAHIR is also the name of a fishing village in the county of Kerry, Ireland, on the coast opposite to Valentia island,

which was formerly much frequented in time of war, because no French privateer ever landed there to plunder, as was usual on other parts of the coast; a privilege said to have been procured by the Roman Catholic bishop of the see from the French monarch. *Smith's Kerry.*

CAHIR, a small island in the Atlantic ocean, on the west coast of the county of Mayo, Ireland, a little south of the entrance into Clew bay. N. lat. $53^{\circ} 44'$. W. long. $9^{\circ} 53'$.

CAHIRCONREE, a high mountain, south of Tralee, in the county of Kerry, Ireland, the name of which is supposed to signify *the fortress of king Con*. On the top of it is a circle of maffly stones, laid one on the other, in the manner of a Danish intrenchment, several of them being from eight to ten cubical feet, but all very rude. Different opinions have been entertained respecting this and other ancient monuments of the same kind. Some suppose them to be of eastern origin, and designed for religious purposes in honour of the sun; whilst others maintain that they are of northern origin, and were monuments of some great action performed near the place, or perhaps a sepulchral trophy raised over some eminent person. Mr. Pinkerton, in his account of Stone-henge, supposes them to have been introduced by the *Belgæ* or Goths, whom he considers as the Irish *Firbolgs*. These people used them, he says, as circles of judgment, or solemn places where courts were held, of all kinds and dignities, from the national council down to the baronial court, or that of a common proprietor of land, for adjusting disputes between his *villani* and slaves. According to this account they are of greater antiquity than the Danes, though used by this people. The common people, unable to conceive how human strength could possibly raise stones of such a prodigious weight to the summit of a steep mountain above 2000 feet high, get over the difficulty by supposing it to have been the work and labour of a giant. See *STONE-HENGE*. *Smith's Kerry. Collectanea Hibernica. Ledwich's Antiquities. Pinkerton's Geography.*

CAHLO, in *Ichthyology*, a name given by some old writers to the fish they also called *lupus marinus*, or wolf-fish, *anarhichas lupus* of Linnæus.

CAHOKIA, in *Geography*, a settlement in the north-western territory of America, north of Kaskaskias, which see.

CAHORS, a considerable town of France, before the revolution the capital of Quercy, and see of a bishop, now the principal place of a district in the department of the Lot, situate in a vale between mountains on the bank of the river Lot. One part of the town seems to lean against the steep side of a mountain; the other is seated in a small plain, watered by the meandering stream of the river, and finely cultivated, with its corn-fields, gardens, and fruit-trees, particularly the almond. The town is irregularly built, and its streets are narrow. The cathedral church is distinguished by its large cupola, which must in part have been an ancient Roman work: the remains also of a Roman amphitheatre and aqueduct are seen in this place. The number of inhabitants in the north and south districts of the town is 11,728, in the north canton 10,162, and in the south 8,981; the territory comprehends $142\frac{1}{2}$ kilometres and 10 communes. The lands round the town are very fertile; and the wine of this place has high reputation, and is exported from Bourdeaux as an article of commerce. It is produced by dwarf or ground vines, on steep mountains, and holds a high rank among the red wines of France. This town is fortified and surrounded with thick walls; but it was taken by assault by Henry IV. in 1580, when mortars are said to have been first used. N. lat. $44^{\circ} 27'$. E. long. $1^{\circ} 6'$.

CAHUSAC, LOUIS DE, in *Biography*, was born at Montauban, and having finished his studies at Toulouse, was admitted an advocate. On his return to Montauban, he obtained the post of secretary of the intendance. He afterwards removed to Paris, and became secretary to the count de Clermont, and after attending him in the campaign of 1743, he devoted himself to literature, and particularly to dramatic compositions. He died at Paris in June 1759. His temper was restless, lively, and arrogant; and his sensibility with regard to his reputation was so acute, that it is said to have produced a degree of derangement, which probably shortened his days. His publications were "Grigri," a romance, 12mo.; "The History of the Dance, ancient and modern," 3 vols. 12mo.; "Pharamond," written in 1736, and the tragedy of the "Earl of Warwick;" two comedies, viz. "Zeneide," and the "Algerine;" the "Festivities of Polyhymnia," and of "Hymen," "Zais," "Nais," "Zoroaster," the "Birth of Osiris," and "Anacreon," all operas; besides the "Loves of Tempé," which is also ascribed to him. *Biog. Dict.*

CAHUSAC, in *Geography*, a town of France, in the department of the Lot and Garonne, and district of Lauzun, and 5 miles E.N.E. from it.

CAHUZAC *sur Verre*, a town of France, in the department of the Tarn, and district of Gaillac, and 2 leagues N. of it.

CAHYS, in *Commerce*, a dry measure for corn, used in some parts of Spain, particularly at Seville and Cadiz. It is near a bushel of our measure.

CAI, in *Zoology*. The Linnæan *SIMIA MIDAS* is described under this name by Ray in his History of Quadrupeds.

CAJA, in *Entomology*, the species of *PHALÆNA*, known in England by the name of the garden tiger moth. The anterior wings are whitish, with large fuscous spots: posterior pair red with black spots. *Donov. Brit. Inf.*

CAJA, in *Geography*, a river of Portugal, which runs into the Guadiana, 7 miles E. of Elvas.

CAIA, in *Ornithology*. Buffon gives this name to the HOODED PARROT, *PSITTACUS PILEATUS*.

CAIA, in the *Turkish Military Orders*, an officer serving in the post of a deputy or steward, and acting for the body of the janizaries.

CAIAC, in *Geography*, a town of Persia, in the province of Irak; 64 miles W.S.W. of Ispahan.

CAJANA, or CAJANEBOG, a town of Sweden in a lehn or district of the same name, and capital of East Bothnia, seated on a lake near the borders of Lapland, and almost surrounded by the river Pyha, which forms a tremendous cataract in the neighbourhood. The district of which it is a part is about 60 leagues long and 16 broad. It was granted as a barony, in 1650, to Peter Brahe, under the title of the fief of Cajana. N. lat. $64^{\circ} 13' 30''$. E. long. $15^{\circ} 50' 47''$.

CAIANI, in *Ecclesiastical Antiquity*, a sort of heretics, thus denominated from one Caianus of Alexandria, their leader, otherwise denominated *APHTHARTODOCETÆ*.

The same name is sometimes also given to the sect of Cainians or Cainites.

CAIAON, in *Geography*, a kingdom of the island of Java.

CAIAPHAS, in *Scripture History*, the high priest of the Jews, at the time of our Saviour's crucifixion. He succeeded Simon, the son of Camithus, A. M. 4029, and after possessing this dignity nine years, till the year A. M. 4038, was deposed by Vitellius, governor of Syria, and the

the dignity devolved upon Jonathan, the son of Ananus. It appears that Caiaphas was high priest all the time that Pilate was in Judea. Some have thought, that the phrase, "being high-priest that same year" (John, xi. 49.) implies, that St. John supposed the high priesthood was annual. And on this account, they have been disposed to charge him with a great mistake; for Pontius Pilate was governor of Judea 10 years, and Caiaphas was put into the priesthood by Valerius Gratus, the predecessor of Pilate, and continued in it, till after Pilate's removal. But the phrase "that year," as it should have been rendered, and not "that same year," denotes no more than "at that time." St. John, therefore, merely says, that Caiaphas was high-priest at that time. It is added, that "being high-priest that year he prophesied." By prophesying we may understand his declaring the event; which it was in a peculiar manner the office of the priest to do, when he was inquired of, or when God was inquired of by him, concerning any important matter under deliberation. Lardner's works, vol. i. p. 387, &c.

CAJARE, in *Geography*, a town of France, in the department of the Lot, and chief place of a canton, in the district of Figeac; $5\frac{1}{2}$ leagues E. of Cahors. The town contains 1975 and the canton 8,126 inhabitants: the territory includes $207\frac{1}{2}$ kilometres and 14 communes.

CAIATUS, in *Botany*, (Rumph. amb. iv. 64, t. 24.). See *ÆSCHYNOMENE indica*.

CAIAZACOS, in *Geography*, a town of the island of Cuba; 40 miles W.S.W. of Bayamo.

CAJAZZO, a town of Naples, in the country of Lavoro, the see of a bishop, suffragan of Capua, 8 miles N.E. of it.

CAIC, CAIQUE, CAICA, in *Sea-language*, is used to denote the skiff, or sloop, belonging to a galley.

The Cossacks give the same name, *caic*, to a small kind of bark used in the navigation of the Black sea. It is equipped with forty or fifty men, all soldiers; their employment is a kind of piracy. The Turks have also a sort of caics, which some render by *liremes*.

The Caics, or Caiques, that navigate the sea of Marmora, are generally manned by two or three rowers; and they are incessantly employed in crossing the harbour, and proceeding with celerity to all the villages of the Bosphorus, to Scutari, to Prince's islands, and to every place in the environs. These caiques are long narrow boats, extremely light, equipped with one, two, or three pairs of oars, seldom with four. They carry one or two, and even three sails, which are set only in fair weather, or when the wind is not too strong. They are not provided with ballast, and are so buoyant that a somewhat stiff breeze would upset them, if the boatman did not take care to let go the sheet on the smallest danger, and to throw the boat up in the wind by shifting the helm. These caiques are so numerous, and they divide the water with such velocity, that in some cases the utmost skill of the rowers cannot prevent their running foul of each other, and one of the two from being upset, especially in bad weather. Such accidents, when they occur, are little regarded. They are no less swift in sailing than elegant in their form. In two hours, with a light breeze, they will sail from Constantinople to Prince's island, distant from 10 to 12 miles; and notwithstanding contrary wind and current, three rowers never take more time for reaching Buyuk-Dere, distant 18 miles. The Caiques belonging to the Sultan are remarkable for their size, their gilding, their elegance, and the number and dexterity of the rowers: they carry 14 pairs of oars, and are manned by 28 bostangees, dressed in white, the bostangee-bachi being the cockswain, or steerman. The caique

of the grand visier has 12 pairs of oars; those of the principal officers of the Porte, and of the ambassadors of foreign powers, have seven pairs each. In these large caiques one man is required for each oar; while those of private persons are sufficiently narrow for a single man to make use of two oars at a time. When the sultan in summer visits his different palaces on the Black sea, his caique is distinguished by a beautiful crimson awning, spread towards the stern: and he is preceded and followed by a number of others, in which are his principal officers.

CAICANDROS, or CAICANDRUS, in *Ancient Geography*, an island of the Persian gulf, 400 stadia distant from Catwa, and before a place named Ilan, according to the journal of the navigation of Nearchus. It is mentioned also by Arrian. It was a small place and uninhabited.

CAICINUS, a river of Italy in Brutium, near the Epizephyrian Locrians. It was near this river that the Athenians invaded the territory of the Locrians.

CAICO, in *Geography*, a town of the island of Cuba; 25 miles S. E. of Bayamo.

CAICOS, or CAYOS, a cluster of small islands or rocks, called *Little* and *Great* CAICOS, lying between St. Domingo, and the Bahama islands. N. lat. $21^{\circ} 14'$ to $22^{\circ} 23'$. W. long. $71^{\circ} 40'$ to $71^{\circ} 50'$.

CAICUS, in *Entomology*, a species of SPHINX that inhabits Surinam. The wings are fuscous: posterior pair rufous streaked with black: abdomen cinereous with black rings.

CAICUS, in *Ancient Geography*, a small river of Asia Minor, in Mysia, which passed near the frontiers of Lydia, and uniting with other streams, discharged itself into the sea near Elæa; supposed to be the present *Girmasli*.

CAIDBEIA, in *Botany*, (Forst. Ægypt.). See FORSKOEHLIA.

CAJELI, or CAGELY, in *Geography*, a bay at the north-east end of the island of Bouru, where the Dutch have a fortress.

CAJELIE, a country of Celebes in India, lying on the western shore of the island, towards the north, between Mandhar Mamodje and Sinlense, which is the southernmost place belonging to the government of Ternate. By the treaty of Boni, this country was ceded to the king of Ternate; but the government at Batavia afterwards issued orders that it should be considered as belonging to the government of Macassar. It formerly yielded much cocoa-nut-oil; but since the year 1730, it has been so much ravaged, first by the internal dissensions between their own nobles, and afterwards by the Mandharese, that all the cocoa-nut trees were felled; and the land lies now almost uncultivated and desert, and is subject, for the greatest part, to the Mandharese.

CAJEPUT OIL, *Oleum Volatile Melaleuca*. This essential oil is prepared from the dried leaves of the MELALEUCA *Leucodendron*, a tree which grows abundantly in many of the Molucca islands. The oil is brought over in considerable quantity from Amboyna, Batavia, and other Dutch settlements.

Cajeput oil is a very limpid fluid with a slight green tinge, lighter than water, of a very penetrating and peculiar smell somewhat resembling a mixture of ether and camphor, totally evaporable in a moderate temperature when exposed to air, very inflammable and burning without leaving any residue. In chemical qualities it resembles the other *essential* Oils.

To the taste it is highly acrid and stimulating, and it appears to possess valuable medicinal properties as a general stimulant.

stimulant and antispasmodic. Hence it is warmly recommended in flatulent colic, paralysis, chorea, whooping cough, and convulsive disorders in general. The dose is from one to six drops. It is also of considerable use externally applied for the relief of tooth-ach, rheumatic pains, sprains, and the like. This oil was first introduced into the *Amsterdam Pharmacopœia* about the year 1726, and is retained in the last edition of that of Edinburgh.

Insects have a great aversion from this oil, the vapour of which appears to intoxicate and kill them. A peculiar property of cajeput, in which it excels other essential oils, is, that it is a perfect solvent of *caoutchouc*, from which a perfect drying varnish may be made in the manner described under that article.

CAJET, or CAYET, PETER VICTOR PALMA, in *Biography*, was born in 1525, of poor Protestant parents, at Montrichard in Touraine; and after pursuing his theological studies at Geneva, became a domestic in the house of Calvin, and afterwards a minister. However, he left his church to follow the court, and was appointed chaplain to Catharine, sister of Henry IV.; but being addicted to alchemy, he was calumniated as a magician, and charged with publishing a book in favour of the establishment of public stews; and deposed from his ministerial function by a synod. Thus disgraced, he abjured Protestantism, in 1595, and was cordially received by the Roman Catholics, among whom he was ordained priest at the college of Navarre, and made doctor in theology, and appointed royal professor of Hebrew. His zeal, as a new convert, led him to attack the sect he had abandoned in several controversial writings, and in a disputation with Du Moulin. But his principal reputation was founded on his historical compilations. In 1598 he published a relation of the recent war between the Turks and Hungarians; and, in 1605, his "Septenary Chronology," from the peace of Vervins, in 1598, to 1604, to which he afterwards added the history of the nine years' war, terminated at this peace, in his "Novennary Chronology," printed in 1608. He also wrote two works in Latin; one intitled, "Concilium pium de componendo Religiosis Dissidio," and the other, "Instrucciones in the four principal Oriental Languages." He died in 1610. Gen. Dict.

CAJETA, in *Entomology*, the name under which Cramer figures the Gmelinian NOCTUA FULLONICA, which see.

CAJETA, in *Ancient Geography*, a sea port town of Italy in Latium, now *Geta*.

CAJETAN, CARDINAL, in *Biography*, so called from the place of his nativity, Cajeta, (his proper name being *Thomas da Vio*), was born in 1469, and entered into the order of Dominicans, among whom he was distinguished for the acuteness of his understanding and his learning. The chapter of his order conferred upon him the degree of doctor in 1494; and after having taught philosophy at Rome and at Paris, he was chosen general of his order in 1508, and raised to the dignity of cardinal in 1517, by Leo X. In the following year he was deputed as legate to the emperor, for promoting the war against the Turks and opposing the Lutheran heresy. At this time he held three conferences with Luther at Augsburg, in the conduct of which he behaved in a manner so imprudent and imperious as to give offence at the court of Rome. Instead of recurring to argument, he used the mere language of authority, and in an overbearing tone insisted on the reformer's giving up his opinions and submitting respectfully to the judgment of the Roman pontiff. Luther's temper could not brook such treatment, and of course the breach was

widened by these conferences. Pope Adrian VI. sent him as his legate to Hungary, and upon his return he was promoted to the see of his native city. When Rome was sacked in 1527, he fell into the hands of the soldiers, by whom he was treated with great indignity, and they insisted on a large sum for his ransom. He closed his life at Rome, where he was assiduously employed in the study of the Scriptures, in 1534. His earlier works were "Commentaries upon Aristotle," and upon the "Summa Theologiæ" of Aquinas. In his "Tractatus de Comparatione Autoritatis Papæ et Concilii," he alleges many frivolous and groundless arguments in favour of the absolute authority of the popes as successors to St. Peter. His theological treatises discuss the most important tenets of the Roman Catholic religion; and in his illustration of the doctrine of indulgences he maintains that they avail only as an absolution from the penances enjoined by the church, but that their benefits extend to souls departed merely in the way of suffrage or intercession. With respect to indulgences he contended, in his conference with Luther, that "one drop of Christ's blood being sufficient to redeem the whole human race, the remaining quantity that was shed in the garden and upon the cross, was left as a legacy to the church, to be a treasure from whence indulgences were to be drawn and administered by the Roman pontiffs."

Cajetan's most considerable work is his "Commentary upon the Scriptures," comprehending the Old and New Testament, except the Song of Solomon, the Prophets, and the book of Revelation. In this performance, he restricted himself to the literal sense of the words of Scripture in the original languages, without regarding the expositions of the fathers. Ignorant of the Hebrew, he employed a Jew and a Christian to furnish him with the exact import of the words according to the letter and grammar, without troubling themselves to give a sense of their own when no sense appeared. In the New Testament he chiefly followed the version of Erasmus. By deserting the vulgar Latin translation, and disregarding the fathers, he incurred the censure of some of his own communion; and, in 1544, the university of Paris issued a decree, condemning his work, as containing false, impious, and even heretical propositions. Some more candid Catholics have vindicated him, though he is justly charged with too scrupulously adhering to the literal version of the rabbins. Many editions of his works have appeared. Those on the Scriptures were printed at Lyons, in 1639, in 5 vols. fol. Dupin's E. H. 16th century. Mosheim's E. H. vol. iv.

CAI-FONG, in *Geography*. See KAI-FONG.

CAILAR, a town of France, in the department of the Herault, and chief place of a canton, in the district of Lodève. The town contains 722, and the canton 3127 inhabitants: the territory comprehends 255 kilometres, and 8 communes.

CAILHAU, a town of France, in the department of the Aude, and district of Limoux; $3\frac{1}{4}$ leagues S. W. of Carcassonne.

CAILLE, NICHOLAS LEWIS DE LA, in *Biography*, an eminent mathematician and philosopher, was born at Rumigny, in the diocese of Rheims, March the 15th, 1713. The amusements of his father, after withdrawing from the army, in mathematical and mechanical philosophy, led the son, at an early period, to form an attachment to mechanics. Having left school in 1729, he prosecuted his studies at Paris, and applied particularly to theology, in the college of Navarre, with an intention of becoming an ecclesiastic. But his inclination to astronomy diverted his purpose; and, by the friendship of the celebrated Cassini, to whom he was introduced,

introduced, he obtained an appointment in the observatory; and under the instruction of this excellent patron, his natural genius had favourable opportunities for cultivation and exercise, and he acquired the reputation of an able astronomer. In 1739 he was connected with M. Cassini de Thury, in verifying the meridian through the whole extent of France; and in the same year he was appointed professor of Mathematics in the college of Mazarine. In 1741 he was admitted into the Academy of Sciences, and from this year to 1763 inclusive, he enriched every volume of the memoirs with some valuable paper. He also published, at different periods, some useful treatises on geometry, astronomy, mechanics, and optics. He also computed all the eclipses of the sun and moon, from the commencement of the Christian era, which were printed in the work intitled, "L'Art de vérifier les Dates, &c." Paris, 1750, 4to. He also compiled a volume of "Astronomical Ephemerides," for 10 years, from 1745 to 1755; another from 1755 to 1765; and a third, from 1765 to 1775. His excellent work, intitled, "Astronomiæ Fundamenta, novissimis Solis et Stellarum Observationibus stabilita," was published at Paris in 1759; and in 1760 appeared his correct solar tables, under the title of "Tabulæ solares, quas è novissimis suis observationibus deduxit," N. L. de la Caille.

Having completed a series of seven years' observations in the observatory at the Mazarine college, he formed a project, which was approved by the French court, of observing the southern stars at the Cape of Good Hope; and proceeded upon this expedition in 1750. In the space of two years he observed the places of about 10,000 stars in the southern hemisphere, invisible in our latitude; and determined several other important elements, such as the parallaxes of the sun and moon, and some of the planets, the obliquity of the ecliptic, the quantities of refraction, &c. Previous to his return he engaged in the arduous attempt of estimating the dimensions of the earth by measurement, at the southern parallels, as other astronomers had done near the equator, and in northern latitudes, with a view of deciding whether the former corresponded with the latter. The results of his labours were satisfactory; for having determined a distance of 410814 feet from a place called "Klip-Fontyn" to the "Cape," by means of a base of 38802 feet, three times actually measured, he discovered an unknown secret of nature, viz. that the radii of the parallels in south latitude are not of the same length with those of the corresponding parallels in north latitude. He found that a degree on the meridian in 32° S. lat. contains 342222 Paris feet. In conformity to orders from the court of Versailles, he also determined the situation of the Isles of France and Bourbon. During his abode at the Cape he likewise made some curious meteorological observations; and he particularly observed, than when the south-east wind blows, which is often the case, the stars appear larger and seem to dance; that the moon has an undulating tremor; and that the planets have a sort of beardlike comets.

Upon his return to France, after an absence of 4 years, he replied to some strictures, published by the celebrated Euler, relating to the meridian: he afterwards settled the results of the comparison of his own observations, respecting the parallaxes, with those of other astronomers. Accordingly, he fixed that of the sun at $9\frac{1}{2}''$, that of the moon at $56''$, that of Mars, in his opposition, at $36''$, and that of Venus at $38''$. He also settled the laws, by which astronomical refractions are varied by the different density or rarity of the air, by heat or cold, and by dryness or moisture. And he was one of the first promoters of the lunar observations for determining the longitude at sea. In consequence

of the reputation which he had thus acquired and established, he was elected a member of most of the academies and societies in Europe: as London, Bologna, Petersburg, Berlin, Stockholm, and Gottingen.

Independently of his own publications, he edited the memoirs of Father Feuillée, at the Canaries; the journal of the voyage of M. de Chazelle, to the Levant; and the manuscript collection of observations of William, Landgrave of Hesse, and Bouguer's treatise on the gradation of light.

Although he was attacked in 1760 with a severe fit of the gout, the energy of his mind was unimpaired: so that besides pursuing his course of studies, he sketched out the plan of a new and large work, proposed to be "The History of Astronomy through all Ages, with a Comparison of the ancient and modern Observations, and the Construction and Use of the Instruments employed in working them." In the year 1761 his constitution gradually declined, without interrupting his studies, in which he persevered to the last: and they only terminated with his life, March 21st, 1762. Mem. of the Paris Academy for 1762.

CAILLE, in *Ornithology*, among the French, synonymous with the English word quail, as for example, *caille de la Louisiane* of Buffon, the Louisiane quail of Latham; *caille de la Chine* of Buffon, the Chinese quail of Edwards; *caille de l'isle de Luzon* of Sonnerat, the Luzonian quail of Latham, &c.

CAILLERE, LA, in *Geography*, a town of France, in the department of the Vendée; $4\frac{1}{2}$ leagues N.E. of Luçon.

CAILLOT, in *Biography*, a most pleasing, and almost the only pleasing, theatrical French singer, to the natives of other countries, that France has produced. He continued, during many years, the favourite actor and singer of the comic opera at Paris. His voice, which he could make a base, tenor, or counter-tenor at pleasure, was sweet and flexible. He was an excellent actor, and, in all respects, a most interesting, entertaining, and admirable performer. He first appeared in the part of *Colas*, in *Ninette à la Cour*, in 1760.

CAILLY, in *Geography*, a town in France, in the department of the Lower Seine, and district of Rouen; $3\frac{1}{2}$ leagues N.N.E. of Rouen.

CAILO, a small island in the gulph of Persia, 80 leagues W. of Ormus.

CAIMACAN, or CAIMACAM, a dignity in the Ottoman empire, answering to that of lieutenant, or vicar, among us. The word is composed of the two Arabic words, *Caim machum*, q. d. *he who holds the place, or discharges the functions of another*.

There are usually two caimacans: one resides at Constantinople, who is the governor thereof: the other attends the grand visir, in quality of his lieutenant. Sometimes there are three caimacans: one constantly attending the grand signior, another the grand visir, and a third constantly at Constantinople, who examines affairs of policy, and regulates them in great measure. The caimacan that attends the visir, only officiates when at a distance from the grand signior; his function ceasing, when the visir is with the sultan. The caimacan of the visir is his secretary of state, and the first minister of his council. The caimacan is properly the substitute of the grand visir, appointed by the sultan, when the former is obliged to absent himself in order to take command of the army. The caimacan discharges his functions, is invested with the same authority, enjoys the same rights, but not the same revenues; his salary is fixed, and the emoluments of the place belong to the visir, to whom the caimacan renders an account of them. It is generally a pacha or bashaw

baſhaw with three tails who is appointed to this eminent place.

CAIMAN, in *Geography*. See CAYMAN.

CAIMENI. See KAMMENI and HIERA.

CAIN, קַיִן, derived from קָנָה, to *acquire*, and denoting *acquisition* or *possession*, in *Scripture History*, the eldest son of the progenitors of the human race, Adam and Eve, was born towards the end of the first year of the world, B. C. 4003. From the concise history of Cain that occurs in Genesis, ch. iv. we learn, that he devoted himself to husbandry, and his brother Abel to the keeping of sheep; that when they brought their respective offerings to God, that of Abel was accepted, and that of Cain rejected; that this preference enraged Cain, exciting in his mind jealousy and envy of his brother; and that the indulgence of these wicked passions at length terminated in the murder of his brother. As a punishment of this atrocious crime, God condemned him to be a fugitive and vagabond on earth, and to till an ungrateful soil, which should not recompense his labour with the plenty and increase he had before experienced. Nevertheless he set a mark upon him, or gave him a sign, that none might take away his life in his wanderings. Many ridiculous conjectures have been made both by Jews and Christians concerning this mark. Some have supposed that God stigmatised him with a brand in his forehead, to denote his being accursed; others, that he had a wild aspect and bloody eyes, which rolled in a horrid manner. The fathers, in general, apprehend, that he had a continual trembling of the body, so that he could hardly get his food to his mouth; and this opinion is favoured by the LXX, which render "a fugitive and a vagabond" φευγὼν καὶ τρεμῶν, lamenting and trembling. Others say, that wherever he went the earth shook under him; and others again intimate, that he had a horn growing out of his forehead, to warn people to avoid him; and others have indulged him with the sign of the cross. Le Clerc imagines, that God ordered him to wear some distinguishing garment, perhaps of some glaring colour, as a mark or sign upon him for his preservation. To these fanciful conjectures we may add a more probable opinion of Dr. Shuckford (Conn. vol. i. p. 8:), who renders the words לָקַן אֹת וַיִּשֶׂם יְהוָה "God gave to Cain a sign," or token, probably by some apparent miracle, that he would providentially protect him; so that none that met him should kill him. In this sense the word אֹת is used, when the rainbow is called the אֹת oth, that is, the sign, or token, of the covenant which God made with Noah, assuring him that he would drown the world no more. (Gen. ix. 12—17.) See also Judg. vi. 17. Psalm, lxxxvi. 17. Dr. Geddes (Crit. Rem. vol. i. p. 59.) translates the words above cited, "and the Lord gave a token of security to Cain;" and he observes, that the original cannot admit of the common interpretation, as there is not a single passage in the Bible where אֹת signifies a *mark* or *brand* set on one. It always denotes a *sign*, a *token*, a *wonderful event*; but never a *mark*. And although שֵׁם signifies to *place* or *set*, it has often a meaning like that of נָתַן; and יִשֶׂם אֹת is here equivalent to אֹת יָתַן, and such is its signification wherever it is connected with the word אֹת. Pf. lxxiv. 4. lxxviii. 43. cv. 27. If. lxvi. 19.

Cain at length settled with his wife and family in the land of Nod, on the east of Eden, where he built a city, calling it after the name of his son, Enoch. But Josephus says (Ant. l. i. c. 2.) that instead of being reformed by the punishment inflicted on him, he became more wicked and violent, and headed a band of thieves, whom he taught to acquire riches by oppression and robbery. He is said to have corrupted and changed the simplicity and honesty of the world, and to have invented weights and measures. He was also the first

who set bounds to the fields, and who built and fortified a city.

CAINAN, the son of Enos, was born A. M. 325, B. C. 3679, Enos being 90 years of age. Gen. v. 9. At the age of 70 he begat Mahaleel, and died at the age of 910 years, A. M. 1235, B. C. 2769.

CAINAN was also the son of Arphaxad, and father of Salah, whose name does not occur either in the Samaritan or Hebrew text, nor in any of the ancient versions of Gen. xi. 12, &c. except the LXX; and hence it has been generally deemed an interpolation. The name, however, occurs in the genealogy of Christ, Luke iii. 36, between Salah and Arphaxad. Dr. Jackson, in the first volume of his "Chronological Antiquities," labours hard to shew, that the reading of the LXX is the true original reading, and that it stood in the original copies till after the Christian era. It must be acknowledged, that it is not easy to determine by what means it could have got into the Septuagint version, if it had not been found in their Hebrew copy; and it is certain, that it must have been in the copy used by St. Luke in forming his genealogy of Christ. It is not easy to conceive, how such an interpolation could have been made, or for what purpose; whereas its having been dropt out of the Hebrew text may be readily accounted for. On the other hand, the conformity of the Samaritan with the Hebrew copies, the silence of Josephus and Philo, and its omission in the chronological computations of Julius Africanus, Eusebius, and Theophilus, are urged as cogent proofs that the passage was not in the original copies of the Septuagint; and Grotius even asserts, that it was not to be found there before the 4th century. But it may be asked, how came it to be inserted? To which it is replied, that it was foisted into St. Luke's gospel by some careless copyist from ver. 37, where it rightly occurs; and this interpolation, being transcribed by other copyists, got imperceptibly into almost all the exemplars; and, on these exemplars, the copies of the LXX were next interpolated, in order to make them agree with the evangelist. This indeed, though not an impossible, is certainly a strange, rapid, and almost incredible process. For we find this same interpolated Cainan in the Syriac, Vulgate, Arabic, and Ethiopic versions. Upon the whole there is reason for inclining to the opinion, that the comma in question stood originally in the Septuagint version, and that Luke drew his genealogy from that version. After all, it is a point, in its connection with Biblical criticism, of no great moment, as the design of the evangelist was only to present us with the genealogy of Christ in its ascent to Adam, which is equally clear, whether we reckon Salah as the immediate descendant of Arphaxad, or whether we consider him as his grandson by Cainan. We must not, however, omit to mention, that the comma is wanting in three of Holmes's MSS. in the Coptic (which indeed has Cainan, but makes him one of the sons of Shem, and places him after Aram), and Armenian, edited copies, and in one Arab. MS. Nor was it read by Theophilus; nor by Jerom in his Heb. Questions; where he expressly says, "Arphaxad genuit Sala."

CAINAS, in *Ancient Geography*, a navigable river of Asia, which discharged itself into the Ganges; mentioned both by Pliny and Arrian.

CAINITES, or CAINIANS, in *Ecclesiastical History*, a sect of ancient Gnostics, that sprung up towards the close of the second century, and paid extraordinary honours to those persons represented in Scripture as the worst of mankind; so called from Cain, whom they esteemed their patriarch, and the chief object of their veneration. They held that Cain, Efav, Core, Dathan, and Abiram, and those of Sodom, were born of a most eminent celestial virtue; that

Abel, on the contrary, was born of a virtue much less eminent: to Cain, and others of the same order, who, according to them, had a mighty knowledge of all things, they associated Judas, whom they held in so much esteem, that they had a book among them called the gospel of Judas. S. Epiphanius, who seems to have borrowed his account from Irenæus, relates, and at the same time refutes, their errors.

Irenæus and Epiphanius concur in their accounts of the gross errors and atrocious wickedness of these people. Dr. Lardner, however, disputes the credibility of their relation. The wickedness ascribed to them, he says, is incredible; as it is not easy to conceive, that any number of persons calling themselves Christians should honour Cain, Core, and Judas, and all who lie under just condemnation in the scriptures, both of the Old and New Testament, for the most notorious wickedness; and besides, the account is inconsistent with itself; for it is not possible that men should be extremely wicked in principle and practice, and at the same time be concerned about the salvation that is by the cross of Christ, and honour Judas for his love of truth, and solicitude for the salvation of the world and the general good. Moreover, the rise of this denomination of Cainites may be accounted for another way, without making a particular sect. It might arise from the SETHIANS, those who call themselves by that name, and extolled their ancestor. Seth could not well avoid declaiming against Cain; and they might sometimes say of those in a different course of life from themselves, that they acted as if they were the children of Cain, who was of the evil one; and seemed to shew themselves kindred of Core, and Dathan, and even Judas himself. From this circumstance or mode of speaking, some persons, who were disposed to multiply heresies, took occasion, or by mistake were led to talk of a sect under the denomination of Cainites. Lardner's Works, vol. ix. p. 456. See SETHIANS.

CAINITO, in *Botany*. (Plum. Gen. 10. ic. 69.). See *CHRYSOSEPHYLLUM Cainito*.

CAINON, *Kanon*, the new court, in *Antiquity*, a civil court of justice at Athens, sometimes called *παρὰβουλον μισον*, which took cognizance of trifling matters, not exceeding in value one drachm. The judges in this court were the eleven magistrates. See ATHENS.

CAINS, in the island of Candia, denote, Greeks revolted and retired to the Venetians, either at Suda or Spina Longa; who in time of war, burn, pillage, and commit all manner of cruelties on their ancient brethren under the Turks. When a Cain, or false brother, is taken, there is no mercy for him, they either impale him, or put him to the ganche.

CAINUM, in *Ancient Geography*, a town of Asia, in Mesopotamia. Not. Imp.

CAJORI, in *Geography*, an island near the mouth of the Ganges, at the bottom of the bay of Bengal, on the west side of the river.

CAJOU, CASHW, or CASSU. See ANACARDIUM.

CAIPHA, CAIAPHA, or HETHA, in *Ancient Geography*, a town at the foot of Mount Carmel, to the north, on the gulf of Ptolemais; its ancient name was Sycaminos, or Porphyreon. It was separated from Acco or Ptolemais, by a large and beautiful harbour. The distance from Acco to Caiapha, or Capha, by sea, is not above 15 miles; but it is twice as much by land.

CAIRA, in *Geography*, a river of South America, which runs into the Oronoko, or Orinoco. N. lat. 7° 16'. W. long. 65° 1'.

CAIRINA, a post-town of America, in Amelia county, Virginia, 190 miles from Washington.—Also, the chief town of Sumner county, Tennessee.

CAIRINA, in *Ornithology*, the Muscovy duck, *ANAS MOSCHATA*, according to some authors.

CAIRN. See CARN.

CAIRNEY, in *Geography*, a town of Scotland, in Aberdeenshire, into which the linen manufacture has lately been introduced, and where it is likely to flourish; 8 miles W. of Aberdeen.

CAIRNGORM, a mountain in the Highlands of Scotland, and north-east part of the county of Inverary, 4060 feet high, called also the Blue Mountain, which is clothed with almost perpetual snow, and which is remarkable for quartz of different colours, chiefly the smoaky kind, well known to lapidaries.

CAIRO, FRANCESCO, called CAVALIERE DEL CAIRO, in *Biography*, a painter of history and portrait, was born at Milan, in 1598, and instructed in his art by Morazzone, whose style he for some time imitated; but in consequence of pursuing his studies at Rome, he altered his manner, and evinced his improvement by composing with judgment, designing in an elevated style, and giving correctness, grace, and harmony to his compositions. In the Venetian school, he farther acquired a strong and lively manner of colouring, and a talent of execution which has occasioned some of his pictures, particularly his portraits, to be ascribed to Titian, and Paolo Veronese. He is said to have adopted three manners of painting, the Milanese, Roman, and Venetian; and by this variety he obtained extensive employment and applause. At the court of the duke of Savoy, Victor Amadeus I., whither he was invited, he was honoured with a pension, and with the order of knighthood. His "Theresa," at Venice, is much admired for its colouring and expression; and his picture in the chapel of the Chartreux, at Pavia, representing the Virgin, St. Catharine of Siena, and another saint, is excellently designed, and beautifully coloured, in a style resembling that of Rubens. This artist died in 1674. Pilkington.

CAIRO, or GRAND CAIRO, in *Geography*, the chief city of Egypt, and reckoned the second capital of the East, and the metropolis of Africa, is seated on the east of the Nile, and distant from it about one quarter of a league; but connected with it by the suburbs, called Misr, or Mafr el Attiké, and Bulac, or Boulac, which &c. This city was founded in the year 358 of the Hegira, A. D. 968, by Jauhar, or Giavhar, general of Moaz, the first caliph of the race of the Fathimites. Having subjugated Egypt, he built this town for the accommodation of his victorious soldiers, and a palace for the residence of the emperor. Four years after, Moaz himself removed from Barbary to this place, completed the building of the city, and established the empire of the Fathimites. As the foundation of the city was laid at the instant when the planet Mars passed the meridian, and this planet was denominated by the Arabian astronomers *Cabér*, q. d. victorious, it obtained from this circumstance the appellation *El Kabera*, *Kaherah*, or *Kahirah*. This new city was erected near *Old Cairo*, formerly called *Mafr*, and now *Fostat*, which see; and farther from the Nile, which rendered its situation less advantageous for trade. When the French, under king Louis XIV., had extended their conquests in Syria, and carried their victorious arms even into Egypt, they proceeded, in the year of the Hegira 564, A. D. 1168, to Belbeis, and having taken it by storm, they advanced towards Grand Cairo, which they also captured. Schaouar, king of Egypt, fearing lest Fostat should also fall into their hands, set fire to it; and the inhabitants, being thus reduced to the necessity of abandoning it, took refuge in the new town, which assumed the name of "Mafr," or "Misr," attached to the capital of Egypt.

Salah Eddin, or Saladin, being nominated governor of Egypt, in the year 564 of the Hegira, successfully resisted the Franks, almost entirely expelled from the eastern countries, and established in Egypt, of which he acquired the sovereignty, the dynasty of the Aïoubites. In the year 572 of the Hegira, A.D. 1176, he built the walls that encompass Grand Cairo, and the castle situated on Mount Mokattam. It is said to be about 29,300 cubits (3 leagues) in circumference: $1\frac{1}{2}$ leagues from north to south, or, according to Browne's estimate, about 3500 yards, and $\frac{1}{4}$ of a league from east to west. To the south-east and east of Grand Cairo is a ridge, called Mokattam, of the extensive chain, which runs along the course of the Nile to Upper Egypt, sometimes receding and leaving a plain about a league broad, and at other places opposing its barrier to the stream. This mountain is totally without verdure, and presents nothing to the eye but a dry sand and stones calcined by the sun, which of course reflect a suffocating heat upon the town, whenever the northerly wind does not blow. To the north of the city a plain extends to the Delta, which it resembles in soil and productions. Immediately under the mountain is the castle, now incapable of defence, though esteemed of great strength, before the invention of artillery. As it is commanded by the neighbouring mountain, it could not sustain a battery from thence for two hours. It is more than a quarter of a league in circumference; and the access to it is by two very steep passages, cut out of the rock on which it stands, which lead to two gates, entrusted to the guard of Afkabs (no longer existing) and Janizaries. The former occupied the lower part of the fortrefs, and the others the part called the citadel. The interior of the castle contains the palace of the sultans of Egypt, almost buried under their ruins. In one of the halls of these ruined buildings, exhibiting only some shattered remains of their ancient magnificence, is fabricated the rich carpeting, or embroidered cloth, which the Emir Hagg, or bey, who is prince of the caravan, carries every year to Mecca, for the purpose of covering the Caaba. The pacha's apartments in the castle are mean and incommensurate; the audience-hall, where the divan is held three times a week, is a long room stained with the blood of the beys, massacred by order of the Porte. At the extremity of the place called "Cora Maïlan," is the mint (the only one for Egypt), where they coin in gold mahbûbs, and half-mahbûbs, the first being worth about 5 shillings each; and in copper washed with silver the small coins worth about a half-penny, called in Turkish "paras," in Arabic, "diwani," "fuddha," or "maidi;" and by European writers, "aspers," and "medines." On one side is the name of the reigning sultan, and on the reverse "Misr," and the date. The sequins are worth about 6s. 3d. English, and are made of the gold-dust brought from Abyssinia, which furnishes annually upwards of four millions. One of the most curious monuments in the castle is the "Well of Joseph," hewn out of the rock, which, according to Pococke, was sunk about 700 years ago by a vizir, called Joseph, by order of Sultan Mahommed, son of Caloun. The Egyptians ascribe it to Salah Eddin. It is hardly necessary to observe, that fabulous tradition attributes it to Joseph the patriarch, whose palace this castle is said to have been. The well is 280 feet deep, and 42 in circumference. A stair-case of gentle descent winds round it. Within this well, at a considerable depth, is an esplanade with a basin; where oxen turn the wheel that raises the water from the bottom of the lower well; other oxen, placed above, raise it from this reservoir, by the same mechanism. The water proceeds from the Nile, and, as it filters through a sand impregnated with salt and nitre, it is brackish. From the sa-

loon of the palace of Salah Eddin, situate in the quarter of the Janizaries, and existing only in ruins, the view extends over an immense horizon, including the whole extent of Grand Cairo, a multitude of mosques and minarets, the river, and on the side of Boulac, a rich country covered with harvests, and interspersed with groves of date-trees. Mafr-Fostat appears to the south-west, and the plains of the Said, or Upper Egypt, when overflowed by the Nile, present to view different hamlets, built on eminences, now converted into islands. The landscape is terminated by the pyramids, which, like the tops of mountains, lose themselves in the clouds. This castle commands the town, which forms an immense crescent around it. The streets of this famous city are narrow, crooked, and unpaved, intersected here and there with large vacancies, which become lakes during the increase of the Nile, and are gardens during the rest of the year. In the month of September they are passable by boats; but in April they are covered with flowers and verdure. The narrowness of the streets, however, affords protection from the fierce effulgence of the meridian sun.

The "Chalige," "Knalig," or canal, which traverses Grand Cairo from north to south, and which is opened every year with great solemnity, takes its rise near Mafr el Attiké, or Fostat, fills the lakes of the city, and loses itself four leagues beyond it, in the "Birque" (large piece of water,) of the pilgrims of Mecca. Mr. Shaw calls this the canal of Trajan. Pococke, and other modern writers, ascribe the construction of it to this emperor; and it has been commonly denominated "Amnis Trajanus." Macrisi says it was built by the Emperor Adrian. Elmacin, cited by Savary, says that this grand project was executed by Amrou, who, having announced the capture of Alexandria to Omar, received his instructions to cut a khalig, by which the produce of Egypt might be transported into the sea of Colzoum (or Red Sea), and from thence to the port of Medina. It was called "the river of the prince of the faithful;" and boats passing from Fostat, conveyed the commodities of Egypt into the Red Sea. Through the negligence of succeeding caliphs it has been choked up, so that it no longer conveys its waters to the Red Sea. By opening this important communication with the Red Sea, a project which engaged the attention of Bonaparte during his short abode in Egypt, Grand Cairo would again become the richest and most commercial capital in the world. For a further account of it, see CANAL. At different seasons of the year, this canal, in its passage through Cairo, assumes various aspects; but its most permanent character is that of a dunghill, or public receptacle for all kinds of offal. Before the rise of the Nile, it is cleaned, and becomes a street; it is then filled by the increase of the river, and exhibits the appearance of a canal covered with boats. The kites shriek wildly over this canal; and the city is infested with its usual herds of dogs; while the turtle-doves, unmolested by men or children, breed in the houses, building their nests under the projecting beams.

The principal street of Cairo runs parallel to the "Chalige." And on this canal are all the houses of the Europeans, notwithstanding the stench that proceeds from it, and that is said to produce the pestilence, to which, however, that order of men is least subject. Within the walls of Grand Cairo are more than 300 mosques, most of which have several minarets, or high steeples of a very light architecture, and surrounded with galleries. These elevated structures give to the city an agreeable variety, which would otherwise appear too uniform, on account of the flatness of the roofs, all of them being in the form of terraces: and they seem also to accommodate the public criers, who call the people to prayers at the hours prescribed by the Mahometan

metan law. About 800 voices may be heard at the same instant in every quarter of the town, reminding the people of the seasons of devotion.

Four or five of the mosques at Cairo far exceed the rest in splendour. One of the most magnificent is called "Iama el Az her;" it is ornamented with pillars of marble, and Persian carpets, and has attached to it immense property. A Sheikh, being an ecclesiastic of the highest order, presides over the establishment, which also supports a number of persons distinguished for their profound skill in theology, and accurate knowledge of literal Arabic. It is furnished with a large collection of MSS.; and lectures are read on all subjects which are here called *scientifique*, though commonly very remote from real science. This is also a very considerable eleemosynary establishment, supplying chiefly poor ecclesiastics, to the amount of some thousands, with broth, and other articles. At Cairo, most of the mendicants are ecclesiastics, who plead their studies as an excuse for idleness. The other mosques most frequented are, that of "Sultan el Ghouri," "el Hassanein," and, of later date, that erected by "Mohammed Bey Abudhabab." For the construction of this latter, the most costly materials were provided, and it is esteemed a chief d'œuvre of oriental magnificence.

The city abounds with large and sumptuous reservoirs, which supply passengers with water; and also with commodious and magnificent baths. See BATH. The "Okals," or warehouses, for wholesale goods, are spacious, strongly built, convenient and clean: the bazars, for retail commodities, are extensive buildings, with convenient shops, each trade being appropriated to its allotted quarter, and furnishing a plentiful supply of every commodity. Most of the houses are built with soft stone from the adjoining mountain; many of them are constructed with earth, or bricks badly burnt; and they are two, or sometimes three stories high, with flat roofs, or terraces of stone or tiles. The windows of the upper stories are latticed; the ground-floor being either a shop, or having no windows to the street. Sometimes they content themselves with lattices; some few have paper windows, and some of the rich have glass. The houses of the great chiefly surround "Birket-el-Sil," or Birque, already mentioned, a pool which receives the water of the Nile from the "Chalige." The palace of a bey contains a square court, having one or two sides occupied by his Mamlukes. Apart is the *Hârem*, which see. The room in which the bey generally sits in summer, has a contrivance in the roof for admitting a copious supply of fresh air. In the halls of houses belonging to persons of superior rank, are marble basins, which receive spouting water; the paved floor, inlaid with marble and coloured earthen ware, is covered with mats and mattresses, and over all is spread a rich carpet, on which they sit cross legged. Around the wall is a sort of sofa, with cushions, to support the back and elbows; and above, at the height of 7 or 8 feet, a range of shelves, decked out with China or Japanese porcelain. The walls are chequered with sentences extracted from the Koran, and painted foliage and flowers, with which, also, the porticos of the beys are covered. Fire is only employed at Cairo for cookery; the effects of cold being sufficiently obviated by warmer clothing. The mean annual heat of Cairo, according to the estimate of Mr. Kirwan, is 73°. The apartments of the women in this city are furnished with the finest and most expensive articles; but those of the men are distinguished by plainness and neatness. The houses, in general, are irregular, but substantial and commodious.

The population of Cairo consists of the Arabs, or lower class of Mahometans, who form the body of the people;

of the Coptic Christians, who are numerous; of Mamlukes, whom Browne estimates at no more than 10 or 12 thousand; of Greeks, Syrians, and Armenians; and of Muggrebins, from Tripoli, Tunis, and Morocco, to whom an appropriate quarter is assigned, who are remarkable for industry and frugality, and are attracted hither by the great profits of trade. Besides these above recited, there are other Mahometans from Arabia Proper, and countries farther east. There are few Turks who are permanent inhabitants, but they occasionally resort hither on business, and return to Constantinople. Jews were once numerous: but they are now on the decrease. Exclusively of negro slaves in every house, there are blacks from Nubia, who act as porters at the gates of the rich, and sometimes sell eatables. It is not easy to calculate the precise amount of the whole population, because the Turks have no registers of births, deaths, or marriages; and if the number of houses were known, it would furnish no sufficient datum for computing the number of inhabitants, as in Egypt, a large proportion of the people have no visible dwelling. Baron de Tott states the whole number at Cairo, and the adjacent port Boulac, on the authority of an officer of the customs, at 700,000; and Volney, admitting with Niebuhr, that the circumference of Cairo is 3 leagues, and comparing it with Paris, after proper allowances, estimates the number at 250,000. Browne thinks it cannot be less than 300,000. The women of Cairo are, in general, well-formed, but not tall. Those of the upper ranks are tolerably fair, in which quality, and fatness, consists the chief constituents of beauty in the Egyptian climate. They marry at 14 or 15, and at 20 are passed their prime. The Coptic women have interesting features, large black eyes, and a genteel form. See COPTIS.

Life at Grand Cairo, says Savary, is more a passive than an active existence: the body during nine months of the year being oppressed with excessive heat, and the mind partaking of this state of indolence. The Mamlukes breakfast before sun-rise, make their second meal at ten, and the third about five in the afternoon. They have plenty of animal food, and in the middle of the table appears a large dish of plau, surrounded with small dishes of meat, fish, and fowl. Before they dress their meat, they cut it in small pieces. Their drink is water, which is brought from the Nile into the houses, and put into jars, called "haumam," previously rubbed in the inside with a kind of paste, made of bitter almonds. Thus preserved, it becomes quite clear and limpid in two hours. But it is often drank in its muddy state, without any ill effects. After the meal, coffee is served; and at the tables of the great sherbet is introduced. A fermented liquor made of maize, millet, barley, or rice, pleasant to the taste, but in the hot season spoiling in the course of the day, is drank at Cairo, as well as in Saïd, in considerable quantities. The native Christians mostly distil for themselves, from dates, a liquor called by the general name of "araki;" it is also made from currants, or the small grapes imported from Cerigo.

The principal diseases to which the inhabitants of Cairo are subject, are fluxions in the eyes, sometimes terminating in blindness; the disorder called by the vulgar the "blessed evil," or Neapolitan disease, as the syphilis has been sometimes improperly called, hydrocele, malignant fevers, and the plague.

Among the amusements of Cairo, we may mention its dancing girls, (see ALMÉ) and rope-dancers; its chief games are chess, and Polish drafts: on solemn occasions, fire-works are exhibited; and on Friday, a mosque without the walls is frequented by the ladies as a pilgrimage of pleasure.

fare. Parties are also formed for sailing in light boats, like Venetian gondolas, on the increase of the Nile.

Before the discovery of the passage to India by the Cape of Good Hope, the commerce of Cairo was very extensive; but though it has since declined, this city may still be regarded as the metropolis of the trade of eastern Africa, as Tripoli chiefly possesses that of the west. From Yemen are imported coffee, odours, gems, and some useful drugs: from Surat, and other neighbouring parts of India are obtained muslins, and various articles of cotton manufacture; from Ceylon, spices; and shawls from Cashmere. A few slaves are brought from Abyssinia by the way of Jidda and Mecca. Caravans passing to and from Sennaar, Darfur, and Fezzan, bring slaves, gold-dust, ivory, horns of the rhinoceros, ostrich feathers, gum, and drugs. See CARAVAN. From Tunis and Tripoli are brought oil, red caps, for which Tunis is famous, and fine flannel; from Syria arrive cotton, silk, soap, tobacco, and glass beads; from Constantinople they obtain white slaves, male and female, and all kinds of brass, copper, and iron manufactures. Numerous negro slaves pass from Cairo to the more northern Mahometan countries.

"Two powerful causes," says Volney, "have contributed to render Cairo the seat of an extensive commerce: the first of which is, that all the commodities consumed in Egypt are collected within the walls of that city; and all the persons of property, that is, the Mamlukes and lawyers, are assembled there, and draw thither their whole revenues, without making any return to the country from which they receive them. The second is the situation, which makes this city a centre of circulation, while, by the Red Sea, it corresponds with Arabia and India; by the Nile, with Abyssinia and the interior parts of Africa; and by the Mediterranean, with Europe and the empire of Turkey. Every year, a caravan from Abyssinia arrives at Cairo, and brings from 1000 to 1200 black slaves, as also elephants' teeth, gold dust, ostrich feathers, gums, parrots, and monkeys; while another, destined for Mecca, leaves the extremities of Morocco, and receiving pilgrims, even from the river of Senegal, coasts along the Mediterranean, collecting those of Algiers, Tripoli, and Tunis, and arrives by the desert at Alexandria, consisting of not less than three or four thousand camels. From thence it proceeds to Cairo, where it joins the caravan of Egypt. They then jointly set out for Mecca, whence they return one hundred days after."—"The lading of these caravans consists in India stuffs, shawls, gums, pearls, perfumes, and the coffee of Yemen." "The same commodities arrive by another rout at Suez, to which port the southerly winds bring in May 26 or 28 sail of vessels from Djedda." "Small caravans also arrive from time to time from Damascus, with silk and cotton stuffs, oils, and dried fruits." Besides, "there are always some vessels in the road of Damietta, unloading hogsheds of tobacco from Latakia, the consumption of which in Egypt is enormous. These vessels take rice in exchange, whilst others arrive successively at Alexandria, bringing clothing, arms, furs, passengers, and wrought silk, from Constantinople. Vessels come likewise from Marseilles, Leghorn, and Venice, with cloths, cochineal, Lyons' stuffs and laces, grocery, paper, iron, lead, Venetian sequins, and German dollars. All these articles conveyed by sea to Rosetta in barks called "djerm," are first landed there, then re embarked on the Nile, and sent to Cairo." From this account, it appears, that we need not hesitate to admit the report of the commissioner general of the customs, who asserted, that in 1783, Cairo had traded to the amount of near 150 millions of livres, or six millions 250 thousand pound sterling.

Among the manufactures are sugar, of a bad quality, sal ammoniac, which is very good, glass lamps, salt-petre, coarse gun-powder, red and yellow leather, and linen cloth, made of the fine Egyptian flax. The only manufacture in any degree of perfection is silk stuff; but the workmanship is less highly finished, and the price much greater than in Europe. Their mercery, their hardware, their gun and pistol barrels are all imported from foreign countries. It is difficult to find at Cairo more than one watchmaker who has skill enough to repair a watch, and he too is an European. Jewellers, indeed, are more common here than at Smyrna and Aleppo; but they know not how properly to mount the simplest rose. For the mode of hatching eggs at Cairo without incubation, see HATCHING.

The government of airo, and of Egypt in general, is vested in one of the 24 bays (see BAY): and the chief judicial authority in the city is delegated to a "Mulla," who is annually appointed from Constantinople; but his jurisdiction is principally directed to cases of doubt and difficulty. There are, besides this officer, "Cadis" in all the districts, which, in this great city, amount to more than 200. There are also "Imams," or priests of the four sects, each having the direction of the adherents of his sect. The revenue of the cadis arises from a tenth of the value of the thing litigated. See CADY.

In Cairo every trade or profession has its sheich or leader, who has great authority over the rest of the class to which he belongs; and this circumstance much contributes to the good order of the city. The gates also, which are at the end of every street, impede the progress, and render difficult the escape of ill-intentioned persons. Notwithstanding these forms of government and subordination, Cairo affords no security either for life or for property; and, therefore, the stranger on his arrival is struck with the universal appearance of squalid wretchedness. Indeed, he often meets with horsemen richly clad; but this display of luxury only renders the contrast of indigence the more shocking. Every thing that he sees or hears, reminds him that he is in the country of slavery and tyranny. The chief subjects of conversation are intestine dissensions, the public misery, pecuniary extortions, batinadoes, and murders. "The blood of men," says Volney, "is shed like that of the vilest animals. Justice herself puts to death without formality. The officer of the night in his rounds, and the officer of the day in his circuit, judge, condemn, and execute in the twinkling of an eye, without appeal. Executioners attend them, and, on the first signal, the head of the unhappy victim falls into the leathern bag in which it is received, for fear of soiling the place."—"Without any other reason than the avarice of a powerful chief, or the information of an enemy, a man is summoned before some bey, on suspicion of having money. A sum is demanded of him, and if he denies that he possesses it, he is thrown on his back, and receives 2 or 3 hundred blows on the soles of his feet, nay, sometimes is put to death."

To the north-east of Cairo are gardens, and large houses, to which persons of rank and opulence occasionally retreat; and the Mamlukes also perform their military evolutions, and exercise their horses, in an open space appropriate to this purpose. The ground under the mountains to the east is filled with tombs. The gates of Cairo are numerous; but the most remarkable are two at the northern extremity of the city, called "Bab-el-Nafr," and "Bab-el-Fitush," which present a splendid display of Saracenic architecture. N. lat. 30° 2' 44". E. long. 31° 18' 16". Cairo by the mean of several accounts is about 59 geographical miles W. of Suez, equal to 1° 8' of longitude; and accordingly, Cairo should stand at 31° 20' of longitude. Savary's Egypt, vol. i. Volney's Travels, vol. i. Sonnini's Travels. Browne's Travels in Africa. See EGYPT.

CAIROAN, or **KAIR-WAN**, the *Vicus Augusti* of the Itinerary, a walled city of Africa, in the ancient Bizacium, or modern kingdom of Tunis, inferior in trade and in number of inhabitants only to Tunis, is situated in a sandy barren plain, 8 leagues W. of Sufa, and about the same distance S.W. of Herkla. In this city and its vicinity are several fragments of ancient architecture. Its present name seems to be synonymous with "Caravan," and might originally denote the place where the Arabs had their principal station in conquering this part of Africa. It is said to have been founded for this purpose, and colonized by Akbah, or Hucba, in the 50th year of the Hegira, A.D. 670. Notwithstanding the inconveniences of its situation, which renders it necessary to obtain vegetable food from a great distance, and to collect a precarious supply of rain-water in cisterns or reservoirs, Akbah encompassed it with a wall, inclosing a circumference of 3600 paces; and in the space of five years, the governor's palace was surrounded with a sufficient number of private habitations; a spacious mosque was supported by 500 columns of granite, porphyry, and Numidian marble; and Cairoan became the seat of learning, as well as of empire. Under the government of Ibrahim Ben Aglab, from whom was derived the dynasty of the Aglabites, in the year 184 of the Hegira, A.D. 800, its buildings and inhabitants were very considerably augmented; and its inland situation, 12 miles westward of the sea, protected it from the Greek and Sicilian fleets. In the year of the Hegira, 956, A.D. 1549, it had its own sovereign, who was an Arab; but he was despoiled of part of his dominions by Dragut, who commanded in the city of Tripoli for Soliman II. emperor of the Turks. N. lat. $35^{\circ} 36'$. E. long. $10^{\circ} 13'$.

CAISIOMU, a town of the island of Cuba; 30 miles E.S.E. of Villa del Principe.

CAISSON, in *Architecture*. The practice of building in caissons is a method sometimes adopted in laying the foundation of bridges in very deep or rapid rivers. These are large hollow vessels framed of strong timbers, and made water-tight, which being launched and floated to a proper position in the river where the ground has been previously excavated and levelled, are there sunk. The piers of the bridge are then built within them, and carried up above, or nearly to the level of the water, when the sides of the caisson are detached from the bottom and removed; the bottom, composed of a strong grating of timber remaining, and serving for a foundation to the pier.

The most considerable work, which has come to our knowledge, where caissons have been used, is in the building of Westminster-bridge; of these, therefore, a particular account may be acceptable. Each of the caissons contained 150 loads of fir timber, and was of more tonnage than a man of war of 40 guns; their size was nearly 30 feet from point to point, and 30 feet in breadth; the sides, which were 10 feet in height, were formed of timbers laid horizontally over one another, pinned with oak trunnels, and framed together at all the corners, except the salient angles, where they were secured by proper iron-work, which being unremoved would permit the sides of the caisson, had it been found necessary, to divide into two parts. These sides were planked across the timbers inside and outside with 3-inch planks, in a vertical position. The thickness of the sides was 18 inches at bottom, and 15 inches at top; and in order to strengthen them the more, every angle, except the two points, had three oaken knee timbers properly bolted and secured. These sides when finished were fastened to the bottom or grating, by 28 pieces of timber on the outside, and 18 within, called straps, about 8 inches broad, and about 3 inches thick, reaching and lapping over the

tops of the sides; the lower part of these straps were dovetailed to the outer curb of the grating, and kept in their places by iron wedges. The purpose of these straps and wedges was that when the pier was built up sufficiently high above low-water-mark, to render the caisson no longer necessary for the masons to work in; the wedges being drawn up gave liberty to clear the straps from the mortices, in consequence of which the sides rose by their own buoyancy, leaving the grating under the foundation of the pier.

The pressure of the water upon the sides of the caisson was resisted by means of a ground timber or ribbon, 14 inches wide, and 7 inches thick, pinned upon the upper row of timbers of the grating; and the top of the sides was secured by a sufficient number of beams laid across, which also served to support a floor on which the labourers stood to hoist the stones out of the lighters, and to lower them into the caisson.

The caisson was also provided with a sluice to admit the water. The method of working was as follows: A pit being dug and levelled in the proper situation for the pier of the same shape as the caisson, and about five feet wider all round; the caisson was brought to its position, a few of the lower courses of the pier built in it, and sunk once or twice to prove the level of the foundation; then being finally fixed, the masons worked in the usual methods of tide work. About two hours before low water, the sluice of the caisson, kept open till then, left the water, flowing to the height of many more feet on the outside, than the inside, should float the caisson and all the stone work out of its true place, was shut down, and the water pumped low enough, without waiting for the lowest ebb of the tide, for the masons to set and cramp the stone-work of the succeeding courses. Then when the tide had risen to a considerable height, the sluice was opened again, and the water admitted; and as the caisson was purposely built but 16 feet high to save useless expence, the high tides flowed some feet above the sides, but without any damage or inconvenience to the works. In this manner the work proceeded till the pier rose to the surface of the caisson, when the sides were floated away to serve the same purpose at another pier. (Labelye's Description of Westminster-bridge.)

CAISSON, in the *Military Art*, is sometimes used for a chest; and in particular for a bomb-chest.

The caisson is considered as a superficial mine, or *fourneau*.

CAISSON is also a covered waggon to carry bread, or ammunition.

CAISTOR, in *Geography*. See **CASTOR**.

CAISTOR, a township of America, in the county of Lincoln, Upper Canada, between Dinbrook and Gainsborough, watered by the river Welland.

CAISTRUS, in *Ancient Geography*, *Kaiser*, a small river of Asia Minor in Ionia, formed by the union of two branches, which had their sources in mount Tmolus, and flowing by the south-west, watered Metropolis or Ephesus, near which it discharged itself into the sea. It is called at present by the Turks "Kitchik Meander," or the Little Meander. Virgil refers to it,

"Jam varias pelagi volucres, et quæ Asia circum
Dulcibus in stagnis rimantur prata Caystri."

Georg. l. 1.

CAITAIA, in *Zoology*, the name under which Marcgrave notices *simia sciurea* of Gmelin.

CAITHNESS, in *Geography*, sometimes denominated the shire of Wick, is the most northerly county of Scotland. Its S.W. border unites with the county of Sutherland, and the remainder is washed by the waters of the Pentland-frith, and the German Ocean. This district, includes an area of about 35 miles from N. to S, by 22 miles from east to west.

Mr.

Mr. Pennant describes the country as a large morafs intersperfed with fome fruitful patches which produce barley and oats. The coaft is rocky, and abounds with bays and promontories. The principal of thefe are, Sandfide-head, pointing to the opening of Pentland-frith; Orcas, or Holborn-head, and Dunnet-head, both pointing northward to the frith. Sorbiller-bay is a good harbour for fhipping. There are two other fmaller bays, named from the contiguous places, Rice and Thurfo. The only ifland annexed to this country is Stroma, which is fituated in the Pentland-frith; the property of which was formerly claimed by the earls of Orkney, but was afterwards attached to Caithnefs. The caufe of this reverfion is faid to have refulted from a curious experiment. The earls of Orkney and Caithnefs contended for the property of this ifland, it being fituated about midway between their refpective diftricts. Inftead of reforting to the fword in this difpute, they mutually agreed to abide by the iffue of a more inoffenfive trial. As venomous animals would not live in the Orkneys, fome were conveyed to Stromā, and finding that they continued to thrive in the ifland, it was determined that it naturally belonged to Caithnefs, and was adjudged to that earldom accordingly. This county is well watered, and contains a few birch plantations; but the foil and the climate are unfavourable to the growth of timber. At fome parts of the coaft, the fea is generally very impetuous, being continually agitated by violent counter tides, currents, and vortices. Fish are caught in great abundance, but from the above named caufes, and the want of convenient harbours, the proprietors do not derive much advantage from exportation. The rocks round the fhore are perforated into numerous caves, which are frequented by an abundance of feals. Many of thefe are deftroyed by the inhabitants. Eagles, hawks, and a vaft quantity of fea-fowl frequent thefe rocks.

Caithnefs is well peopled with a race of hardy, athletic inhabitants, whole chief employ, and fource of livelihood are fifhing, and breeding fheep and black cattle. Of the latter it has been recorded, that from 1000 to 2000 head have been fent from this country in one year. In bad feafons, the farmers mofly kill and falt them for home confumption and for exportation. Great numbers of fwine are alfo reared here, but according to the opinion of Dr. Morifon, (Sir John Sinclair's Statistical Account, viii. 150.) "the damage they do in the winter to the grafs and corn lands, as they are allowed to roam at large, far exceeds any advantage that can accrue from them." Thefe animals are rather peculiar in character and fpecies: they are fhort, high-backed, long-briftled, fsharp, fflender and long nofed, have high erect ears, and are very wild in afpect. Barns and granaries are unknown to this county; the corn is thrafhed out and preferved in the chaff in bythes, which are ftacks in the fhape of bee-hives, and thatched quite round. Much falmon is taken in the rivers of this county, particularly at Cattle-hill, Dunet, Wick, and Thurfo. At the laft place there was "a miraculous draught taken within the memory of man; not lefs than 2500 being caught at one tide." (Pennant's Tour in Scotland, i. 202.) Caithnefs is divided into ten parifhes, and contains one royal borough, Wick, and the town of Thurfo. It fends a member to parliament alternately with the county of Bute. The principal landholders are the earl of Caithnefs, Sir John Sinclair, bart. Sir Benjamin Dunbar, and — Sinclair, efq. all of whom poffefs feats in the county. Many monuments of antiquity are ftill remaining in Caithnefs, moft of which are of a military nature. Of the more ancient kind are the Cairns, Duns, and Tumuli; which are fcattered over many parts of the county. Some ruins of caftles are ftill left at Cattle-Sin-

clair, Germengo, Auchnavern, Dirlet, and Lochmore. In mineralogy, Caithnefs poffeffes fome articles of value, as excellent free-ftone and lime-ftone; alfo, copper, lead and iron ores. At the N.E. point of Caithnefs is Dunsby-head, the moft extreme northern promontory of Britain. At this place the breadth of the frith does not exceed twelve miles, and is the moft ufual ferry or paffage to the Orkney iflands. In the forefts of Moravins and Berridale, are abundance of red deer, roe-bucks, &c. and the county abounds with groufe, heathcocks, plover, hares, and moft other game. Birds of a peculiar fpecies, called Snow-fleets, frequent this county, in large flights, about the middle of February, and depart in April. They are about the fize of a fparrow, and efteemed very delicious in flavour. The laft private war in Scotland was occafioned by a difpute relating to this county. Pennant's Tour in Scotland. Sir John Sinclair's Statistical Account of Scotland.

CAIUS, POPE, in *Biography*, fucceeded Eutychianus in the pontificate A.D. 283, and held it till A.D. 296. The church of Rome reckons him among her martyrs; but hiftory informs us, that, having concealed himfelf under the perfecution of Dioclefian, he died in peace A.D. 296. To him is afcribed a decree that bifhops fhould pafs through the feven inferior orders of the church before they affumed the epifcopal office. Bower.

CAIUS, or GAIVS, an ecclefiaftical hiftorian, who flourifhed, according to Cave, about the year 210. Photius fays, "that he was ordained bifhop of the nations," i. e. as fome have interpreted the phrafe, that he was ordained to preach the gofpel to infidel countries, without the allotment of any particular diocefe. Fabricius reads, inftead of "nations," Athens; and accordingly fuppofes, that, having been at firft a prefbyter of the church of Rome, he was afterwards made bifhop of Athens. It has been afferted by many writers, but upon difputable authority, that he was a difciple of Irenæus. Three or four books are afcribed to Caius, viz. "A dialogue or difputation with Proculus or Proclus," a follower of Montanus; "Of the Univerfe;" the "Labyrinth;" and a treatife againft the "Herefy of Artemon." Some fragments of thefe works are ftill extant. The firft, however, is, in Dr. Lardner's opinion, the only piece juftly afcribed to him. In his dialogue are fome paffages that indicate the author's refpect for the ancient fcriptures generally received by Chriftians; though he feems to have thought, the epiftle to the Hebrews was not written by St. Paul, and that the book of the Revelation was not genuine, but probably an impofture of Cerinthus. Cave, H.L. T. i. p. 100. Lardner's Works. vol. ii. p. 371, &c.

CAIUS, BERNARD, born at Venice towards the end of the 16th century, where he received his education, publifhed, in 1606, "*De Veficantium Ufu*." He entirely rejects blifters in all acute difeafes, as adding greatly to the malady by irritating the fystem. He alfo publifhed in 1608, "*De Alimentis, quæ cuicque naturæ conveniunt, de Voluptate, Sapore, Frigida Potione, Viribus Salis Nitri ad refrigerandum*," 4to, republifhed in 1610. Haller Bib. Med.

CAIUS, KAYE, or KEY, JOHN, an ingenious and learned phyfician, was born at Norwich, October 6th, 1510. After paffing through the ufual fchool education at Norwich, he was admitted a ftudent in Gonvil Hall in Cambridge, Sept. 12th, 1529, and having diftinguifhed himfelf by his proficiency in literature, he was made fellow of that community in 1533. His thirft for knowledge, and his defire of perfecting himfelf in the different branches of medicine, determined him to vifit the continent, and to pafs fome time at Padua, then famed for the celebrity of its profefors, particularly in that branch of fciences. He here ftudied under John

John Baptista Montanus, having Vesalius for his fellow student. His progress here in Greek and Latin, as well as in the knowledge of anatomy and medicine, equalled the promises of his early years; as was evinced by his translations and commentaries on various parts of the works of Hippocrates, Galen, Scribonius Largus, &c. correcting the errors of the transcribers, and elucidating and explaining the more difficult passages. With the view of hearing other professors, and of examining ancient manuscripts, he visited most of the principal cities of Italy. At Bologna he resided some time, and there took his degree of Doctor of Medicine, in 1541. He then returned to Padua, and in conjunction with Realdus Columbus, read lectures on the Greek text of Aristotle. In 1544, he came to England, and for some time read lectures in anatomy to the corporation of surgeons in London. He afterwards practised medicine at Shrewsbury, where he was at the time when the sweating sickness made its appearance in 1551; of which he published a popular account, with the view of instructing his countrymen in the nature of the complaint, and of the methods he thought most proper for opposing its progress. This he afterwards, in 1556, published again in Latin, much enlarged and improved, under the title of "*De Ephemera Britannica*." As it contained an accurate description of the disease, whatever might be the value or the efficacy of the practice, it was thought deserving of being preserved, and was reprinted in 1721, 12mo. His reputation for learning and abilities being established, he was admitted a fellow of the College of Physicians in 1547. He was also appointed physician to king Edward the Sixth, and in succession to the queens Mary and Elizabeth. To the College of Physicians he was a warm and strenuous friend, and on the death of Linacre, under whom it was founded, he was appointed president, which office he held for seven years. During this time, he revised their laws, appointed insignia for the president, and, to encourage the study of anatomy, he obtained a grant of the bodies of two malefactors every year, to be dissected under the direction of the College. He also drew up their annuals in Latin, or an account of their institution, with a journal of their proceedings, which he left with the College. Mindful of his alma mater, he obtained from Queen Mary a power of erecting Gonvil Hall into a College, adding to its endowments, provisions for three fellows, and twenty scholars. He added an entire new court to the College, and built three gates. They cost him together 1834*l*. The improvements were begun in 1557; when completed he was made master of the College, and continued in that post until a short time before his death, when he resigned it to Dr. Legge, but still resided as a fellow commoner; and died there in 1573, aged 63 years, having in his last illness supported himself by woman's milk. On his tomb, by his direction, was engraved, "*Eui Caius*." Besides his versions from the Greek, and the "*Ephemera Britannica*," he published "*De Canibus Britannicis*," 1572, inserted entire by Mr. Pennant in his *British Zoology*; to which were added "*Historiæ rariorum Animalium*," originally printed in Gesner's collection; also, "*De Libris propriis*," and "*De Antiquitate Cantab. Academicæ*;" and from numerous unedited manuscripts, appears to have projected various other works. Haller's Bib. Med. et Anat. Aikin's Biog. Mem. of Medicine in Great Britain.

C AJUS, in *Entomology*, a species of PAPILIO (*Hesperia* Fabr.), having entire brown wings, with a bluish disk: beneath, varied with cinereous and white, with brown ocellar dots. Inhabits India.

CAIX, in *Geography*, a town of France, in the department of the Somme; 12 miles E. of Amiens.

CAKE, a finer sort of bread, denominated from its flat round figure. We meet with divers compositions under the name of cakes; as seed-cakes, made of flour, butter, cream, sugar, coriander and caraway-seeds, mace, and other spices and perfumes, baked in the oven; plum-cakes, made much after the same manner, only with fewer seeds, and the addition of currants; pan-cakes, made of a mixture of flour, eggs, &c. fried; cheese-cakes, made of cream, eggs, and flour, with or without cheese-curd, butter, almonds, &c.; oat-cakes made of fine oatmeal flour, mixt with yeast, and sometimes without, rolled thin, and laid on an iron or stone to bake over a slow fire; sugar-cakes, made of fine sugar beaten and sieved with the finest flour, adding butter, rose-water, and spices; rose-cakes, *placenta rosaceæ*, are leaves of roses dried and pressed into a mass, sold in the shops for epithems. See EPITHEM.

CAKE of *Copper*, denotes a quantity from 1*lb*. to one hundred-weight.

CAKE, in *Rural Economy*, a term applied by farmers to the substance which remains after the oil has been expressed from flax and rape seeds. Cakes made from the frit of these seeds, are much employed in the feeding and fattening of bullocks, and other sort of cattle. These substances have likewise, sometimes, been made use of for the purpose of manure, especially when made from the latter material. See OIL-CAKE.

CAKE-wax, a denomination sometimes given to the white or virgin-wax.

CAKE-soap, stands distinguished from soft-soap and ball-soap. See SOAP.

CAKET, in *Geography*, a town and capital of a country in Asia, in the northern part of Persia, near mount Caucasus, trading principally in silk. N. lat. 43° 2'. E. long. 46° 4'.

CAKILE, in *Botany*, (*Tournefort*, *Gærtner*, and *Ven-*
tenat.) See BUNIAS.

CALA, in *Geography*, a town of Spain, in the country of Seville, on the borders of Estremadura; 14 miles S. of Lerenæ.

CALA. See EL CALLAH.

CALABA, in *Botany*, (*Plumier*.) See CALOPHYLLUM.

CALABAR, or CALBARI, in *Geography*, a country of Africa in the kingdom of Benin, or Upper Guinea, usually distinguished into New and Old Calabar, with a river of the same name in each. The entrance into New Calabar is in N. lat. 4° 30'. W. long. 9° 10'. That into Old Calabar is in N. lat. 4° 32'. W. long. 10° 28'. The Dutch carry on a considerable trade with this country. See BENIN.

CALABASH, in *Botany*. See CUCURBITA Pepo.

CALABASH-tree. See CRESCENTIA.

CALABASH, *African*. See ADANSONIA and BAOBAB.

The word is Spanish, *calabaga*, which signifies the same. The Indians, both of the North and South sea, put the pearls they have fished in *calabashes*, and the negroes on the coast of Africa do the same by their gold-dust. The smaller calabashes are also frequently used by these people as a measure, by which they sell these precious commodities to the Europeans.

CALABASH-bay, in *Geography*, lies on the S.W. side of the island of Jamaica, between Flint bay on the east, and Swift's river on the west, and affords good anchorage.

CALABER; QUIRUS, in *Biography*, a Greek poet, supposed to have flourished under the emperor Anathasius I. about the year 491, and to have derived his name from Calabria, though he resided chiefly at Smyrna. He is known as the author of a poem, consisting of 14 books, on the "*Paralipomena*" of Homer, or the events of the Trojan war, not related by that poet, and commended for its elegant versification. It was discovered by cardinal Bessarion,

in a monastery near Otranto in Apulia. Two of the books, describing the capture of Troy, were published separately by Neander, in his "Opus Aureum," Leips. 1577. Editions of the whole have been given at Hanau, 8vo. 1604; and by Paw at Leyden, 8vo. 1734. Voss. de Poet. Græc.

CALABEZA, in *Geography*, a town of South America, in Terra Firma, on Orinooko river.

CALABITE, a small island of the East Indian ocean, being one of the Philippines, between Mindoro and Luban.

CALABRIA, in *Ancient Geography*, a name supposed to have been received from the oriental "caleb," or pitch, on account of the resin obtained from the pines of this country, and corresponding to that part of Italy more generally denominated "Messapia," and the present Calabria.

CALABRIA, in *Geography*, a country of Italy, in the kingdom of Naples, divided into Calabria Citra, and Calabria Ultra, or Hither and Farther Calabria. The former is bounded on the north by Basilicata, on the east by the gulf of Taranto, on the south by Calabria Ultra, and on the west by the Mediterranean, and a small part of Principato Citra. Swinburne estimates its extent at 1,605,463 moggie, (five moggie being equal to four English acres) and the number of inhabitants at 315,330. It abounds in excellent fruits, corn, wine, oil, hemp, cotton, flax, saffron, honey, salt, wool, silk, and manna. It has some mines of gold and silver, lead and iron, together with sulphur, alabaster, and rock crystal. Hogs and sheep are numerous. Its coasts are defended by towers. Its principal towns are Cozenza, Paola or Paula, Bisignano, Cassano, Scalea, Cariati, Rossano, Umbriatico, Strongoli, Carenza, Martorano, and Amantea. Its chief rivers are the Coghile, Crate, Lao, Celano, Trionto, Aquanile, and Bato. Calabria Ultra is bounded on the north by Calabria Citra, and on the east, west, and south, by the Mediterranean sea. The productions are nearly the same with those of Calabria Citra. The extent, according to Swinburne, comprehends 1,901,878 moggie; and the number of its inhabitants is 460,392. The principal towns are Catanzaro, Cotrone, St. Severina, Isola, Taverna, Nicastro, Belcastro, St. Eufemia, Squillace, Tropea, Nicotera, Mileto, Oppido, Gerace, Reggio, and Bova. The chief rivers are the Aili, Angitola, Tacina, Alaro, Alice, Amato, Metauro, and Metramo.

In Calabria all the oxen are white, large and long-horned, except those of the red breed, which have been introduced from Sicily by the princes of Cariati and Gerace. The buffaloes are black; and most of the goats, sheep and hogs are of that hue. The last species have no hair, but their hides are as sleek as those of elephants. In some parts of this country dormice are accounted delicate game, as they were in ancient Rome, where they were kept in warrens, and fattened for the tables of the most refined epicures. They are smoked out of their nests in hollow trees, and caught with sharp hooks. Their skins make very fine leather. The Calabrian horses are pretty, spirited, and brilliant in their motions; but generally low, and seldom free from vice. All live animals in Calabria are taxed. Six carlini (or about 2s. 3d.) are paid for an ox, 4 grains (10 of which make a carlino) for a sheep; and therefore it is no wonder that the graziers should be indigent, and that the cottagers should keep no beast of any kind, and that they should live upon casual and unsubstantial nutriment, instead of milk, cheese, and other wholesome diet, which the rich pasturage of the country ought to afford them. Arable land is ploughed four times; but instead of laying down their fallows with hay seeds, clover, or any of those rich artificial grasses, which are sown in England to produce fine meadows and pastures, the Calabrian farmer thinks he

does his farm ample justice if he ceases to plough it for two or three years, and leaves the good grass, accidentally produced there, to make its way, as well as it can, through the matted fibres of various sorts of rank weeds. The Calabrian foresees no melioration of his condition from any of his efforts; and he is discouraged by the apprehension that increasing activity and produce on his part would subject him to an additional weight of taxes and oppression.

The Zingari, or gypsies, of Calabria do not contract alliances with any other class of inhabitants, but marry among themselves. They have no permanent property, nor any fixed habitation. They subsist by the profits of little handicrafts, and chiefly by trucking asses and horses, which they do for the smallest trifle to boot. They generally work in iron, and make trivets, knitting-needles, and bodkins, and baubles of that kind. Their dress is very mean; they shave their chins, but wear long hair, to which they apply neither comb nor scissors. Their religion is altogether mysterious; and though they occasionally conform to the ceremonies of the Roman Catholic church in marriage, burials, &c. they often perform these functions according to their own customs, which resemble those of the heathens. At their weddings they carry torches, and have paronyms to give away the bride, with many other unusual rites. With regard to their conduct they are depraved and licentious; and are universally accounted to be pilferers, cheats, faithless, shameless, and abandoned to all manner of dissoluteness. They accustom themselves to tell fortunes, and to play juggling-tricks, as they do in other countries. In 1560, they were banished the kingdom as thieves, cheats, and spies for the Turks. In 1569 and 1585, the order was renewed; but not being enforced, it had little effect. They make use of two languages, one Calabrian, with a foreign accent and pronunciation; the other peculiar to themselves, which, in sound, bears a great affinity to the oriental tongues, and is spoken by them whenever they have secrets to impart to each other.

There is a visible difference in the dress and manners of the two Calabrias; the inhabitants of the south part resemble the Sicilians; and, like them, the men wear bonnets; but north of Rogliano, the boundary of the provinces, hats are universally worn. The Sicilians, it is supposed, even now betray strong marks in their character of their ancient connection with the Africans, and the North Calabrese have in their disposition much German solidity, arising perhaps from colonies transplanted thither by the Swabian princes; and in the southern Calabrese, and Neapolitans, particularly the latter, there are evident traces of Grecian manners and temper. Calabria is in bad repute with respect to the safety of travellers; and yet the people seem perfectly honest with regard to one another; for their houses have no bolts or bars to their doors; and during the owners' absence, they are left to the mercy of every passenger. Swinburne's *Travels in the Two Sicilies*, vol. ii. and iv.

Calabria, formerly possessed by the Brutii and other Greek colonies, has been in all ages convulsed and desolated by earthquakes. In 1638 and 1659 the two provinces of Calabria were almost utterly destroyed; and that of 1744, though not equally injurious, was very calamitous and distressing. The dreadful effects of the successive earthquakes of 1783 are particularly described by count Ippolito and sir William Hamilton. The part of Calabria, according to sir William's account, which was most affected, is comprehended between the 38th and 39th degree; and the greatest force of the earthquake seemed to have exerted itself from the foot of those mountains of the Apennines, called the Monte Diio, Monte Sacro, and Monte Caulone, extending westward to the Tyrrhene sea. The towns, villages, and farm-houses, nearest

nearest these mountains, situate either on hills or in the plain, were totally ruined by the first shock of the 5th of February; and the farther removed towns and villages were from this centre, the less they suffered. Indeed, the face of the earth of that part of Calabria above-mentioned was entirely altered; many openings and cracks had been made in the ground; some hills had been lowered, and others quite levelled; roads were rendered impassable by the chasms that had been produced in the plains; huge mountains had been split asunder, and parts of them driven to a considerable distance; deep valleys had been filled by the severed mountains; the course of some rivers had been altered; new springs broke forth in dry ground, and other springs totally disappeared; and in one place the surface of two whole tenements, on which grew large olive and mulberry trees, were detached by the earthquake, and transplanted, whilst the trees remained in their places, to the distance of about a mile from their former situation; and from the spot on which they formerly stood, hot water sprung up to a considerable height, mixed with ferruginous sand; and near this place some countrymen and shepherds had been swallowed up with their teams of oxen and their flocks of goats and sheep. "From the city of Amantea," says sir William "situate on the coast of the Tyrrhene sea, in Calabria Citra, and along the westward coast to cape Spartivento in Calabria Ultra, and then up to the eastern coast as far as the cape d'Alice (a part of Calabria Citra) on the Ionian sea, there is not a town or village, either on the coast or land, but what is either totally destroyed, or has suffered more or less, amounting in all to near 400 of what are called here "Paefes;" a village containing less than 100 inhabitants is not counted as a "Paefe." At Casal Nuovo, the princess Gerace, and upwards of 400 of the inhabitants, lost their lives; at Bagnara, the number of dead amounts to 3017; Radicina and Palmi count their loss at about 3000 each; Terra Nuova about 1400; Seminari still more. The sum total of the mortality in both Calabrias and in Sicily, by the earthquakes alone, according to the returns in the secretary of State's office at Naples, is 32,367;" but sir William conceives that the whole number amounted at least to 40,000. In the accounts from Calabria Ultra, two singular phenomena are mentioned. "At about the distance of 3 miles from the ruined city of Oppido, there was a hill (the soil of which is a sandy clay) about 500 palms high, and 1300 in circumference at its basis. It was said that this hill, by the shock of the 5th of February, jumped to the distance of about 4 miles from the spot where it stood, into a plain called the Campo di Bassano. At the same time the hill on which the town of Oppido stood, which extended about 3 miles, divided into two, and as its situation was between two rivers, its ruins filled up the valley, and stopped the course of those rivers; two great lakes are already formed, and are daily increasing, which lakes, if means are not found to drain them, and give the rivers their due course, in a short time must infect the air greatly." For a farther detail, see Phil. Trans. vol. 73. part i. See EARTHQUAKE.

CALABRINI, in *Botany*, a name by which some authors call the rough SPLENWORT, or *Isnehtis aspera*. Ger. Emac. Ind.

CALABRITA, in *Geography*, a town of European Turkey, in the Morea; 30 miles W. of Corinth.

CALABRITO, a town of Naples, in the province of Principato Citra.

CALABURA, in *Botany*, (Pluk.) See Muntingia.

CALACHERIN, in *Geography*, a town of Persia, in the province of Irak; 125 miles W. of Amadan.

VOL. V.

CALACINE, or CALACHENE, in *Ancient Geography*, a province or district of Assyria, bounded on the north by the mountains of Armenia and Arrapachitis, on the west by the Tigris, on the east by the Lycus, and on the south by Adiabene. It contained the following cities, viz. Marde, Calach, Bessara, and Refen.

CALACTA, a maritime town, seated on the northern coast of Sicily. Ptolemy.

CALADE, in the *Mange*, a descent or slope in a riding-ground, by which to bring a horse to bend his haunches, and form his stop, with the aids of the calves of the legs, bridle, and cavesson, seasonably given.

The *calade* is also called, by the French, *basse*. They say to ride or gallop down the *calade*.

CALADIUM, in *Botany*, a name given by Rumphius to a plant which Linnæus afterwards called *Arum esculentum*. Ventenat has separated it from *Arum*; and uniting it with the ovatum, the sagittifolium and arborescens of Linnæus, and the bicolorum of Aiton, with two others less known, has formed a new genus under the original name given it by Rumphius, with the following general character. *Spathæ* swelling, folded in its lower part. *Spathæ* or ament shorter than the spathe, simple, straight, cylindric, with the male flowers on the upper part, and female on the lower. *Anthers* sessile, disposed in a spiral form, with twelve furrows full of pollen in molecules agglutinated together, and terminated at the top by a flat surface in the shape of a lozenge, which is sprinkled with shining dots, and crenulated at its border. *Germes* numerous, orbicular, concave. *Stigma* sessile, umbilicate; full of a viscid liquor. The space between the stamens and pistils occupied by four rows of oblong, obtuse, elevated glands. *Fruit* similar to that of *Arum*. Its essential character, according to Ventenat, is founded on the situation and structure of the anthers, and even of the pollen itself, on the direction and form of the glands, and on the umbilicated stigmas. See *ARUM*.

CALADUNUM, in *Ancient Geography*, a town of Spain, assigned by Ptolemy to the "Callaici Bræcarii" in the Tarragonensis, and situate, according to M. d'Anville, to the north-west of Aquæ Flaviæ.

CALÆI, islands of the Indian ocean, placed by Arrian at the mouth of the Persian gulf.

CALÆNUS, a fountain of Asia Minor in Lycia. Steph. Byz.

CALAF, in *Botany*, (Alpinus Ægypt.) See *SALIX ÆGYPTIACA*.

CALAF, in *Geography*, *Karaighen-Souï*, a stream of Asia in Mesopotamia, which, running from west to east, discharges itself into the Tigris, near Amida.

CALAGORINA, a town of Spain, attributed by Ptolemy to the Vascones.

CALAGORRIS, CAZÈRES, a place of Gaul, belonging to the "Volcæ Tectosages," at some distance S.W. of Tolosa, and comprehended within the Narbonnensis Prima.

CALAGUM, CHAILLI, a place of Gaul, belonging to the "Meldi," S.E. of Meldi or Iatinum (Meaux.) It was included in the Lyonnensis Quarta.

CALAGURIS, now CALAHORRA, a town of Hispania Citerior, seated on the Iberus, belonging to the Vascones. Also, a town of Spain, belonging to the Ilérgetes, according to Ptolemy; now *Lobarre*. It was situated N. W. of Oca.

CALAH, or CALE, in *Ancient Geography*, one of the four cities built by Ashur, of which we have an account in Gen. x. 11, 12. This is supposed to be the Calach, situate about

the springs of the river Lycus, and mentioned by Strabo as the capital of a province called Calachene, seeming to be the same with Ptolemy's Calacine, above Adiabene, towards mount Niphates.

CALAHORRA, in *Geography*, an episcopal town of Spain, in Old Castile, seated on the south side of the Ebro, on the borders of Navarre; 62 miles N.W. of Saragossa. N. lat. $42^{\circ} 18'$. W. long. $2^{\circ} 7'$.

CALAIS, a sea-port town of France, and chief place of a canton, in the department of the straits of Calais, and district of Boulogne; the place contains 6,750, and the canton 15,266, inhabitants; the territory includes 165 kilometres, and 12 communes. Calais has a citadel on the N.W. side, and near the sea, as large as the town, with one entrance, and is strongly fortified; but its chief strength depends upon its situation among the marshes, which may be overflowed at the approach of an enemy. It is encompassed, except for a short space towards the harbour, by a moat and wall, which latter serves as a public walk. It is a regular well-built town, with a spacious and handsome square, and its streets are tolerably clean and well paved; and has several churches and monasteries. Its harbour, formed by a small rivulet, is too much obstructed by sand to admit of large vessels, or even common merchant ships, except at high water. This haven ebbs dry at every tide; but at high water, with a common flow, it has not less than 3 fathoms. The flood sets in N.E. by E. The harbour commences at the gate of the town, where a fine massive quay terminates in two long wooden moles, which extend far into the sea. Calais is a trading town, and in time of peace regular packets for the mail sail from and to England; and other passage boats form a constant intercourse between this place and Dover, from which it is distant 22 miles S.E. Some have supposed that an isthmus formerly joined Calais and Dover; and that the rupture of it was occasioned by an earthquake, and has been gradually widened by tides and currents. Calais communicates by means of canals with St. Omer's, Gravelines, Dunkirk, &c.

About the close of the 12th century, Calais was only a fishing village; but from the success of its inhabitants in the herring fishery, it soon acquired so much importance as to attract the notice, and excite the rapacity of the church; for in the year 1180, we find that pope Alexander III. granted the title of all the herrings there taken to the abbey of St. Bertin, recorded for its immense wealth, for the luxurious and dissolute lives of its monks, and for the worthlessness of its abbot. The honest fishermen, not readily comprehending the pope's right to give away their property, declared that they would sooner decimate the monks than suffer their herrings to be decimated. They were, however, reduced to obedience by the count of Flanders, who was then their regent, as guardian to Ida, countess of Boulogne. Its walls and castle were built in the year 1228 by Philip count of Boulogne, brother of Lewis VIII.; but its municipal laws and privileges are supposed to have been granted by the countess Ida, and her fourth husband, Renaud de Dammartin, in the year 1191. From these laws it appears that the city was governed by its own magistrates elected by the citizens, and by a bailiff appointed by the count. Among its privileges we find that, if a woman offered to take, as her husband, a man condemned to death for theft, she might demand and obtain his pardon. In 1347, Calais was taken by Edward III. of England, after having been reduced to extreme distress by famine. Edward, having been detained under its walls for eleven months by the obstinate resistance of its defenders,

conveyed a messenger to the governor, who informed him that he would grant them no terms; but that they must surrender at discretion. At length, in consequence of the spirited remonstrances of the governor, and the intercession of sir Walter Manny, whom he had deputed as his messenger, Edward consented to grant their lives to the garrison and its inhabitants, except six of the principal burgesses, who were required to deliver to him the keys of the city, with ropes about their necks. In this extremity of deep distress, Eustace de Pierre, one of the most wealthy merchants of the place, voluntarily offered to be one of those six victims; and his example was soon followed by five others of the richest citizens. These illustrious patriots, barefooted and bareheaded, with ropes about their necks, were attended to the gates by all the inhabitants with tears, blessings, and prayers for their safety. When they were introduced into the presence of Edward, they laid the keys of the city at his feet, and, falling upon their knees, supplicated his mercy in strains so moving, as to melt the spectators into tears. The queen enforced their intercession, and implored and obtained their lives. Having thus succeeded, she conducted them into her own apartment, entertained them honourably, and dismissed them with presents. Edward, having taken possession of the city, found it necessary to turn out all the ancient inhabitants, and to people it with English. Calais remained from this time in subjection to England till the reign of queen Mary, when it was retaken by the duke of Guise. The duke obliged all the inhabitants to abandon the place, and conferred the government of it upon Des Termes, who was soon after made a marshal of France. By the treaty at Chateau Cambresis, it was agreed, that Calais should, after the expiration of 8 years, be restored to England; and, at the expiration of that term, queen Elizabeth dispatched some troops to recover it; but the surrender was refused, because, five years before, the English had taken Havre, and violated the terms of the treaty. In the year 1596, it was taken by the Spaniards, under the conduct of the archduke Albert, but was restored two years after by the peace of Vervins. In 1694, it was bombarded by the English, under sir Cloudesly Shovel, but without sustaining much damage. Calais is distant 7 leagues from the South Foreland, and 40 from Dunnoke; 5 posts S.W. from Dunkirk, and $34\frac{1}{2}$ N. from Paris. N. lat. $50^{\circ} 57' 31''$. E. long. $1^{\circ} 50' 56''$. High water $11^{\circ} 30'$.

CALAIS, *St.* a town of France, and principal place of a district in the department of the Sarthe; 6 leagues E.N.E. of Chateau du Loir. The place contains 3,630, and the canton 13,749, inhabitants; the territory comprehends $307\frac{1}{2}$ kilometres and 14 communes. N. lat. $47^{\circ} 56'$. E. long. $0^{\circ} 39'$.

CALAIS, a township of Caledonia county, and state of Vermont, in America; 105 miles north-easterly of Bennington; containing 45 inhabitants.

CALAMA, in *Ancient Geography*, *Gelma*, or *Kalma*, an episcopal town of Africa, in Numidia; situate to the south-west of Hippo-regius. St. Augustine mentions a disturbance that happened in this place, A.D. 408, or 409; and that soon succeeded a law enacted by Honorius in 407, or 408, expressly prohibiting the solemnities of the Gentiles.

CALAMA, the name of a village of Asia, in Carmania, or Gedrosia, according to Arrian.

CALAMA, in *Geography*, a town of Naples, in the province of Calabria Ultra; 6 miles N. E. of Reggio.

CALAMÆ, or **CALAMES**, in *Ancient Geography*, a burgh of Peloponnesus, in Messenia, seated on the river Aris, and mentioned by Polybius and Pausanias.

CALAMA-

CALAMAGROSTIS, in *Botany*, (Trag. ic. Dalech. Hist.) See *TRIGLOCHIN palustre*. Linnæus has given it as a trivial name to a species of *Agrostis*, and also to one of *Arundo*. Dr. Withering has made it a generic appellation for such species of *Arundo* as have only one floret in a calyx: but, as Dr. Smith justly observes, (Flor. Brit. vol. i. p. 145.) the very natural genus *arundo* ought not to be broken merely on account of a difference in the number of florets, and, if that were not the case, the term *calamagrostis* is not admissible, as a generic name, on the established principles of the Linnæan Nomenclature.

CALAMANCO, in *Commerce*, a woollen stuff manufactured in Brabant and in Flanders, particularly at Antwerp, Lille, Tournay, Turcoin, Roubaix, and Lannoy.

It is commonly woven wholly of wool; there are some, however, wherein the warp is mixed with silk, and others with goat's hair. There are calamancos of all colours, and diversely wrought. Some are quite plain, others have broad stripes adorned with flowers; some with plain broad stripes; some with narrow stripes; and others watered. This has been also no inconsiderable branch of the woollen manufacture in England, both for home wear and exportation; but of late it has declined.

CALAMRACUM, in *Ancient Geography*, a place of Italy, in Magna Græcia, between Petitia, and the marsh of Lucania.

CALAMARIA, in *Botany*, (Dillen. Musc.) See *ISOTETES lacustris*.

CALAMARIÆ, one of the natural orders of Linnæus, nearly allied to the grasses, and having commonly the same kind of leaves, but differing from them in not having a two-valved glume. The calamariæ have a culm which is generally triquetrous, rarely cylindrical, often leafless, or bearing only a few leaves. The leaves are generally more rigid and rough, and the flowers are often disposed in an imbricated manner. The genera enumerated in the *Système Naturel* are, bobartia, (but the genus is now abolished; see *BOBARTIA*;) scirpus, cyperus, eriophorus, carex, and schænus; with a doubt, whether flagallaria, juncus, and scheuchzeria should not be added. In the posthumous lectures of Linnæus, as published by Giseke, they stand thus: sparganium, typha, eriophorum, scirpus, carex, scleria, cyperus, schænus, restio, gabbia, kyllingia, fuirena. The genus scleria is added by Giseke.

CALAMARIUS, in *Zoology*, a species of *COLUBER*, having 140 abdominal plates, and 22 caudal scales. Linn. Mus. Ad. Fr.

This kind inhabits America: general colour livid with linear brown streaks and dots: beneath tessellated with brown.

CALAMATA, in *Geography*, a town of European Turkey, in the Morea, seated on the river Spinazza; taken by the Venetians in 1685, but since retaken, together with the rest of the Morea, by the Turks; 13 miles W. of Militra.

CALAMBA, or **CALAMBAC**, in *Commerce*, a kind of wood brought from China, usually sold under the denomination of *lignum aloes*, or *AGALLOCHUM*.

Sir Phil. Vernatti makes calambac and lignum aloes synonymous. Others seem to distinguish, restraining calamba wood to the best sort of aloes wood, growing chiefly in Malacca, and Sumatra; and much used in India for making of beads and crucifixes. Phil. Trans. N^o 43. p. 567.

CALAMENTHA, or **CALAMINTHA**, in *Ancient Geography*, a town of Africa, in Libya, belonging to the Phœnicians.

CALAMIANES, in *Geography*, a cluster of islands in the Indian Sea, among those called the "Philippine Islands,"

situate at a small distance from the northern cape of Paragua, and west from Manilla, and giving name to a province or government. They are reckoned twelve in number, which are all small, and inhabited by peaceable Indians, who pay tribute. The chief product of their mountains is wax, which they gather twice in the year. The rocks over the sea afford some of the esteemed birds' nests, and on the coasts are fine pearls.

CALAMIDES, a cluster of islands, amounting to about seventeen, situate in the Indian Ocean, 14 or 15 leagues S. W. of Luban, and forming a province; the largest of which is Paragua, which see.

CALAMIFEROUS, in *Botany*, a denomination given by some to those otherwise called *CULMIFEROUS* plants.

CALAMINA, in *Ancient Geography*, a lake of Asia, in Lydia; in which, according to Pliny, were floating islands, which, during the Mithridatic war, served as a place of refuge for the Roman citizens.

CALAMINE, or **LAPIS CALAMINARIS**, is an ore of ZINC, which see. The lapis calaminaris, calcined, powdered, and sifted, forms a heavy brownish-yellow powder, which when mixed with wax and oil forms the "ceratum lapidis calaminaris," (ceratum epuloticum of the old dispensaries,) the most commonly used of all the simple unguents. Calamine is much used for taking off films from the eyes of horses, &c.

CALAMINE, in *Rural Economy*, an ore of zinc, having a white-gray brown, or red colour, and varying in hardness. It is found in Derbyshire, and some other districts, and is supposed by some writers to be capable of being made use of in agriculture with advantage, from its containing oxygen in a large proportion, as one of its constituent principles. Too few experiments have, however, yet been made with this material to fully ascertain its utility in this application.

CALAMINT, in *Botany*, (Smith Flor. Brit.) See *THYMUS Calamintha*, and *Nepeta*, removed by Dr. Smith from *Melissa*.

CALAMINTHA, (Pluk. Mant. 34. t. 344. fig. 1. Morif. Hist. iii. p. 413. S. 11. t. 19. f. 7.) See *CUNILA maritima*.

CALAMINTHA arvensis verticillata, (Bauh. Pin. 229.) See *MENTHA arvensis*.

CALAMINTHA aquatica belgarum, (Lob. ic. 505.) See *MENTHA exigua*.

CALAMINTHA lederacea, (Scop.) See *GLECHOMA lederacea*.

CALAMINTHA magniflora, (Bauh. Pin. 229. Riv. Mon. 43.) See *MELISSA grandiflora*.

CALAMINTHA vulgaris, (Bauh. Pin. 228.) montana, (Dod. Pemp. 98. Riv. t. 46. Blackw. t. 166.) See *MELISSA calamintha*, Linn. Thymus. Dr. Smith.

CALAMINTHA pulegii odore, (Bauh. Pin. 228.) montana *pratensis*, (Boec. Mus. 2. p. 15. t. 40 & 38. Riv. t. 47. Kniph. Cent. 7. n. 27.) See *MELISSA nepeta*, Linn. Thymus. Smith.

CALAMINTHA incana, (Bauh. Pin. 228. Pulegii odore minor Bar. ic. 116.) See *MELISSA cratica*.

CALAMINTHA hispanica frutescens, (Tourn. Inst. 194.) Montana incana minor. (Morif. Hist. 3. p. 413. n. 3. See *MELISSA frutescens*.)

CALAMINTHA lortum genus, (Fuch. Hist. 436.) See *LAULA dysenterica*.

CALAMINTHA, in *Ancient Geography*, a town of Libya, probably of Mauritania, taken notice of by Herodotus, and Hecateus, whose situation is unknown; but supposed by Bochart, from the etymology of the name in the

Phœnician language, to be seated on an eminence, and of Phœnician original.

CALAMISSUS, a town of Greece, in the country of the Locri Ozolli, situated, according to Pliny, on the Crisean gulf, and placed by M. D'Anville, under the name of Cala, to the west of Naupactus.

CALAMITA storax. See **STORAX**.

CALAMITES, in *Natural History*, a name given by some to the osteocolla, which, when in small pieces, sometimes pretty exactly resembles the barrel of a quill; others have called some of the fossil coralloides by this name, there being frequently in them the resemblance of several quills cemented together in stone.

CALAMITIS is used for a species of artificial *cadmia*, found adhering to the sticks, ladders, and other utensils where-with they stir the copper when in fusion in the furnace. It is denominated *calamitis*, from the Latin *calamus*, a reed, on account of its resemblance to the figure of a reed cloven in the middle.

CALAMO, in *Geography*, sometimes called *Calmino*, or *Calimena*, an island in the Archipelago, near the coast of Asia, not far from Mitylene, about 5 or 6 leagues in circumference. The ancients called it *Claros*: Pliny also distinguishes it by the name of *Calydna*, and Ovid has extolled the abundance of honey which it produced: "Fœcundaque melle Calydna." *Metam.* l. viii. On this island are some lofty mountains, an inconsiderable population, and the remains of an ancient town on the west coast, and, on the other side, a village, called *Calamo*, built on the summit of a mountain, and near it a tolerable good harbour. This island is poor and incapable of providing subsistence for its inhabitants; and it is therefore chiefly occupied in procuring foreign resources by a carrying trade. Its mountains contain minerals, which, under the Turkish government, are a source of oppression and ruin.

CALAMOCHA, a town of Spain, in Arragon, seated on the Xiloca; 14 miles S. of Daroca.

CALAMON, or **CALAMOS**, in *Ancient Geography*, *Kalamony*, a town of Phœnicia, situate on the sea-coast, at the southern extremity of mount Carmel. Pliny says, that it was burnt by Antiochus the Great.

CALAMOTI-SINUS, the gulf of Propontis, in Asia Minor, at the entrance of the Thracian Bosphorus, south-east of Byzantium.

CALAMUS is commonly used to denote the same with *arundo*, a reed, rush, cane, or flag.

CALAMUS, in *Botany*, (*Καλαμος*, the usual name among the Greeks for a reed, and applied by them to several plants, chiefly aquatic, with hollow stems. See Theophrastus, *Hist. Plant. lib. iv. cap. 12.*) Linn. gen. 436. Schreb. 589. Willd. 669. Gært. Sor. tab. 139. Lam. Illust. pl. 770. Juss. 37. Vent. vol. ii. 122. Rotang. Encyc. Meth. and Nouveau Dict. Rattan. Class and order, *hexandria monogynia*, Einn. Gært. Vent. *Monacia hexandria*, Lam. to which disposition Jussieu also inclines. Nat. Ord. *Tripetaloides*, Linn. *Palme* Juss. Vent.

Gen. Ch. *Cal.* permanent, of six leaves, or in six divisions; the three outer ones shorter and broader; the three inner ones longer, narrower, and acuminate. *Cor.* none. *Stam.* filaments six, capillary, longer than the calyx, (often separate from the pistil, Poiret): anthers round. *Pist.* germ superior, roundish: style trifid, round, spiral, thread-shaped: stigmas three, simple. *Peric.* membranous, top-shaped, or globular, covered with scales imbricated backwards and obtuse, one-celled, at first pulpy, afterwards dry. *Seeds* one, two, or three, globular, fleshy.

Ess. ch. *Calyx* of six leaves, or with six divisions. *Co-*

rolla none. *Fruit* a one-celled berry covered with scales imbricated backward.

Obs. The three inner leaflets of the calyx have the appearance of petals, and it is not easy to determine why they were not considered as such by Linnæus. The division of the style and the three stigmas make it probable that these are naturally the rudiments of three germs, but two of them generally prove abortive. Jussieu observes that this genus forms the connecting link between the palms and the grasses, having the flower of the former and the habit of the latter. The sago palm so nearly resembles *calamus* in its parts of fructification that it scarcely seems a distinct genus. The only difference between them, according to Gærtner, is that the flowers of the former are monoicous, and of the latter hermaphrodite; and that the embryo of the former is on the side, and of the latter at the base of the seed. As the flowers, at least of one species of *Calamus*, are now allowed to be monoicous, the former difference vanishes; and whether the latter alone be a sufficient generic distinction, may justly be doubted in the present imperfect state of our knowledge.

Linnæus makes only one species, but mentions eight varieties, all taken up from Rumphius, who calls them *Palmijunci* from their similarity to the palms in their fructification, and to the junci, or rushes, in their flexibility. Loureiro has distinguished and described six species. Willdenow has enumerated eight, at the same time acknowledging that he cannot identify the *scipionum*, *amarum*, and *dioicum* of Loureiro. Poiret has extended them to twelve, from the descriptions of different authors, but without being absolutely certain that his synonyms are in all cases exact. As he is the latest writer on the subject, we shall take him for our guide.

Sp. 1. *C. petraeus*, Lour. (Rotang. Willd. var. and Linn. *Arundo zeylanica spinosissima*: Burm. zeyl. 36. Flor. 468. *Tièr-tsiéfel*: Rheed Mal. v. 12. p. 12, t. 64. *Palmijuncus calapparius*: Rumph. Amb. v. 5. p. 97, t. 51.) "Stem thick, set with prickles; prickles erect; spadix erect." Willd. *Stems* more than a hundred feet high, and at least the thickness of a man's arm: internodes cylindrical, unequal, furrowed, spotted, about a foot long, downy towards the summit. *Leaves*, or fronds, in terminating tufts, alternate, winged; leaflets sword-shaped, long, straight, beset with numerous, straight, long, very sharp prickles. *Spadix* nearly straight, moderately branched. *Calyx* with six divisions. *Berry* rather egg-shaped, acuminate. A native of the East Indies and CochinChina, where it is used for making long pikes. The inner part of the young shoots, stripped of the bark, is eaten either boiled or roasted on the hearth. The fruit is pleasantly acid. 2. *C. rudentum*, Lour. (*C. rotang* var. 7 Linn. *Palmijuncus albus*: Rumph. t. 53.) "Prickles of the stem reflexed; spadix divaricated, straight." Willd. *Stems* very tough, not more than an inch thick, but rising by the means of trees, and passing from one tree to another, sometimes to the length of more than five hundred feet; internodes nearly equal, round, a foot and a half long. *Leaves*, long, winged, reflexed; common petiole lengthened into a naked, pendant, prickly filament; leaflets short, straight, acuminate, downy, terminated by a long bristle. *Spadixes*, large, spreading out in a loose panicle. *Flowers*, numerous, nearly sessile. *Berries*, very small. It is one of the most common species, and is used instead of ropes to bind untame elephants, to draw heavy loads, and to make cables for ships. 3. *C. scipionum*, walking cane, rattan. Lour. (Katutsiurel: Rheede. *Arundo rotang dicta*: Pison mant. 188, La Marck illust. pl. 770. f. 1.) "Internodes of the stem, very long, awl-shaped, shining;

thing; prickles recurved, spadix thick, with short branches". Poir. *Stems* smooth, glossy, marked with dark spots: internodes three feet long, or more, unequal. *Leaves*, winged: leaflets, sword shaped, acuminate; armed, as well as the petioles, with short, recurved, prickles. *Flowers*, few, but rather crowded on the branches of the spadix. *Berry*, globular, of a moderate size, and a clear yellow colour. *Seed*, one, globular. It grows abundantly on both sides of the straits of Malacca, whence it is exported into China and Europe; and on account of its long internodes and glossy surface, has been long preferred for walking canes. 4. *C. verus*, Lour. (*Palmijuncus verus*: Rumph. t. 54, rotang var. 8. Linn.) "Prickles of the stem horizontal; spadix erect; three of the leaflets of the calyx very long." Willd. *Stem*, single and not, as in other species, several from the same root; more than a hundred feet high, and about the thickness of a man's finger; very flexible, and of a yellowish brown colour: internodes very long, almost equal. *Leaves* long, winged; leaflets ovate lanceolate, three-nerved. *Spadixes* racemed. *Spathes* oblong, prickly. The three interior leaflets of the calyx whitish, having the appearance of petals. *Berry* rather large; brown: common in forests in the East Indies. Its stem cut into thongs, is used to make cables and other ropes, cane chairs, and many kinds of household furniture. 5. *C. secundiflorus*, Beauvois, t. 9, 10. "Leaves, winged, flexible, reflexed, gibbous at the base, cultrate at the margin; leaflets prickly at the base." A shrub. *Leaves*, long, winged, without leaflets at their summits, but armed with several pairs of large prickles; opposite, almost triangular without, flat, or a little concave within; leaflets prickly at their edges. *Calyx*, with three short exterior divisions in the form of scales; the three inner ones longer. *Stigma*, capitate, almost trifid. *Berry*, nearly globular. A native of Africa, in the kingdom of Benin. By the means of the prickles on the edges of its leaflets, it firmly attaches itself to other plants; and its own leaves, which hang down to the ground, are so closely entangled together, that each shrub forms an impenetrable bush, which affords a sure defence to the smaller animals against their numerous enemies. M. Beauvois has seen the nests of the termites in the kingdom of Benin so completely covered by these shrubs, as scarcely to leave a passage for the smallest bird. 6. *C. amarus*, Lour. "Prickles crowded, short; leaflets linear; spadixes remote; spathes partial." *Stems*, about the thickness of a finger, about sixty feet high, hardish, even, pale-coloured; internodes long, round, almost equal. A native of Cochinchina. It is used for the same purposes as the preceding, and is more durable. 7. *C. draco*, Willd. (rotang var. 3, Linn. *Palmijuncus Draco*, Rumph. t. 58. f. 1.) "Prickles of the stem pressed close to it; of the leaves spreading; spadix erect." Willd. *Internodes* from two to three feet long, of the thickness of a finger, unequal. *Leaflets* alternate, linear, acuminate, narrowed at their base, beset with a few hairs. *Spadix* branched into small, short racemes. *Berries* egg-shaped, about the size of a hazel nut, terminated by a blunt point. *Seed* one, smooth, oval. From this species is obtained the gum, commonly called Dragon's blood. 8. *C. niger*, Willd. (var. 2, Linn. *Palmijuncus niger*, Rumph. t. 22.) "Prickles of the stem and of the leaves horizontal; spadix compact, pendulous." Willd. *Stems* thick, armed with prickles, which enter easily into the skin and then break off. *Leaves* very long, alternate, winged; leaflets alternate, straight, narrowed almost into a petiole at their base, acuminate. *Spadixes* axillary, in tufted racemes. *Berries*, globular, scarcely the size of a small pea. A native of the East Indies. Its stems do not easily split, and are so irregular in their shape, that

they are not of the same use as several of the other species. 9. *C. viminalis*, Willd. (rotang var. 1, Linn. *Palmijuncus viminalis* Rumph. t. 55.) "Prickles of the stem spreading; of the leaves, distant, reflexed: spadix nodding." Willd. *Stems*, about the thickness of a goose-quill: internodes, about a foot long on the lower part, shorter near the summit, where they are armed with straight, horizontal, very fine prickles. *Leaves* alternate, distant, winged; petioles lengthened beyond the leaflets; leaflets straight, long, acuminate, armed with reflexed prickles. *Spadixes* axillary, branched in rather spreading racemes. *Flowers* peduncled, almost opposite. *Berries* very small. A native of moist forests in Java and the Celebes Islands. Its stems answer the purposes of ozier, and divided into shreds, make several kinds of household furniture. 10. *C. equestris*, Willd. (rotang, var. 2 Linn. *Palmijuncus equestris*, Rumph. t. 56. and t. 57. f. 1.) "Prickles of the stem erect, spreading; of the leaves hooked: leaflets elliptic: spadix erect." Willd. *Stems* slender, very supple: internodes short, equal, smooth, furnished near their summit with alternate, winged leaves: *Leaflets*, alternate, from eight to ten inches long: petioles extended beyond the leaflets, but prickly to the end. *Berries* round, about the size of a pea. A native of humid, rocky places, in the island of Amboina. It is in general use in the East Indies as a riding cane. 11. *C. dioicus*, Lour. "Stem very slender; leaves and prickles shorter; flowers dioicous." Nearly allied to the two preceding. It may possibly be only a variety of one of them: or it perhaps is an intermediate species. *Stems* slender, scarcely the thickness of a goose-quill, twenty feet high, very flexible and regular, pale and glossy; internodes a foot long; leaves winged. *Calyx* with six unequal divisions; the three inner ones resembling petals, white, ovate-lanceolate, striated. A native of Cochinchina, on the banks of rivers. 12. *C. zalacca*, Willd. Gært. Tab. 139. f. 1. Lam. Pl. 770. fig. 2. copied from Gærtner. (*C. rotang* var. 7, Linn; *Zalacca*, seu rotang zalak, Rumph. t. 57. f. 2. *Fructus Baly infusæ* pyriformis, J. Bauh. Hist. p. 401, with a figure.) "Prickles spreading; spadix radical." Willd. *Stem*, none. *Leaves*, in a tuft, from the crown of the root, from ten to twelve feet long, winged; leaflets long, acuminate; petioles strong, straight, spreading, prickly. *Spadixes* racemed, nearly radical. *Berries* rather large, top-shaped, of an irregular form from their pressure against each other; rind thin, papery; scales somewhat cartilaginous; the upper ones erect, linear; the rest pressed close, imbricated downward; marked with a raised line along the middle, and a little reflexed at the tip, so as to make the berry rough to the touch. *Seeds* three, fixed to the bottom of the berry, two generally abortive, nearly globular, with a small umbilical fungous, thick, rather heart-shaped lobe affixed to them below. Gært. Fruit rather larger than a pear, of a pleasant acid flavour, which has been compared to that of the pineapple. They are eaten either raw or pickled, and are a general sea-store. A native of Java, and other parts of the East Indies. This species has the habit of a palm, and connects the others with the Sago Palm. See SACUS.

CALAMUS, in *Ancient Geography*, a place situated on the Thracian Bosphorus, which is said to have taken its name from the quantity of roses which grew there.

CALAMUS aromaticus, in *Botany*. See **ACORUS Calamus**.

CALAMUS aucupatorius, or *calamus struatus*, among *Fowlers*, signifies a bird-CALL.

CALAMUS indicus petrificus, in the *Natural History of the Ancients*, a name given to a substance found often in the fossil kingdom usually of about three inches long, half an inch broad, and one third of an inch thick, and covered all

over its surface with large round figures in form of radiated stars within. This very much resembled in external appearance the root of our common *calamus aromaticus* of the shops turned into stone, and seems to have been vulgarly supposed to be that substance petrified. The more accurate among the early writers, however, have by no means countenanced so wild a conjecture; and Theophrastus, though he records the substance under that name, as it had no other in his time, yet joins it to the corals, which, he says, grow in the sea, and are vegetables; and adds, that those and this substance are properly the substance of another treatise, not of a history of stones.

This author's placing it among the CORALS is perfectly right, since the specimens of it now found are plainly no other than corals of the stellated kinds, which have been long buried in the earth.

CALAMUS odoratus; Mathioli, in *Botany*. See ANDROPOGON *nardus*.

CALAMUS pastoralis, in *Musæ*, the shepherd's pipe; an ancient musical instrument, the origin of the flute; at first, made of a straw or reed; *avena* and *calamus*. It should seem as if the *μονολος*, *monolos*, with holes to produce different tones, must have been suggested by the syrinx, or Pan's pipe, an instrument in which pipes of different lengths, of one tone each, without ventiges, produced the scale by moving them over the lips; but afterwards it was discovered, (as it is said, by Minerva,) that one single pipe, perforated, would furnish as great a variety of sounds, and more conveniently, than all the pipes of the *ψιφύλα Panis*. Flutes were improved and multiplied, almost to infinity. See Pl. of ancient musical instruments, and Hist. vol. i. pp. 408, and 412. According to Horace, the flute had undergone various changes and improvements from its first invention:

Tibia non, ut nunc, orichalco vineta, tubæque

Æmula; sed tenuis simplexque, foramine paucò,

Aspirare.—

A. P. 202. See FLUTE.

CALAMUS scriptorius, properly denotes a reed or rush to write with, answering to the use of the ancient stylus and modern pen. The ancient Egyptian calamus was a sort of *arundo aquatica* growing plentifully about Memphis, and on the banks of the Nile; whence it was also called *calamus Memphisicus*, *Niloticus*, &c.

CALAMUS scriptorius, in *Anatomy*, is a dilatation of the fourth ventricle of the brain; so called from its figure, which resembles that of a quill. See BRAIN.

CALAMUS also denotes a sort of measure otherwise called CANNA, CANE, or reed.

CALAMY, EDMUND, in *Biography*, an eminent divine among the English Nonconformists of the 17th century, was born in London in the year 1600, and educated at Pembroke Hall in the university of Cambridge; where he took his degrees of bachelor of arts, and bachelor of divinity, but on account of his hostility to the Arminian party, he was prevented from obtaining a fellowship in that society, to which his standing, talents, and literary acquirements entitled him. His studious disposition and religious character, however, recommended him to Dr. Felton, bishop of Ely, who made him his domestic chaplain, and gave him the vicarage of Swaffham prior in his neighbourhood. In this situation, he studied at the rate of 16 hours a day, and acquired that large fund of solid and useful learning, which enabled him to discharge, with great ability, the several offices which he afterwards occupied. After the death of the bishop in 1626, he was chosen one of the lecturers at Bury St. Edmund's, and resigned his vicarage. During his 10 years' residence in this place, he distinguished himself for the most part as a strict conformist: but when bishop

Wren's articles, and the reading of the book of Sports were enforced, he avowed his dissent, made a public apology for his conduct from the pulpit, and, from this time, was regarded as an undisguised and active nonconformist. Being much in favour with the earl of Essex, he was presented by his lordship with the rectory of Rochford in Essex, which, though a valuable preferment, was, on account of the infalubrity of its situation, the occasion of permanent injury to his constitution. In 1639, he was chosen minister of St. Mary, Aldermanbury, and removed to London, where he took an active part in the controversy concerning church-government, which was then agitated. In 1640, he engaged with other writers in the composition of the famous book, entitled "Smectymnus," from the initials of the names of those that were concerned in it; viz. Stephen Marshall, Edmund Calamy, Thomas Young, Matthew Newcomen, and William Spurstow. This treatise, though written with a considerable degree of asperity, has been considered, not only by the Nonconformists, but by Dr. Wilkins, bishop of Chester, as a capital work against episcopacy. Calamy himself says of it, that it gave the first deadly blow to this system of church government. In 1641, Mr. Calamy was appointed by the house of lords a member of the sub-committee, which ineffectually attempted to accommodate the differences that subsisted with regard to religion. And he afterwards distinguished himself, by his learning and moderation, in the assembly of divines. He was also at this time one of the most eminent preachers in the city of London, and held in high estimation, particularly by the Presbyterian party. With this party he concurred in opposition to the Independents and Sectaries, and in testifying his disapprobation of the violent measures that brought on the king's death, an event which he ardently deprecated. During the usurpation of Cromwell, he withdrew from all public concerns; but he boldly opposed the project of his single government, which he undertook to prove to be both unlawful and impracticable. As soon as a favourable opportunity occurred, he was active in promoting the restoration of Charles II.; and he was one of the divines delegated to compliment the king in Holland on the occasion. In 1660, he was appointed one of his majesty's chaplains; and he was offered the bishopric of Litchfield and Coventry, which, after previous deliberation, he declined accepting. As soon as the act of uniformity was passed, he conscientiously discontinued his public sermons in the church, and preached his farewell sermon at Aldermanbury, August 15, 1662. He joined several of his brethren, however, in a petition to the king for liberty to retain their public functions, and on the occasion made a long and moving speech; but this last effort for toleration proved ineffectual. After he had ceased to officiate in the church, he attended its public service; at one time, viz. December 28, 1662, when the appointed preacher did not appear, he was urged by some of the principal parishioners to take his place; but taking occasion to speak with freedom concerning the parish, and the situation to which he was then reduced, he was arrested by the lord mayor's warrant, and committed to Newgate. Doubts, however, occurred as to the legality of his confinement; and the hardship of his case being duly considered, he was liberated in a few days by the king's order. After the fire of London, he was driven over its ruins in a coach on his way to Enfield; and the sight so much affected him, that he died within two months afterwards, October 29, 1666.

Mr. Calamy was well acquainted with the subjects appropriate to his profession: as a preacher, he was plain and practical; and he boldly avowed his sentiments on all necessary occasions. Several of his sermons, delivered on particular

ticular occasions, were printed separately; and a set of five sermons, entitled "The godly Man's Ark, or a City of refuge in the Day of Distress," was published in 1683, 12mo, and became a very popular book in those times. Biog. Brit.

CALAMY, BENJAMIN, a divine of the church of England, of the 17th century, was the son of the preceding by a second wife, and having received the rudiments of education at St. Paul's school, he completed his course at Catharine Hall, Cambridge, of which he became a fellow, and an eminent tutor. In 1677, he was chosen minister of St. Mary, Aldermanbury, and soon after appointed one of his majesty's chaplains in ordinary; and in 1682, he took his degree of doctor in divinity. The attention of the public was very much engaged by "A Discourse about a scrupulous Conscience," which he published in 1683. It was dedicated to sir George Jefferies, afterwards the chancellor of notorious memory, whom he compliments as his friend and patron. This discourse, which was designed to shew the crime and danger of separating from the established church on the pretext of a tender conscience, and which inculcates the notion, that "such wayward, skittish consciences, as doubt of and suspect the rights of the crown, ought to be well bridled and restrained," was much derided by one party, and extolled by the other. Mr. Thomas de Laune, a Non-conformist school-master, published a warm reply to this discourse, for which, and some other intemperate publications, he was committed to Newgate, and sentenced to pay a fine, which he was unable to discharge; so that the event proved fatal to himself, his wife, and children. It is allowed, however, in vindication of Dr. Calamy, that he exerted himself in favour of this antagonist; and that though he avowed himself a strenuous advocate for the principle of religious intolerance, and was unfortunate in the selection of his patron, he was far from possessing the spirit of a persecutor: and it is further said, that his opinions on this topic underwent some change before his death. In consequence of the high estimation in which he was held by the best men of all parties in the city of London, he obtained in 1683 the vicarage of St. Lawrence, Jewry, and in 1685, a prebend in the cathedral church of St. Paul. Towards the close of the year 1685, his health declined in consequence, as it is said, of the calamitous state of public affairs, by which he was deeply impressed, and he died of a pleuritic complaint in January, 1686. He was distinguished by his zealous attachment to the government and church of England; and at the same time respected and esteemed for his piety and charity, by persons of different denominations. As a preacher, he was much applauded: and some of his posthumous sermons, published by his brother, have been frequently reprinted, and are at this day read and admired. Biog. Brit.

CALAMY, EDMUND, an eminent dissenting divine, was grand-son of the first Edmund Calamy, by a father of the same name, and born in London, in 1671. After a previous course of education in some private and public schools, he was placed under the tuition of Mr. Samuel Cradock, by whom he was instructed in logic, metaphysics, and natural philosophy. In 1688, he removed to the University of Utrecht, where he distinguished himself by his proficiency in philosophy and law, under De Vries, Vander Muyden, and Gravius, some of the most learned professors in their respective departments at that period. In these several stages of education, Mr. Calamy recommended himself to his tutors by the diligence of his application, and to all his associates by the sweetness of his temper, and the urbanity of his manners. Having declined the offer of a professorship in the college of Edinburgh, he returned from Hol-

land to England, and spent some time at Oxford, without becoming a member of the university, availing himself of the patronage and counsel of Dr. Pocock, and Dr. Edward Bernard, and also of the instructive conversation of Mr. Henry Dodwell. Determining to devote himself to the profession of divinity, he directed his course of studies to this object; and having deliberately investigated the grounds of the controversy between the established church and the Separatists, he resolved to connect himself with the latter; and in 1692, he commenced the regular exercise of his ministry at a meeting-house in Black friars, London. In 1694, he was ordained; and this was the first instance of the kind that was performed among the dissenters, after the passing of the act of uniformity: and in 1703, he was chosen pastor of a large and respectable congregation in Westminster. To the dissenters he performed an acceptable service, by publishing "Baxter's History of his Life and Times," which he afterwards abridged, annexing an account of many of the ejected ministers, and an apology for their non-conformity. Baxter's history terminated with the year 1684; but Calamy's continuation extended to the year 1691; and was published in 1702, 8vo. A new edition of this work was published in 1713, in 2 volumes 8vo.; in which the history of the Non-conformists is continued through the reign of king William and queen Anne, to the time of passing the occasional bill. The first edition of this work was, as we may reasonably imagine, very differently received by persons of different parties and opinions; and it occasioned a controversy of some extent and continuance, which, however, was carried on with a greater degree of candour and moderation than most controversies of a similar kind. In Scotland, which Mr. Calamy visited in 1709, he was received with singular respect; and each of the three Universities of Aberdeen, Glasgow, and Edinburgh, presented him with the degree of doctor in divinity. In 1718, he wrote a vindication of his grandfather, and several other worthy persons against the reflections of Archdeacon Eachard, in his History of England. About this time the question of subscription to the first article of the Church of England, relating to the Trinity, began to be agitated among the dissenters; Dr. Calamy, however, remained neutral, and he has incurred reproach among the present race of dissenting clergy, for not having joined those 73 ministers who carried it against 69 for the Bible, in opposition to human formularies. As to the belief of the doctrine he was decidedly orthodox, which was also the case with several others; and he published a set of sermons in defence of it, which was dedicated and presented to the king, and for which he received from his majesty a gratuity of 50l. and likewise the thanks of several dignitaries of the church. In 1727, he completed his great design of preserving the history of ministers, &c. ejected and silenced, after the restoration, in a work intitled, "A Continuation of the Account of the Ministers, Lecturers, Masters, and Fellows of Colleges, and Schoolmasters, who were ejected and silenced after the Restoration in 1660, by, or before the Act of Uniformity, &c." 2 vols. Lond. 1727. This is a work of laudable industry and labour, and contains a valuable collection of memoirs, which would have been otherwise lost. In 1775, the rev. Mr. Samuel Palmer of Hackney published in two large volumes 8vo. under the title of "Non-conformists' Memorial," an abridgement, with corrections, additions, and new anecdotes, of Dr. Calamy's 4 volumes, concerning the ejected and silenced ministers; and a new edition of this work, with improvements, has been lately reprinted. Dr. Calamy distinguished himself by other learned and useful writings, consisting chiefly of sermons and controversial pamphlets. Of his publications, besides those already notice-

ed, we may mention his "Inspiration of the Holy Writings of the Old and New Testament, in 14 Sermons;" and "His Defence of moderate Nonconformity," in 3 parts. The introduction to one of these tracts, representing the true state of the controversy between the Church and the Dissenters, was so much approved by Mr. Locke, that he sent a message to our author informing him, that he thought it such a defence of nonconformity as could not be answered; and that, in adhering to the principles thus laid down, he had no occasion to be afraid of any antagonist. After an honourable course of professional services for which he was much esteemed, and after sustaining a character which was much respected, not only among dissenters, but also among the moderate members of the established church, both clergy and laity, with many of whom he lived in great intimacy; he closed his life June 3, 1732, in the 60th year of his age. In his funeral sermon by Mr. Mayo, his character is very justly delineated, as "a person of sound judgment, extensive learning, sincere piety, of a candid and benevolent temper, and very moderate with regard to differences in points of religion." Biog. Brit.

CALANDA, in *Geography*, a town of Spain in Arragon, on the river Guadaloupe; 3 leagues W. S. W. of Alkanitz.

CALANDRA, in *Ornithology*, a bird of the **ALAUDA**, or lark genus, called by some the calandre lark, and which appears to be a general inhabitant of Sardinia, Italy, the South of France, Syria, Russia, and Tartary, and also of America. This is the calandra of old authors. Brisson calls it *alauda major* f. *calandra*: it is the calandra of the arctic zoology, of Aldrovandus, Willughby, and Edwards, and grosse alouette ou calandre of Buffon. The length of this bird is about seven inches and a quarter. It builds its nest on the ground: sings finely, and imitates the notes of other birds extremely well. It is specifically distinguished by having the first exterior tail feather on each side white on the outer web; second and third tipt with white: pectoral band brown. Gmel. &c. *Obs.* The bill and legs are pale grey: body above varied with brown and grey: chin white: throat with a white crescent, and beneath that a whitish band spotted with black: belly white: quill feathers dusky edged with white; the lesser ones tipt with white: tail black.

CALANDRE, in *Natural History*, a name given by the French writers to an insect that does vast mischief in granaries. It is properly of the scarab class.

The female lays a considerable number of eggs, and the increase of these creatures would be very great, but nature has so ordered it, that while in the egg state, and even while in that of the worm, they are subject to be eaten by mites; these little vermin are always very plentiful in granaries, and they destroy the far greater number of these larger animals.

CALANDRO, in *Geography*, a town of Asiatic Turkey, in the province of Caramania; 100 miles S. of Cogni.

CALANGAY, in *Natural History*, a name given by the people of the Philippine islands to a species of parrot very common there; it is all over white, and has a crest of white feathers on its head; it is of the size of a pigeon, and is easily kept tame, and learnt to talk. It is called also in some of the Philippines *catatua* and *abacay*.

CALANNAS, in *Geography*, a town of Spain, in the county of Seville, near the river Odiel; 40 miles N. W. of Seville.

CALANTIGAS, an island of the East Indian ocean, not far from Lingon, which see.

CALANUS, in *Biography*, a brachman or Indian phi-

losopher, who followed Alexander the Great, in his expedition to India. Having passed 83 years without sickness, a fit of the colic made him impatient of life, and he resolved to render his exit as ostentatious as possible. Accordingly, having obtained permission of Alexander to burn himself, a funeral pile was erected and strewed with perfumes; and the whole army was arranged round it in battle array: upon which, Calanus, magnificently dressed, ascended the pile with a composed air, and saw the flame applied without emotion. When he was asked if he had any message to Alexander, he only replied, "I shall soon see him again at Babylon;" which declaration some have interpreted as presignificative of his death in that city; and the last words he uttered were, "Happy hour of departure from life, in which, after the mortal body is consumed, the soul shall go forth into light." This event took place on the frontiers of Susiana, B. C. 325. See **ALEXANDER**.

CALAO, in *Ornithology*, synonymous with the modern Latin *Buceros*, and *Hornbill* of the English. Petiver called the Philippine hornbill (*Bicornis* Linn.) Calao, and since that period, the French have adopted the expression as a generic name for the other species of the same tribe. Thus, Buffon has calao d'Abyssinie, calao d'Afrique, calao de Malabar, calao à casque rond, calao à bec rouge de Senegal, &c. all which refer to the corresponding synonyms, Abyssinian hornbill, African hornbill, Malabar hornbill, Helmet hornbill, red-billed hornbill, &c.

CALAON, in *Ancient Geography*, a river of Asia Minor, in Ionia, near the town of Colophon.

CALAPADA, in *Geography*, a cape on the north side of the isle of Candia, to the east of cape Meleche, and about one-fourth part of the length of the island from the west end.

CALAPIS, in *Ancient Geography*, a colony of Asia Minor, in Bithynia; established, according to Strabo, by the inhabitants of Heraclea.

CALAPIZZATI, in *Geography*, a town of Naples, in the province of Calabria Citra; eight miles N.W. of Cariati.

CALAPPA, in *Botany*, Rumph. See *Cocos nucifera*.

CALAPPA, in *Entomology*, a species of **CANCER** that inhabits America. The thorax is crenulated, with the posterior angles dilated, and very entire: hand-claws crested. Fabricius.

CALASCIO, in *Geography*, a town of Naples, in the province of Abruzzo Ultra; eight miles E. of Aquila.

CALASCIONE, a musical instrument much in use by strolling and street musicians throughout the kingdom of Naples. It is a species of guitar, with only two strings, tuned 5th to each other. It has a very long neck, which is fretted. See **FRET**. The Turks have an instrument of the like kind, with three strings, called in Arabic, *dambura*. Sometimes the strings are struck with a plectrum, and sometimes with a quill. See **PLECTRUM**. The tone is rough and coarse; the neck is sometimes six feet long. The frets amount to 15 or 16. But the Neapolitans have a smaller sort called *calascioncina*. See *Mus. Pl.* of mod. instr.

CALASH, or **CALESH**, a small light kind of chariot, or chair, with very low wheels, used chiefly for taking the air in parks and gardens.

The word is French, *caleche*, which Menage derives from the Latin, *carrus*, *carri*, *cariscus*, *carrisca*, *carresca*, *calesea*, *caleche*.

The calash is for the most part richly decorated, and open on all sides, for the convenience of the air, and prospect; or at most enclosed with light mantlets of waxed cloth, to be opened or shut at pleasure.

In the Philosophical Transactions, we have a description of a new sort of calash going on two wheels, not hung on traces, yet easier than the common coaches; having this farther advantage, that whereas a common coach will overturn if one wheel goes on a surface a foot and a half higher than that of the other, this will admit of a difference of three feet and one third, without danger of overturning. Add that it would turn over and over, that is, after being turned so as that the spokes are parallel to the horizon, and one wheel flat over the head of him that rides in it, and the other flat under him, it will turn once more, by which the wheels are placed in *fiatu quo*, without any disorder to the horse or rider. N° 172. p. 1028.

CALASIO, MARIUS DE, in *Biography*, a Franciscan professor of Hebrew at Rome, and author of a "Concordance of the Hebrew Words in the Bible," in four volumes folio, printed at Rome in 1621, and at London in 1747. This Concordance has been highly approved both by protestants and papists; and contains, besides the Hebrew words occurring in the Bible, the Latin version, and, in the margin, the variations between the LXX version, and the Vulgate. Besides, at the beginning of every article, there is a kind of dictionary, which gives the signification of each Hebrew word, and it furnishes an opportunity of comparing it with other oriental languages, viz. the Syriac, Arabic, and Chaldee.

CALASIRII, in *Ancient Geography*, the denomination of a people, who, according to Herodotus, formed a class of Egyptians, amounting in number to 250,000 persons, devoted, from father to son, to the profession of arms, without being attached to agriculture, or to any art. The kings of Egypt had always one thousand of them among their guards.

CALASIRIS, or CALASSIS, in *Antiquity*, a linen tunic worn by the Pœnician, Egyptian, Roman, and other peo-
ple. We also find mention of the calasiris as worn by the soldiers and by women. In which last sense, it seems to have been a knot in the woman's gown, whereby it was drawn about the neck.

CALASTRI, in *Geography*, a town of Hindooستان, in the Carnatic; 15 geographical miles E.N.E. from Tripetty, and 61 from Arcot: but Major Rennell has some doubts concerning the accuracy of its position.

CALATABELLOTA, formerly the *Crimisus*, a river of Sicily, with the waters of which the inhabitants overflow their beautiful rice grounds; and also a town of Sicily in the valley of Mazara; six miles S.E. of Sciacca.

CALATA-FIMI, a town of Sicily, in the valley of Mazara; 19 miles E.S.E. of Trapani. It is built on a ridge between two valleys, and its inhabitants are estimated at 10,000.

CALATA-GIRONE, or CALAGIRONE, a royal city of Sicily, in the Val di Noto, situate about 20 miles from the sea on the summit of a very high insulated hill, embosomed in thick groves of cypresses, and containing about 17,000 inhabitants, who live by agriculture and the manufacture of potter-ware. The road to it, though paved, is very steep and difficult of passage for any animal except a mule or an ass. The inhabitants of this city are deemed the politest people in the island, and many of them live in a very elegant style. The natives have an idea that this city is very ancient, and that it figured as are public among the Sicilians during the zenith of Grecian glory, under the name of inland Gela or Gelone. The Saracens fortified it, but the Genoese wrested it from them; however, their force was dwindled into a shadow when the Normans arrived. Earl Roger availed himself, on many occasions, of the trusty va-

VOL. V.

lour of the Calatageronese, and rewarded them liberally with estates, which are still in their possession, and render the corporation one of the richest in Sicily. De Non says, this city, in which ancient coins are still found, must have been the "Hybla-hærea" of antiquity. Swinburne's Travels in the Two Sicilies, vol. iv. De Non's Travels in Africa, &c. p. 292.

CALATA-MISSETA, a town of Sicily, in the valley of Mazara; 27 miles E.N.E. of Girgenti.

CALATA-SEIBELTA, a mean town of Sicily, in the Val di Noto, built on the point of a rock, about three miles from Castro-Giovani.

CALATAUD, a city of Spain, in Arragon, situated at the foot of a hill, at the conflux of the Xalon and Xiloca, defended by a castle placed upon a rock. It contains 13 parishes, and 15 convents; 37 miles S.W. of Saragossa. N. lat. 41° 22'. W. long. 2° 9'.

CALATHE, in *Ancient Geography*, Galatz, an island of the Mediterranean, on the coast of Atrica. See GALATA.

CALATHIAN VIOLET. See GENTIANA *Pneumonanthe*.

CALATHIFORMIS, a term in *Botany*, denoting bowl-shaped, or hemispherical and concave.

CALATHION, in *Ancient Geography*, a mountain of Peloponnesus, in Messenia, situate to the east of Gerenia; on which was a temple dedicated to Calathea, with a grotto having a very narrow entrance.

CALATHUA, or CALATHUSA, a town of Arabia Deserta. Ptolemy.

CALATHUS, in *Antiquity*, a kind of hand-basket made of light wood, or rushes; used by the women sometimes to gather flowers, but chiefly after the example of Minerva, to put their work in. The figure of the calathus, as represented on ancient monuments, is narrow at the bottom, and widening upwards like that of a top. Pliny compares it to that of a lily. Hist. Nat. lib. xxi. cap. 5. The calathus, or work basket of Minerva, is no less celebrated among the poets than her distaff.

CALATHUS is also used to denote a drinking cup. Pliny seems likewise to use it for the calyx of a flower. Hist. Nat. lib. xxv. cap. 7.

CALATHUSA, in *Geography*, a town of Pontus. Steph. Byz.

CALATIA, a town of Italy, situate in Campania Felix. In the war of Hannibal, it submitted after Capua; and in that of the allies, Sylla assigned it to the colony of Capua. Julius Cæsar established in it a colony of veterans.

CALATIS, or CALLATIS, a town of Lower Mysia, in Europe, where, according to Strabo, was a colony of the inhabitants of Heraclea. It is mentioned by Sallust, who places it on the western part of the Euxine sea, between Istropolis and Byzance. In the Periplus of Scylax, it is called Callabiæ.

CALATOR, in *Antiquity*, a cryer, or officer appointed to publish something aloud, or call the people together. The word is formed from *καλέω*, I call. Such ministers the pontifices had, whom they used to send before them when they went to sacrifice on *ferie* or holidays to advertise the people to leave off work. The magistrates also used calatores, to call the people to the *comitia*, both *curiata* and *centuriata*. The officers in the army also had *calatores*; as had likewise many private families to invite their guests to entertainments.

CALATRAVA, in *Geography*, a town of Spain in New Castile, and province of La Mancha, situate near the Morena mountains, on the river Guadiana; 50 miles S.E. of Toledo. N. lat. 39°. W. long. 4° 20'.

CALATRAVA, *Knights of*, in *History*, a military order instituted in 1158, by Sanchó III. king of Castile, on the following occasion. When the Moors proposed to attack the little city Calatrava, the Templars, who held it, surrendered it up to the king, on a suspicion of their inability to defend it; upon this Diego Velasquez, a Cistercian monk, but a man of quality, persuaded Raymond, abbot of Fitero, a monastery of Cistercians, to beg Calatrava of the king. He obtained it; and Raymond and Diego put themselves in it; being followed by a great number of people who joined them out of zeal, for the defence of Calatrava. The Moors abandoning the enterprise; many of those who came to the defence of the city, entered the order of the Cistercians; and that under a habit more fit for military than monastic exercise. Accordingly, they began to make excursions on the Moors; and this was the rise of the order of Calatrava.

The first grand master was Gracias; under whose government the order was approved by Alexander III. in 1164, and confirmed by Innocent III in 1198. In 1489, Ferdinand and Isabella, with the consent of pope Innocent VIII. reunited the grand mastership of Calatrava to the Spanish crown: so that the kings of Spain are now become perpetual administrators, or grand masters of this order. The badge of the order is a cross fleury gules, which is worn at the stomach pendant to a ribbon.

Their rule and habit were originally those of the Cistercians, but their dress was a little shortened, on account of their exercises; and in process of time they were permitted a secular habit. The present habit of ceremony of the order is a mantle of white silk tied with a cordon and tassels, like those of the garter; and on the left arm, a cross fleury embroidered gules. Mariana observes, that this noble institution has gradually degenerated: the commanderies, which were formerly the reward of military merit, being frequently bestowed on minions and favourites. The order is said to have at present 34 commanderies, and eight priories, which produce an annual revenue of 120,000 ducats.

As the order of St. James is distinguished by the epithet of the rich, and that of Alcantara is styled the noble, this of Calatrava is entitled the gallant.

Alphonfus IX., having recovered Alcantara from the Moors in the year 1212, committed the custody and defence thereof, first to the knights of Calatrava; and two years afterwards to the knights of the Pear-tree, or of St. Julian, another military order instituted at Pereiro, in 1156, under the protection of Ferdinand II. king of Leon, and ratified as a religious order under the title of St. Benedict, by pope Alexander III. in 1177, at the request of Gomez Fernandez, the first prior or grand master; upon which they changed their name, and assumed the denomination of the knights of Alcantara. The king of Spain is sovereign of this order, which is in high estimation in that kingdom: the mantle worn by the knights of this order is of red silk, with a star of five points embroidered in silver on the left breast. The badge is a cross fleury of gold, enamelled vert, and worn at the stomach with a broad ribbon.

The religious order of Calatrava for ladies was instituted by Don Gonzales Yannes in 1219. The badge of the order is the same as that worn by the knights of Calatrava, only embroidered on the front of the ladies' habits.

CALATUM, in *Ancient Geography*, a town of Britain, in the country of the Brigantes, according to Ptolemy. It is placed by Hordley at Appleby, and by Baxter at Kirkbythore in Westmoreland. But both the name, and the relative situation assigned to it by Ptolemy, might incline us to

place it in or near the Galaterium Nemus, now the forest of Galters in Yorkshire. In the Itinerary of Antonine it is denominated Galacum, and placed 47 miles from Bremetonacis.

CALAU, in *Geography*, a town of Lusatia, which carries on a large trade in wool; 15 miles N.W. of Cobus.

CALAU-CENE, a town of Egypt; 12 miles S. of Abu Girgé.

CALAVON, a river of France, which runs into the Durance, about 8 miles W. of Cavaillon.

CALAURES, in *Ancient Geography*, a river of Asia Minor, in Phrygia, which ran, according to Livy, between Cibyra and Mandropolis.

CALAURIA, one of the Greek islands in the Argolic bay, situate, according to Strabo, in the bay of Hermione, over-against Troezen, a maritime city of Argia, from which it was distant four furlongs, being itself thirty in compass. It was famous for a temple consecrated to Neptune, and an asylum. Demosthenes was an exile in this island, and was buried in the temple, after having poisoned himself, because he would not surrender to the order of Antipater. In the time of Pausanias, the inhabitants and strangers paid great respect to the memory of this illustrious orator. This island was also denominated Irene, Anthedonia, Hypercia, and Possidonia; however, Pliny distinguishes Irene from Calauria. Ancient tradition reports, that Latona gave this island to Neptune in exchange for that of Delos, whence the proverb, "Pro Delio Calauria." A sort of litharge, denominated "Calauritis," was brought to the Greeks from this island, and applied by them to medical purposes.

CALAURIA, a town of Sicily, mentioned by Plutarch.

CALAUWE, in *Geography*, an inhabited island of the Indian Ocean, near Saleyer, (which see,) and belonging to it. It is chiefly inhabited, as well as Bonarette in its vicinity, by Bouginese.

CALBARI, or **CALABAR**, the name of two rivers, as well as of a district in Africa, east of Cape Formosa. See **CALABAR**.

CALBARIA, a province of Africa, adjoining to Rio Real, or Royal River, called also *Calabar*; deriving its name from that river, which, though broad, is too shallow to be navigated by ships of burden. Near the coast, on the west bank of it, is a town called by the Dutch Wyndorp, and by the negroes, from the great quantity of wine, Toke; two branches spread to the east and west from the river, whose course runs constantly north. In the west branch is a road, three or four leagues long, for trading vessels; and the town Calbaria is situated on the north side of this arm, and it is a place of great trade with the Dutch, enclosed with palisadoes, watered on the south by the river, and defended on the north by a boggy wood. On the south of this rivulet is an island of an oval figure, at a distance from the continent, from which it is divided only by a shallow canal, the land low and covered with woods. About 12 leagues westward of Calbaria, lies Belli, governed by one captain: and 20 leagues above the mouth is an arm of Rio Real, running east-north-east, and many other rivers are near the banks. The province of Krike, bordering on the west of Moco, lies about 20 miles from the coast; on the back of Rio Real, southward of Moco, towards the coast, is the province of Bani, whose chief town is Culeba, the principal of this country, which extends westward from the river Calbaria, as far as Sangma, and has ten under officers. The cannibal negroes, inhabitants of the eastern banks of Calbaria, circumcise the women that are marriageable, eat only the slain, and sell the prisoners of war at Calbaria. The canoes used by the Calbarian negroes are pointed at both ends,

ende, 60 feet long and six broad, with a fire-place in the centre for dressing victuals, and planks across for rowers. Near each rower hangs a quiver of arrows, in case of an attack; these nations living in continual war. The canoes carry 80 persons; the slaves only are exposed to the damps of the air, the masters being sheltered in the night by reed mats spread upon poles, and fixed in the form of tents. At the east end of Loitomba river, called by the Portuguese Rio do Santo Domingo, which is three leagues from the mouth of Rio Real, is a large town inhabited by negro traders, who traffic in slaves, which they bring from distant countries. Next to Loitomba is Old Calbaria, or Calborg river. The interjacent country is unprovided with water: the coast from Rio Real to ancient Calborg is 24 leagues in extent, north-north-east. See CALABAR.

CALBE, a town of Germany, in the circle of Lower Saxony, and duchy of Magdeburg, on the Saal; 20 miles S. of Magdeburg.

CALBE, or KALBE, a town of Germany, in the circle of Upper Saxony, and old mark of Brandenburg; 8 miles from Gardeleben.

CALBERGA, a town of Hindoostan, in the country of Hydrabad, formerly a large city, and the stated residence of the kings of the Deccan; but now less populous, since it ceased to be the seat of royalty: 85 miles W. of Hydrabad, and 110 E. of Vissapour. N. lat. $17^{\circ} 25'$. E. long. $77^{\circ} 25'$.

CALBIS, a town of Egypt, 3 miles N. of Rosetta.

CALBIS, in *Ancient Geography*, a river of Asia Minor, in the Doride, according to Ptolemy, and in Caria, according to Pomponius Mela. Pliny calls it Indus, and says that it sprung from the mountains of Cibyra, and that it received in its course 60 rivers, and more than 100 torrents. Its mouth was in the north-west part of the gulf of Glaucus, W. of the promontory of Pedalium.

CALBONGAS, in *Geography*, the inhabitants of a country in Africa, which lies near the source of the river Rio do Rey, or the King's River, and borders on Biafra, at a distance from the coast. They are described as a wicked, deceitful, and filthy people, who are naked, except that they cover their private parts, and who bedaub their bodies with various colours, and figures traced on their foreheads. They are represented as destitute of natural affection, as well as sincerity, inasmuch that parents sell their children, husbands their wives, and brothers their sisters. In this country, those criminals are declared innocent, who make an incision and suck the blood out of their arms. See RIO DO REY.

CALBUCO, a town of South America, in the kingdom of Chili, and military government of Chiloe, on the coast of the South Pacific Ocean, inhabited by Spaniards, Mestizos, and Indians, with one parish church, a convent of Franciscans, another of the Fathers of Mercy, and a college of Jesuits. In this town resides a Corregidor, who is nominated by the President of Chili. It is situate 180 miles S. of Valdivia. S. lat. $42^{\circ} 40'$. W. long. $73^{\circ} 37'$.

C. ALBUM, in *Entomology*, a species of CURCULIO found in Europe, and described by Scopoli. This insect is varied with copper and black, and is particularly distinguished by having an incurved line on the wing-cases at the base, next to the external angle.

C. ALBUM, is also the specific name of a well known species of the European PIERIDAE, called in England the comma butterfly. This insect has the wings angulated, fulvous, spotted with black: posterior wings beneath marked with a white curved line resembling the letter C, whence its name.

CALCADA, in *Geography*. See CALZADA.

CALCAGIUM, in *Middle Age Writers*, a tax or contribution paid by the neighbouring inhabitants towards the making or repairing of a common causeway.

CALCAGNINI, CELIO, in *Biography*, a learned Italian, was probably the illegitimate son of the apostolical Prothonotary at Ferrara, and born in 1579. Having borne arms, after the completion of his studies, under the emperor Maximilian, and pope Julius II., he was employed in various embassies, and honourable commissions. On his return from Hungary, whither he accompanied cardinal Hippolito d'Este in 1518, he was made professor of belles-lettres in the university of Ferrara, which office he held till his death in 1541. He was distinguished by his promotion of the Academy, "Degli Elevati," in that city; and by the liberal donation of his valuable library, and collection of mathematical instruments to the Franciscans of Ferrara, on condition of their preserving them for public use. He wrote much both in prose and verse. His prose works were collected by Frobenius at Basil in 1544. Among those that relate to antiquities are, the 3 books, "Quæstionum Epistolicarum," and his treatises, "De Rebus Ægyptiacis," "De Re Nautica," and "De Talorum, Tesserarum, et Calculorum Ludis." Others relate to philosophy, morals, and politics. Before Copernicus published his system, he wrote a book to prove, "Quod Cælum stat, Terra moveatur." Erasmus highly applauds this author; though others condemn his style as laboured and overwhelmed with quotations. His poetical style was more esteemed. Three books of his Latin poems were published at Venice in 1553, with those of Pigna and Ariosto. Tiraboschi.

CALCANEUM, or CALCANEUS, in *Anatomy*, the same as calx, os calcis, calcar, or the heel bone.

It lies under the astragalus, to which it is articulated by ginglimus; behind it is a large protuberance, which makes the heel, and into which the tendo achillis is inserted.

CALCANTHUM, in *Mineralogy*. See VITRIOL.

CALCAR, in *Anatomy*, the same with CALCANEUM.

CALCAR, or KELKAR, JOHN, in *Biography*, a painter of history and portrait, was born at Calcar in 1499, and he excelled so much as a disciple of Titian, that several of his designs and paintings have been ascribed even by Goltzius to this eminent master. Sandrart affirms, that he also imitated the works of Raphael so exactly, that some of his productions have been esteemed to be Raphael's own. His "Nativity," which was a much admired composition, and which exhibited the light proceeding from the infant, was in the possession of Rubens; and after his death purchased by Sandrart, and sold to the emperor Ferdinand, by whom it was very highly prized. Calcar designed all the heads for the works of Vasari, and the anatomical figures in those of Vesalius. He died in 1546. Pilkington's Dictionary by Fuseli.

CALCAR, in *Botany*, a conic projection from some part of a flower resembling a cock's spur. Tropæolum, the nasturtium or Indian cress of the gardeners, is an instance of a calcarate or spurred calyx; delphinium, or larkspur, of a calcarate corolla; and orchis of a calcarate nectary.

CALCAR, in *Conchology*, a species of TURBO, the shell of which is somewhat imperforated and depressed; whorls scabrous: spines above compressed and hollow. Linn. &c. This is the Calcar of Rumphius and Argenville. Chemnitz gives several distinct varieties of this shell from India, the South Seas, and the Mediterranean.

CALCAR, a species of NAUTILUS, found in the Adriatic sea, and described by Plancus among his microscopic shells.

shells. It is distinguished specifically by the aperture being of a linear form, and having the joints of the whorls elevated. This is a minute shell of an opake white colour, and has been found on the shore of Sheppy island.

CALCAR, in *Entomology*, a species of **CURCULIO**, the colour of which is black: thighs with a single tooth: antennæ and feet testaceous. Fabricius. This is a small insect, and inhabits Germany.

CALCAR, in *Geography*, a town of Germany, in the circle of Westphalia, and duchy of Cleves, about 5 miles from the Rhine. It contains two convents and two churches, one for Roman Catholics, and one for Protestants, and all other sects are tolerated; 5 miles S. E. of Cleves. N. lat. $51^{\circ} 47'$. E. long. $5^{\circ} 41'$.

CALCAR, in *Glass-making*, is the name of a small oven, or reverberatory furnace, in which the first calcination of sand and salt of pot-ashes is made, for the turning them into what they call FRIT.

CALCARATA, in *Entomology*, a species of **BUPRESTIS** that inhabits Germany. The wing-cases are bidentated, and somewhat striated: shanks of the middle pair of legs toothed: body coppery. Schall. Herbst gives this the name of *Buprestis eruginosa*.

Obf. This is of a small size, with four striz on the wing-cases, and a single black blue line on the thorax.

CALCARATUS, an European species of **CERAMBYX**, of a violaceous-black colour, with rufous thighs, the posterior ones dentated. Scop. Ann. Hist.

CALCARATUS, a species of **CIMEX**, of a fuscous colour, with the abdomen sanguineous above, and the posterior thighs six-toothed. Fabricius. Inhabits Europe.

CALCAREOUS, something that partakes of the nature and qualities of **CALX**, or lime.

CALCAREOUS cements. See **CEMENTS calcareous**.

CALCAREOUS earth. See **LIME**.

CALCAREOUS earth, in *Agriculture*, a sort of earth in which calcareous matter abounds. Earths of this kind have the following properties in common:—They become friable when burnt in the fire, and afterwards fall into a fine white powder, which is promoted, if after being burnt they be thrown into water, by which a strong heat arises, and a partial solution takes place. They cannot be melted by themselves into glass in a close fire; but when burnt, they augment the causticity of pot-ashes, and they are dissolved in acids with effervescence. This earth is found pure, in the form of a powder, in some places, and called by chemists *læ læna*. It is of a white colour, and is met with in some moory situations, at the bottoms of lakes, and in the fissures of free-stone quarries, in some of the midland districts. In some countries, as Sweden, the colour varies to red and yellow. This is supposed to be lime-stone washed from the rocks, and pulverized by the motion of the water. It is, however, found in quantities too small to admit of any applications to agricultural purposes. It is frequently met with in a friable or compact state in the form of chalk. The white chalk is the purest, yet it contains, according to lord Dundonald, a little siliceous, and about two *per cent.* of argillaceous earth. There is more fixed air in chalk than in any other calcareous earth, generally about forty *per cent.* It is also seen in a hard or indurated state in lime-stone; and united with the sulphuric or vitriolic acid, in the form of gypsum, selenite, or what is generally termed plaster of Paris. It is likewise combined with clay in the form of marl. See **LIME-STONE**, **GYPNUM**, and **MARL**.

It is maintained by lord Dundonald, in his treatise on the "Connection of Agriculture with Chemistry," "that it constitutes not only the surface, or soil, but likewise the under-

stratum of many countries to a very great depth; and that under this general name of calcareous matter are included chalk, marble, lime-stone, coral, shells, &c. The three first mentioned are frequently mixed with iron, and with different proportions of the simple earths, but are considered as calcareous when the proportion of that earth predominates. This material is capable of absorbing, and of retaining moisture; though in a considerably less degree than clay. By the action of the fire it becomes lime, and returns again to the state of chalk or calcareous matter, by exposure to the air or atmosphere." And it is stated by Dr. Fordyce, in his "Elements of Agriculture and Vegetation," "that when combined with gas or fixed air it is termed *mild*, but that when free from it, it is *caustic*; that calcareous earth, when mixed with clay, gives a greater friability to it than sand does; that it unites with sulphur, forming *hepar sulphuris*; and with animal and vegetable substances, forming a soap. It prevents putrefaction. It attracts acids more strongly than volatile alkali or magnesia. If it be exposed to the air, it attracts from it the fixable air, and reverts to the state it was in before it was burnt. Mild calcareous earth forwards putrefaction. It is soluble in water, and when reduced to the state of a powder, and applied to a soil, it is apt to be washed through it. Caustic volatile alkali will not precipitate calcareous earth, if dissolved in an acid; but fixed vegetable alkali will. This distinguishes it from the other earths. Vitriolic acid will not dissolve it so as to form a clear solution; and if this acid be added to a solution of it in any other, it will make a precipitation.

It is suggested by the author of *Phytologia*, that one great use of calcareous earth consists "in its uniting with the carbon of the soil in its pure or caustic state, or with that of the vegetable or animal recrements, during some part of the process of putrefaction; and thus rendering it soluble in water, by forming an *hepar carbonis*, somewhat like an *hepar sulphuris* produced by lime and sulphur, by which process, it is supposed, the carbon is rendered capable of being absorbed by the lacteal vessels of vegetable roots. The black liquor which flows from dunghills is, it is thought, probably a fluid of this kind; but the author speaks hypothetically, as he has not verified it by experiment; and the carbon may be simply supported in the water by mucilage, like the coffee drank at our tea tables; or may be converted into an *hepar carbonis* by its union with the fixed alkali of the decaying vegetable matter, or by the volatile alkali which accompanies some stages of putrefaction." And a second mode by which it is believed to assist the purpose of vegetation "is by its union with carbonic acid, and rendering it thus soluble in water in its fluid state, instead of its being expanded into a gas; and thus a great quantity of carbon may be drank up by vegetable absorbent vessels. In the practice newly invented of watering lands by driving streams over them for many weeks together, it has been said, that water from springs is generally more effectual, in promoting vegetation, than that from rivers; which, though it may in part be owing to the azotic gas, or nitrogen, contained in some springs, as those of Buxton and of Bath, according to the analysis of Dr. Priestley, and of Dr. Pearson, yet it is supposed to be principally owing to the calcareous earth, which abounds in all springs, which pass over marly soils, or through calcareous strata; and which does not exist in rivers, as the salts washed into rivers from the soil all seem to decompose each other except the marine salt, and some magnesian salt which are carried down into the ocean. The calcareous earth likewise, which is washed into rivers, enters into new combinations, as into gypsum, or perhaps into siliceous sand, and subsides." And a still farther mode in which

which calcareous earth may promote vegetation is, it is conceived, "by its containing phosphorus, which by its union with it may be converted into an *hepar*, and thus rendered soluble in water without its becoming an acid, by the addition of oxygen. Phosphorus it is supposed, is probably as necessary an ingredient in vegetable as in animal bodies; which appears by the phosphoric light visible on rotten wood during some stages of putrefaction; in which, it is supposed, the phosphorus is set at liberty from the calcareous earth, or from the fixed alkali, or from the carbon of the decomposing wood, and acquires oxygen from the atmosphere; and both warmth and light are emitted during their union. But phosphorus may, perhaps, more frequently exist in the form of phosphoric acid in vegetables, and may thus be readily united with their calcareous earth, and may be separated from its acid, by the carbon of the vegetable during calcination, and also during putrefaction, which may be considered as a slow combustion. The existence of a solution of phosphoric acid and calcareous earth in the vessels of animals is proved by the annual renovation of the shells of crab-fish, and by the fabrication of the egg-shells in female birds; and is occasionally secreted, where it cements the wounds made on snail shells; or where it joins the present year's growth of a snail shell to the part where a membranous cover had been attached for the protection of the animal during its state of hybernation; and lastly, it is further evident from the growth of the bones of quadrupeds, and from the deposition of callus to join them when they have been broken." It is therefore contended, that "many arguments may be adduced to show, that calcareous earth, either alone, or in some of the states of combination, mentioned above, may contribute to the nourishment and support of both animals and vegetables. First, because calcareous earth constitutes a considerable part of them, and must of course be either received from without, or formed by them, or both; and secondly, because from the analogy of all organic life, whatever has composed a part of a vegetable or animal, may again, after its chemical solution, become a part of another vegetable or animal; such, it is observed, is the transmigration of matter. See **LIME** and **MANURE**.

CALCAREOUS manures, are all such as abound in calcareous matter. Chalk, pounded lime-stone, lime, calcareous marl, shells, and various other substances of a similar kind, are of this description. They are found particularly beneficial on all the stiffer sorts of soil when made use of in due proportions.

CALCAREOUS soils, such as are constituted of this sort of material in a large proportion. From their dry and friable nature, soils of this nature are in general well suited to the growth of most sorts of grain, as well as some plants of the artificial grass kind, such as clover, saint-foin, &c. See **SOIL**.

CALCAREOUS spar. See **LIME-STONE**.

CALCARIA, in *Ancient Geography*, thought by some to be *Calissane*, a city of Gallia Narbonensis, upon the Aurelian way, west of Aquæ Sextiæ.

CALCARIA, a town of Ancient Britain, 9 miles from Eburacum, and 20 miles from Cambodunum, according to the Itinerary of Antonine, placed by some at Tadcaster, by others at Newton-kyme.

CALCAYLARES, in *Geography*, a jurisdiction of South America, in the country of Peru, situate between Cusco and the sea, and commencing 4 leagues west of the city of Cusco. The air in this jurisdiction excels that of all the other provinces, and accordingly it produces an exuberance of all kinds of grain and fruits. In the hottest parts called "Lares" were formerly very large plantations of sugar canes, but for want of hands to cultivate them, they are

now so diminished, that instead of 60 or 80,000 arobas which they annually produced, they are now reduced to less than 30; but the sugar is of such an excellent kind, that without any other preparation than that of the country, it is equal both in colour and hardness to the refined sugar of Europe. This diminution of its sugar has greatly lessened the principal branch of its commerce.

CALCEARIUM, or **CALCIARIUM**, in *Antiquity*, a donative, or largess bestowed on the Roman soldiers for buying shoes. In the moralities, *calcearium* denoted the daily service of cleaning the shoes of the religious.

CALCEDONIANS, a denomination given by Copt writers to the **MELCHITES**, on account of their adherence to the council of Calcedon. See **COPHTI**, **MONOPHYTES**, &c.

CALCEDONIUS is a term used by the jewellers for a defect in some precious stones, when, in turning them, they find white spots, or stains, like those of the *calcedony*, or *chalcedony*. This defect is frequent in granates and rubies. The lapidaries usually remedy it by hollowing the bottom of the stone.

CALCEDONY. See **CHALCEDONY**.

CALCENA, in *Geography*, a town of Spain, in Arragon; 14 miles S. of Tarragona.

CALCENA, a term used by some medicinal writers to denote a morbid tartareous humour in the body.

CALCEOLARIA, in *Botany*, (from *Calceolus*, a little slipper.) Slipperwort. Linn. Mant. 171. Reich. 32. Schreb. 39. Willd. 51. Gært. 374. La Marck Illust. 36. Juss. p. 120. Vent. vol. ii. p. 297. Class and order, *diandria monogynia*. Nat. Ord. *Corydalis*; Linn.? *Scrophulariæ*, Juss. *Rhinanthoides*, Vent.

Gen. Ch. *Cal.* one-leaved, with four, equal, spreading divisions; permanent. *Cor.* monopetalous, bilabiate, inverted: upper lip very small, contractedly globular; lower lip large, inflated, concave, slipper-shaped, gaping before. *Stam.* filaments two, very short, within the upper lip; anthers incumbent, two-lobed. *Pist.* germ superior, roundish; style very short; stigma rather obtuse. *Peric.* capsule somewhat conic, two-furrowed, two-celled, two-valved. *Seeds* numerous, egg-shaped.

Eff. Ch. *Calyx* with four equal divisions. *Corolla* ringent; lower lip inflated, concave. *Capsule* two-celled.

So. 1. *C. pinnata*, Linn. Mant. 171. Aët. Stock. 1770. t. 8. Feuil. Peruv. 3. 12. t. 7. Curt. Mag. t. 41. Gært. tab. 62. f. 4. Lam. Illust. Pl. 15. f. 2. "Leaves winged." Annual. Stem erect, two feet high, round, branched, pubescent, slightly swelling at the knots. *Leaves* opposite, without stipules, brittle, pubescent, soft, spreading, longer than the internodes, unequally winged, of a delicate green colour; leaflets nearly opposite or alternate, sometimes, as represented in Curtis's figure, so united as to make the leaf only pinnatifid; sometimes, as in a specimen now before us, from a plant raised by R. A. Salisbury, esq. completely separate, bluntly serrated, narrowed at their base, and frequently decurrent on the common petiole. *Flowers* yellow, axillary and terminating. *Capsule* thin, swelled at the base, and diminishing to a pyramidal top, deeply furrowed; mature valves bifid at the tip; partition contrary to the valves. *Seeds* small, pale, marked with about six longitudinal, crenulated furrows. A native of Peru: introduced into England in 1773 by sir Joseph Banks, Bart. 2. *C. integrifolia*, Willd. Smith icon. ined. 1. p. 3. *C. falsiv. folio*, Feuil. Peruv. 3. t. 7. *C. ferrata*, Lam. "Leaves lanceolate, wrinkled, serrated; flowers in terminal panicles." Smith. *Root* fibrous. *Stem* branched, round, two or three feet high. *Leaves* opposite, sessile, bright green above, pubescent and pale beneath.

neath. *Flowers* yellow, peduncled. A native of Peru and Chili. 3. *C. ovata*, Smith icon. ined. 1. t. 3. *C. dichotoma*, La Marck. *C. integrifolia*, Linn. Supp.? "Stem branched; leaves egg-shaped, scolloped." Smith. Pubescent in all its parts. *Root* annual, fibrous. *Stem* slender, round, dichotomous, seven or eight inches high. *Leaves* small, opposite; upper ones sessile, acuminate; lower ones petioled and rather obtuse. *Flowers* small, yellow, on simple peduncles, axillary and terminating. Found in Peru by Dombey. It flowered in the royal garden at Paris in 1781. 4. *C. perfoliata*, Linn. Sup. Mutis. Amer. v. 1. t. 3. Smith icon. ined. 1. t. 4. "Leaves perfoliate, arrow-shaped, downy on both sides." Smith. A handsome plant, very different in its appearance from all the other species. *Stem* about a foot and a half high, round, pubescent, branched. *Leaves* opposite, triangular, or almost arrow-shaped, irregularly toothed, woolly and white beneath. *Flowers* yellow, large, in bundles at the tops of the branches, on simple or branched peduncles. *Calyx* large. *Bractes* resembling the leaves, but egg-shaped and sessile, not perfoliate. Found in New Granada by Mutis, and in Peru by Joseph Jussieu. 5. *C. crenata*, Willd. La Marck. "Leaves sessile, oblong, acute, scolloped; flowers in cymes terminating the stems and branches." *Stem* about two feet high, downy. *Leaves* opposite, almost embracing the stem, resembling those of *Rhinanthus crista galli*, green above, downy and pale beneath. Found in Peru by Joseph Jussieu. 6. *C. resinariifolia*, Willd. La Marck. "Leaves linear, very entire, reflexed at the margin, downy beneath; stem smooth." *Stem* about a foot and a half high, round, more or less branched. *Leaves* opposite, smooth and viscous above, especially when young. *Flowers* yellow; in terminating cymes on smooth, viscous peduncles. Found in Peru by Joseph Jussieu. 7. *C. plantaginea*, Willd. Smith icon. ined. 1. t. 2. La Marck. "Scapes with few flowers; leaves rhomb-shaped, ferrated." *Leaves* only from the root, veined, smooth, fringed with jointed hairs, narrowed at their base into petioles, about two inches long. *Scapes* two or three, as long again as the leaves, with two yellow flowers. Found by Commerfon at the Straits of Magellan. 8. *C. nana*, Willd. Smith icon. ined. 1. t. 1. *C. uniflora*, La Marck. Pl. 15. f. 3. "Scapes one-flowered; leaves egg-shaped, very entire." Smith. *Leaves* all radical, scarcely an inch long, smooth, narrowed into a petiole at their base. *Scapes* as long again as the leaves. *Flowers* large, yellow, spotted with red; upper lip very short, vaulted; lower lip elongated, pendulous, and swelling; edge membranous; folded back, angular. Found at the Straits of Magellan by Commerfon. 9. *C. Fothergillii*, Willd. Aiton. Kew. 1. t. 1. La Marck. Pl. 15. f. 1. copied from Hortus Kewensis. "Leaves spatulate, very entire; peduncles in the form of scapes, one-flowered." Biennial. *Stems* scarcely an inch high, subdivided near the root. *Leaves* scarcely an inch long, opposite, many-nerved, obtuse, hairy above, narrowed into petioles. *Peduncles* solitary or in pairs, twice the length of the leaves. Divisions of the *calyx* acute, bent in at the end, hairy without. Upper lip of the *corolla* yellow, erect, vaulted, a little shorter than the *calyx*; lower lip descending, four times as long as the upper, dilated in front, inflated, pale yellow underneath, above red at the sides, in front yellow with red spots, near the palate yellow; aperture large, open; filaments inserted into the sides of the *corolla* at the base of the aperture; anthers roundish, large; style thick, the length of the stamens; stigma thickened, flat. A native of Falkland islands, introduced by Dr. Fothergill in 1777.

Propagation and Culture.—The first and the last are the only ones hitherto cultivated in England. The first may

be easily raised from seeds sown on a gentle hot-bed in the spring: the seedlings, when of a proper size, may be transplanted into the borders of the flower garden, where they will flower, ripen, and scatter their seeds; but being a delicate plant, it appears to most advantage in a tan-stove, in which, as it will grow from cuttings, it may be had in flower all the year, by planting them in succession. Curtis.

CALCEOLARIA (Læf.). See *VIOLA Calceolaria*, and *Oppositifolia*.

CALCEOLUS, a genus formed by Tournefort corresponding with cypripedium of Linnæus. Tournefort's name is that of nearly all the old authors.

CALCEOLUS Lapponeum (Scheff Lap.). See *ACONITUM Lycopodium*.

CALCEOLUS Philippensis (Petiv.). See *KÆMPFERIA Galanga*.

CALCHAS, in *Fabulous History*, a famous diviner, who followed the Greek army to Troy. He is said to have predicted, that the siege of Troy would last ten years, and that the fleet, which was detained in the port of Aulis by contrary winds, would not set sail till Agamemnon's daughter had been sacrificed to Diana. After the capture of Troy, he is said to have retired to Colophon, and to have died there with grief, because he could not divine what another man of his own profession, called Mopsus, discovered; thus fulfilling a prediction mentioned by Sophocles, according to which, Calchas was to die as soon as he should meet with his master in the art of divining. If Suidas is to be credited, one of the Sibyls was Chalcas's daughter; her name was Lampasa; he calls her the Colophonian; and ascribes to her some oracles in verse. Gen. Dict.

CALCHOPHONOS lapis, among the ancients, a name given to a stone of a black colour and considerable hardness, which, when cut into thin plates, and struck against by any other hard body, gave a sound like that of brass; it seems to have been one of the hard black marbles.

CALCIANA, in *Geography*, a town of Naples, in the province of Basilicata; 16 miles S.E. of Acerenza.

CALCIFRAGA, in *Botany*, (Lobel.) See *CRITHMUM maritimum*.

CALCIFRAGUS, *stone-breaking*, an appellation given by some to the *scelopendrium*; by others to pimpernel, on account of their lithontriptic quality.

CALCIMURITE, in *Mineralogy*, a species of earth or stone, in which magnesia is mixed with a notable proportion of calcareous earth and some iron. The colour is blue or olive-green, of the consistency of clay: the latter contains no argil, but merely calcareous earth and magnesia tinged with iron: the former contains a larger proportion of calcareous earth. Both are found near Thionville: the former is used by potters. Kirwan's El. Min. vol. i. p. 146.

CALCINARA, in *Geography*, a town of Italy, in the duchy of Tuscany; 12 miles E. of Pisa.

CALCINATION. In general, a substance is said to be calcined when it has been exposed to heat of a sufficient intensity to drive off every thing volatile, but short of that requisite for its fusion. A calx, therefore, was understood by the ancient chemists to be a pulverulent substance no longer combustible or capable of further alteration by fire than that of vitrification.

As most of the metals were found to be reducible to such a form by a continuance of a melting heat, the term *calces of metals* was long particularly appropriated to them, and is still partially retained, though it has been chiefly supplanted by the more characteristic appellation of *oxyd*, which expresses the peculiar change that occurs in calcining metallic bodies by the absorption of oxygen. *Calcination*, therefore, expresses

presses the *mode* (or at least one mode), by which, in metals, this change is produced, and oxidation the *circumstance* of change. It is, however, obviously improper to consider the term calcination as synonymous with oxidation, even in speaking of metals, since the true original sense of the former term implies the agency of fire; whereas, oxidation may be produced as well by the action of acids, as by heat and air. Of the calces, or calcined bodies, in which the change is totally independent of the absorption of oxygen, *calcined flints*, *calcined plaster of Paris*, and *calcined hartshorn*, are common examples.

CALCINATION of *gold and silver by electricity*, was effected by Mr. Canton, who, by the heat of electrical explosions, produced numberless beautiful globules of transparent glass, and also others tinged with all the varieties of colour from those metals. He made it also probable that the black dust discharged from the brass chain, and other pieces of metal in such experiments, is the calx or glass of the metal reduced to smaller particles than the laws of optics require to produce colour. Hist. of Elect. edit. 1775, vol. ii. p. 292. See ELECTRICAL Battery.

CALCINATO, in *Geography*, a town of Italy, in the Bergamasco; 7 miles S.E. of Bergamo.

CALCINATO, a town of Italy, belonging to the state of Venice, in the Bressan, where the Imperial troops were defeated by the duke of Vendôme, in 1706; eight miles S.E. of Brescia. N. lat. $45^{\circ} 25'$. E. long. $9^{\circ} 55'$.

CALCINELLA, in *Conchology*, the name given by Adanson to the *Mastra piperata* of Poirer. See PIPERATA.

CALCINELLE of Adanson, the Gmelinian VENUS DE-ALBATA.

CALCIS Os, in *Anatomy*. See Os calvis.

CALCITRAPA, in *Botany*. (Hal. Helvet. p. 193, 194.) See CENTAUREA *felsitialis* and *calcitrapa*.

CALCITRAPA lutea. (Vail. act. 1718, p. 212.) See CENTAUREA *criophora*.

CALCITRAPOIDES, (Lfn. Paris, 1719, 9.) See CENTAUREA *Isnardi*. The calcitrapæ form a section in the genus centaurea of Linnæus, which consists of such species as have the spines of the calyx compound. Jussieu has formed a distinct genus for them, in which he has been followed by Gærtner, Ventenat, and Bosc. The name is a hybrid production from the Latin calx, the sole of the foot, and the Greek *τραπε*, which signifies to turn, and was suggested by the resemblance of the calyx, in these plants, to a machine used in war, consisting of sharp spikes, which turn on an axle when touched with the foot. It is called by the French *chauffe-trape*. See CENTAUREA.

CALCUA, or NALCUA, in *Ancient Geography*, a town of the Atrebatii, in Ancient Britain, generally agreed to have been the same with the *Calleva*, in the Itinerary of Antonine, placed 22 miles from Venta Belgarum, or Winchester. Antiquaries are much divided about the precise situation of this place. See ATREBATII.

CALCULARII, in *Antiquity*, a sort of jugglers who practised slight of hand. Their art consisted in laying several calculi, or counters on the table, then covering them with cups, and shifting and changing them with dexterity, like what is practised by our jugglers.

CALCULARY of a pear, a congeries of little stony knots dispersed through the whole parenchyma of the fruit.

The calculary is no vital or essential part of the fruit; the several knots whereof it consists being only so many concretions or precipitations out of the sap, as we see in urines, wines, and other liquors.

CALCULATION, the act of computing several sums, by adding, subtracting, multiplying, or dividing. See

ARITHMETIC. An error in calculation is never protected, or secured, by any sentence, decree, &c. In stating accounts, there is always understood, *salvo errore calculi*.

The word calculus is used in this sense, in allusion to the practice of the ancients, who used *calculi*, or little stones, in making computations, in taking suffrages, and in keeping accounts, &c. as we now use counters, figures, &c.

A merchant or trader is said to have been mistaken in his calculation, or accounts, when he has happened to take false measures, and has not succeeded in his undertakings so well as he expected.

CALCULATION is more particularly used to signify the computations in astronomy and geometry, for making tables of logarithms, ephemerides, finding the times of eclipses, &c.

CALCULATION of clock and watch work. See CLOCK and WATCH-WORK.

CALCULATION, in *Music*. D'Alembert, and many other theorists, and eminent mathematicians, are of opinion, that the calculation of ratios is of no use in practical music: supposing that a good ear and strong hand on instruments, where the tone depends on the performer, are a musician's best guides for true intonation. In the prelim. disc. to his Elem. de Mus. 2d edit. the great mathematician cautions theoretical musicians against the admission of mathematical or metaphysical principles in music. On this subject, he says: "it would be absurd to expect what is called *demonstration*: it is an achievement of no small importance, to have reduced the principal facts to a system consistent with itself and firmly connected with its parts; to have deduced them from one single experiment (the harmonies of a single string or sounding body), and to have established on that foundation, the most common and essential rules of the art. In digesting and compressing M. Rameau's principles, I had no desire to multiply his calculations: I rather wished to suppress them as much as possible; so much was it to be feared that the generality of readers would be led into a belief, that all this arithmetic was necessary to form a practical musician. Calculation may, indeed, facilitate the intelligence of certain points in theory, such as the relation between the tones of the gammut and temperament; but the calculation necessary for treating these two points is so simple and trifling, that it merits no display. Let us not, therefore, imitate those musicians who believe themselves geometers, or those geometers who fancy themselves musicians; and, in their writings, heap figures on figures, imagining, perhaps, that this display is necessary to the art. The ambition of giving to their productions a scientific appearance, imposes only on the ignorant, and has no other effect than to render their treatises more obscure and less instructive."

CALCULATOR, a machine contrived and constructed by Mr. Ferguson, in the shape of an orrery, for exhibiting the motions of the earth and moon, and resolving a variety of astronomical problems. See an account of the construction, figure, and use of this machine, in Ferguson's Astronomy, 4to. p. 283, &c.

CALCULATOIRES, in *Antiquity*, accountants who reckoned their sums by *calculi*. There were several servants under this denomination in great families. Children also at school were taught to practise the same. In the ancient canons we find a sort of diviners or enchanters, censured under the denomination of *calculatores*.

CALCULUS, primarily denotes a little stone, pebble, or counter, anciently used in making computations, taking of suffrages, playing at tables, and the like. Hence the phrase *ponere calculos*, to denote a series of reasons, and a multitude of others alluding to the use of these calculi in accounts.

Computilla

CALCULUS.

Computists were by the lawyers called *calculus*, when they were either slaves, or newly freed men; those of a better condition were denominated *calculatores*, or *numerarii*: ordinarily there was one of these masters in each family of distinction; the title of whose office was a *calculus*, or a *rationibus*.

The Roman judges anciently gave their opinions by *calculi*, which were white for absolution, and black for condemnation. Hence *calculus albus*, in ancient writers, denotes a favourable vote, either in behalf of a person to be absolved and acquitted of a charge, or elected to some dignity or post; as *calculus niger* did the contrary. This usage is said to have been borrowed from the Thracians, who marked their happy or prosperous days by white, and their unhappy by black pebbles, put each night into an urn. Hence also the phrases, *signare*, *notare aliquid albo*, *nigrove lapillo seu calculo*.

Besides the diversity of colour, there were some also which had figures or characters painted or engraven on them; as those which were in use in taking the suffrages both in the senate and at assemblies of the people. The letters marked upon these *calculi* were U. R. for *uti rogas*, and A. for *antiquo*; the first of which expressed an approbation of the law, the latter a rejection of it. Afterwards the judges, who sat in capital causes, used *calculi* marked with the letter A. for *absolvo*, C. for *condemno*, and N. L. for *non liquet*; signifying a more full information was required.

We may also mention another species of *calculi* used at the public games, whereby the rank and order in which the athletes were to fight were determined. If for instance they were twenty, then twenty of these pieces were cast into an urn; each ten were marked with numbers from one to ten, and the law was, that each of those who drew, should fight him who had drawn the same number. These were called *calculi athletici*.

CALCULUS is also used in *Ancient Grammatic Writers* for a kind of weight equal to two grains of cicer. Some make it equivalent to the *siliqua*, which is equal to three grains of barley. Two *calculi* made the *ceratium*.

CALCULUS also denotes a certain method of performing mathematical investigations and resolutions. Thus, we say the antecedental calculus, the arithmetical or numeral calculus, the algebraical calculus, the calculus of derivations, the differential calculus, the exponential calculus, the fluxional calculus, the integral calculus, the literal or symbolical calculus, &c. See the following articles.

CALCULUS, *Antecedental*. This is a geometrical method of reasoning without any consideration of motion or velocity, applicable to every purpose, to which fluxions have been or can be applied. It was invented by James Glenie, esq. A. M. and fellow of the Royal Societies of London and Edinburgh, as early as 1774, but not published till the year 1793, when it was printed in London for G. G. I. and I. Robinsons, Paternoster-Row. As he derived it from an examination of the antecedents of ratios, having given consequents and a given standard of comparison in the various degrees of augmentation and diminution, which they undergo by composition and decomposition, he denominated it the Antecedental Calculus. It is certainly founded on principles admitted into the very first elements of geometry, and repeatedly made use of by Euclid himself. The inventor of this calculus does not in imitation of modern mathematicians talk of the powers of magnitudes and quantities, but considers every expression in it as truly and strictly geometrical, or rather as universally metrical in a geometrical form. For although the general formulæ in his universal comparison, from which it is derived in an easy, simple direct, and con-

cise manner, are established on the same principles with those of Euclid's elements of geometry, and are deduced in a demonstrative way from an application of some of the truths contained in those elements to the doctrine of ratios or proportion, they are, strictly speaking, generally metrical, and extend not only to geometry, but also to algebra and arithmetic, when the standard of comparison is supposed to become 1 or arithmetical unity. The transitions from them in their geometrical forms to their algebraic and numerical ones are, as Mr. Glenie has observed, so natural, so scientific, and so beautiful, that they cannot fail to furnish the mind with the highest pleasure and satisfaction, in pointing out, as it were, at one general view, the connection between these different sciences, and unfolding the reasons of their various operations, from the same indisputable and mathematical principles. He has not, like other mathematicians, in considering ratio, confined himself to any particular modification of it; but he has regarded it as a magnitude possessing all the measurable affections of any other magnitude, viz. addition, subtraction, multiplication, division, and ratio or proportion, or, as admitting, like other magnitudes, of augmentation or diminution, of increase or decrease. He is the first person, that we know of, who has roundly and expressly considered ratio or proportion as an affection of ratio, which it most unquestionably is. And by applying the elements of geometry to this consideration of it, he has extended the geometrical analysis indefinitely farther than any one before him, either among the ancients or moderns, as far as we are able to discover, has carried it. That he formed the design of applying geometry to ratios under this conception of them, as magnitudes *sui generis*, capable of all the possible degrees of increase and decrease, though they know no diversity of dimension in respect of kind, being homogeneous, and differing not in kind, but only in degree, and actually made such an application of it when he could not have been above eighteen or twenty years of age, is evident from his own performances. For in a short introduction to a paper read before the Royal Society of London, the 6th of March, 1777, and published in their transactions, which is entitled, "The general Mathematical Laws, that regulate and extend Proportion universally; or a Method of comparing Magnitudes of any kind together, in all the possible Degrees of Increase and Decrease," he makes use of the following words:

"The doctrine of proportion laid down by *Euclid* and the application of it given by him in his elements, form the basis of almost all the geometrical reasoning made use of by mathematicians both ancient and modern. But the reasonings of geometers with regard to proportional magnitudes have seldom been carried beyond the triplicate ratio, which is the proportion that similar solids have to one another, when referred to their homologous linear dimensions. This boundary, however, comprehends but a very limited proportion of universal comparison, and almost vanishes into nothing when referred to that endless variety of relations, which must necessarily take place between geometrical magnitudes in the infinite possible degrees of increase and decrease. The first of these takes in but a very contracted field of geometrical comparison; whereas the last extends it indefinitely. Within the narrow compass of the first, the ancient geometers performed wonders; and their labours have been pushed still farther by the ingenuity and indefatigable industry of the moderns. But no author, that I have been able to meet with, gives the least hint or information with regard to any general method of expressing geometrically, when any two magnitudes of the same kind are given, what degree of augmentation or diminution

diminution any one of these magnitudes must undergo, in order to have to the other any multiply or submultiply *ratio* of these magnitudes in their given state; or any such ratio of them, as is denoted by fractions or surds; or (to speak still more generally) a *ratio*, which has to the *ratio* of the first-mentioned of these magnitudes, to the other the *ratio* of any two magnitudes whatever, of the same but of any kind. Neither have I been able to find, that any other author has shewn geometrically, in a general way, when any number of *ratios* are to be compounded or decompounded with a given *ratio*, how much either of the magnitudes in the given *ratio* is to be augmented or diminished, in order to have to the other a *ratio*, which is equal to the given *ratio*, compounded or decompounded with the other *ratios*. To investigate all these geometrically, and to fix general laws in relation to them, is the object of this paper; which, as it treats of a subject as new as it is general, I flatter myself will not prove unacceptable to this learned society. It would be altogether superfluous for me to mention the great advantages that must necessarily accrue to mathematics in general, from an accurate investigation of this subject, since its influence extends more or less to every branch of abstract science, when any *data* can be ascertained for reasoning from. I shall in a subsequent paper take an opportunity of shewing, how from the theorems afterwards delivered in this, a method of reasoning with finite magnitudes geometrically may be derived without any consideration of motion or velocity, applicable to every purpose, to which fluxions have been applied." He then defines magnitude to be "that which admits of increase or decrease," and quantity to be "the degree of magnitude," observing, that "by magnitude he means, beside extension, every thing which admits of more or less, or what can be increased or diminished, such as *ratios*, velocities, powers, &c.

In a short performance of his, printed in Latin, in 1776, entitled "Leges Metaphysicæ, seu Principia Mathematica, quæ Omnia fere ad Magnitudinum Rationes, Rationumque Relationes spectantia universaliter gubernant et indefinite proferunt," he gives the same metaphysical definitions of magnitude and quantity, with a declaration of what he means by magnitude, *viz.*

"Magnitudo est id, quod augeri vel diminui potest."

"Quantitas est gradus magnitudinis."

"Per magnitudinem, præter extensionem, omnia, quæ augeri vel diminui possunt, sicut rationes, velocitates, vires, &c. intelliguntur."

And in his Universal Comparison itself he says, "When I speak of magnitude, I mean to be understood as taking it in its general, abstracted, unlimited, and metaphysical acceptation, *viz.* to be whatever admits of more or less, of increase or decrease; and by quantity I mean the degree of magnitude." And to prevent any misconception of his meaning or intention, in regard to his mode of expressing magnitudes geometrically, and connecting them together by means of the customary signs, he makes use of the following words:—"When I mention the sum of magnitudes, or speak of them as additive or subtractive, I only mean that they are to be taken with or from other magnitudes of the same kind. The signs plus and minus are only intended to denote such aggregates and differences, or to connect magnitudes together in these relations, and by no means to convey any numerical ideas in the following theorems or formulæ, or to imply in themselves any sort of mystery, or even meaning, independent of the magnitudes thus connected. By

$A \cdot \frac{C-D}{D}, A \cdot \frac{A-B}{B}, A \cdot \frac{A-B}{B}^2$, &c. I mean a fourth pro-

portional to D, C-D, and A; a fourth proportional to B, A-B, and A; a fourth proportional to B, A-B, and $A \cdot \frac{A-B}{B}$, &c. respectively. I am obliged to have re-

course to such expressions in the formulæ, which ought not on any account to be considered as algebraic, as it is impossible to express them by means of geometrical schemes or figures in such a way, as to be sufficiently or clearly understood."

As both the differential and fluxionary calculi are immediately, and with the greatest facility derivable from this calculus when the expressions in it are supposed to become numerical, or the standard of comparison to be 1, or arithmetical unity, and in forms too altogether unexceptionable, and as it is itself chiefly derived from the 1st and 5th formulæ in theorem 3 of the universal comparison, it is perhaps necessary to prove the truth of these formulæ, by means of what is delivered in the paper first herein above-mentioned, that was read before the Royal Society of London in 1777, in which, among other things, it is demonstrated geometrically, that if *n* be any whole or integral number whatsoever, and A and B be any two homogeneous magnitudes,

$A + \frac{n-1}{1} \cdot A \cdot \frac{A-B}{B} + \frac{n-1}{1} \cdot \frac{n-2}{2} \cdot A \cdot \frac{A-B}{B}^2 + \&c.$ to $A \cdot \frac{A-B}{B}^{n-1}$ has to B, such a multiply *ratio* of A to

B, as is expressed by the number *n*. Now if in this geometrical expression for A, we substitute its equal $B + \frac{A-B}{B}$

we get the following expression: $B + \frac{n}{1} \cdot \frac{A-B}{B} + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{A-B}{B}^2 + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{n-2}{3} \cdot \frac{A-B}{B}^3 + \&c.$ to $\frac{A-B}{B}^{n-1}$ hav-

ing also to B such a multiply *ratio* of A to B as is expressed by the number *n*. This expression may also be easily derived geometrically by means of Euclid's elements, in the manner pursued by Mr. Glenie in that paper. For let MN, NO, and OP be each equal to, or represent B, and let NR represent A. Let OP, NR be drawn perpendicularly to VO, or otherwise, if in the same angle; and let the rectangles or parallelograms MR, NP be completed. Let LM be a fourth proportional to OP, MN, and NR-OP, and let the rectangle or parallelogram LQ be completed.

Then (14. E. 6.) LT is equal to TR, and since MT is equal to TQ by construction, LM is equal to QR, or A-B, and LN to A or B + $\frac{A-B}{B}$. And since by (23. E. 6.) MR has to NP the *ratio* compounded of the *ratios*

Y		Z	S	R		
			A-B	A-B	A-B	
∠ I		H	T		Q	P
					E	
					A B	B
V	K	L	M	F	N	B

CALCULUS.

of MN to NO and NR to OP, the magnitude LN, which has to B the ratio compounded of the ratio of A to B, and the ratio of equality B to B is expressed by $B + \frac{A-B}{1}$. In like manner if PJ, RY be parallel to VO and KY to NR, and KL be a fourth proportional to OP, QR, and LN, or to B, A-B, and $B + \frac{A-B}{1}$, it will be equal to $\frac{A-B}{A-B + \frac{A-B}{1}}$ and KN will be equal to $B + \frac{2}{1}$.

$$\frac{A-B}{A-B + \frac{2}{1}} + \frac{2-1}{2} \cdot \frac{A-B}{B}$$

Again, if VK be a fourth proportional to OP, QR, and KN, or to B, A-B, and $B + \frac{2}{1} \cdot \frac{A-B}{B} + \frac{2}{1} \cdot \frac{2-1}{2}$. $\frac{A-B}{B}$, it will be equal to $A-B + 2 \cdot \frac{A-B}{B} + \frac{A-B}{B^2}$ and VN will of course be equal to $B + 3 \cdot \frac{A-B}{B} + 3 \cdot \frac{A-B}{B^2} + \frac{A-B}{B^3}$ or to $B + \frac{3}{1} \cdot \frac{A-B}{B} + \frac{3}{1} \cdot \frac{3-1}{2} \cdot \frac{A-B}{B^2} + \frac{A-B}{B^3} + \frac{3}{1} \cdot \frac{3-1}{2} \cdot \frac{3-2}{3} \cdot \frac{A-B}{B^3}$. Wherefore the

magnitude of the same kind with A and B, which has to B the triplicate ratio of A to B, or, which comes to the same thing, the ratio, that arises by compounding the triplicate ratio of A to B, with the ratio of equality B to B, is geometrically expressed by $B + \frac{3}{1} \cdot \frac{A-B}{B} + \frac{3}{1} \cdot \frac{3-1}{2} \cdot \frac{A-B}{B^2} + \frac{A-B}{B^3} + \frac{3}{1} \cdot \frac{3-1}{2} \cdot \frac{3-2}{3} \cdot \frac{A-B}{B^3}$. And universally by the

same geometrical reasoning it is found that $B + \frac{n}{1} \cdot \frac{A-B}{B} + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{A-B}{B^2} + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{n-2}{3} \cdot \frac{A-B}{B^3} + \dots$ to $\frac{A-B}{B^{n-1}}$ has to B such a multiple ratio of A to

B, or of $B + \frac{A-B}{1}$ to B, as is expressed by the number n. And as A-B may be equal to any magnitude C of the same kind with A and B the expression $B + \frac{n}{1} \cdot \frac{C}{B} + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{C^2}{B^2} + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{n-2}{3} \cdot \frac{C^3}{B^3} + \dots$ to $\frac{C^n}{B^{n-1}}$ is a magnitude of the same kind with C and B, that has to B such a multiple ratio of B + C to B as is expressed by the number n.

The foregoing expressions are obtained geometrically when A is greater than B. But if A be less than B, and be represented by EN or FN, we have FM equal to B-A, and by proceeding in an exactly similar manner we get the geometrical expression $B - \frac{n}{1} \cdot \frac{B-A}{B} + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{B-A}{B^2}$

$- \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{n-2}{3} \cdot \frac{B-A}{B^3} + \dots$ to $\pm \frac{B-A}{B^{n-1}}$ for the magnitude of the same kind with A and B, that has to B such a multiple ratio of A to B, or of

$B - \frac{B-A}{1}$ to B, as is expressed by the number n. And, as $\frac{B-A}{B-A}$ may be equal to any magnitude C, of the same kind with A and B, $B - \frac{n}{1} \cdot \frac{C}{B} + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{C^2}{B^2} - \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{n-2}{3} \cdot \frac{C^3}{B^3} + \dots$ to $\pm \frac{C^n}{B^{n-1}}$ has to B such a multiple ratio of B-C to B as is expressed by the number n.

That $B + \frac{nr}{q} \cdot \frac{A-B}{B} + \frac{nr}{q} \cdot \frac{nr-q}{2q} \cdot \frac{A-B}{B^2} + \dots$ has to B such a multiple ratio of $B + \frac{r}{q} \cdot \frac{A-B}{B} + \frac{r}{q} \cdot \frac{r-q}{2q} \cdot \frac{A-B}{B^2} + \dots$ to B as is expressed by

the number n is thus shewn. Let B + D be equal to $B + \frac{r}{q} \cdot \frac{A-B}{B} + \frac{r}{q} \cdot \frac{r-q}{2q} \cdot \frac{A-B}{B^2} + \dots$ (r and q having to each other the ratio of any two homogeneous magnitudes whatever). Then $B + \frac{n}{1} \cdot D + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{D^2}{B} + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{n-2}{3} \cdot \frac{D^3}{B^2} + \dots$ to $\frac{D^n}{B^{n-1}}$ has to B (by what is above demonstrated) such a multiple ratio of B + D to B, as is expressed by the number n. Now if the term, in which A-B is found in the value of D be multiplied by $\frac{n}{1}$ the co-efficient of D we get $\frac{nr}{q} \cdot \frac{A-B}{B}$ for the second term of the expression, (in terms of n, r, q, and A-B). And if the term, in which $\frac{A-B}{B}$ is found in the value of D,

be multiplied by $\frac{n}{1}$ the co-efficient of D, and the term, in which $\frac{A-B}{B}$ is found in the value of $\frac{D^2}{B}$, be multiplied by $\frac{n}{1} \cdot \frac{n-1}{2}$ the co-efficient of $\frac{D^2}{B}$, these taken together will give us $\frac{nr}{q} \cdot \frac{nr-q}{2q} \cdot \frac{A-B}{B^2}$ for the third term. And by thus proceeding we get $B + \frac{n}{1} \cdot D + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{D^2}{B} + \frac{n}{1} \cdot \frac{n-1}{2} \cdot \frac{n-2}{3} \cdot \frac{D^3}{B^2} + \dots$ to $\frac{D^n}{B^{n-1}}$ equal to B

$+ \frac{nr}{q} \cdot \frac{A-B}{B} + \frac{nr}{q} \cdot \frac{nr-q}{2q} \cdot \frac{A-B}{B^2} + \dots$ whatever be the ratio of r to q. Precisely in the same manner it is proved that the ratio $B - \frac{nr}{q} \cdot \frac{B-A}{B} + \frac{nr}{q} \cdot \frac{nr-q}{2q} \cdot \frac{B-A}{B^2} - \dots$ to B is a multiple by n of the ratio $B - \frac{r}{q} \cdot \frac{B-A}{B} + \frac{r}{q} \cdot \frac{r-q}{2q} \cdot \frac{B-A}{B^2} - \dots$ to B.

This then being premised, it can be generally, and at the same time very briefly proved, that $B + \frac{r}{q} \cdot \frac{A-B}{B} + \frac{r}{q} \cdot \frac{r-q}{2q} \cdot \frac{A-B}{B^2} + \dots$

$$\frac{r-q}{2q} \cdot \frac{A-B}{B} + \frac{r}{q} \cdot \frac{r-q}{2q} \cdot \frac{r-2q}{3q} \cdot \frac{A-B}{B^2} + \&c.$$

has to B such a ratio, as has to the ratio of $B + A - B$ to B, or of A to B, the ratio of r to q , be the ratio of r to q what it may, by taking any multiples whatsoever of these ratios and the same multiples of r and q . For the sake of perspicuity let these magnitudes, and their multiples, stand in the following manner:

The magnitudes.	Their multiples.
1st. r	Of the 1st. nr
2d. q	Of the 2d. mq
3d. $B + \frac{r}{q} \cdot A - B + \frac{r}{q} \cdot \frac{r-q}{2q} \cdot \frac{A-B}{B} + \&c. : B$	3d. $B + \frac{nr}{q} \cdot A - B + \frac{nr}{q} \cdot \frac{nr-q}{2q} \cdot \frac{A-B}{B} + \&c. : B$
4th. $B + A - B : B$	4th. $B + \frac{m}{1} \cdot A - B + \frac{m}{1} \cdot \frac{m-1}{2} \cdot \frac{A-B}{B} + \&c. : B$

Now it is evident, that if nr be equal to mq , by substituting mq for nr , the ratio $B + \frac{nr}{q} \cdot A - B + \frac{nr}{q} \cdot \frac{nr-q}{2q} \cdot \frac{A-B}{B} + \&c. : B$ is equal to, or becomes the ratio $B + \frac{m}{1} \cdot A - B + \frac{m}{1} \cdot \frac{m-1}{2} \cdot \frac{A-B}{B} + \&c. : B$. . . to $\frac{A-B}{B^{m-1}} : B$.

It is equally evident, that if nr be greater than mq , the antecedent $B + \frac{nr}{q} \cdot A - B + \frac{nr}{q} \cdot \frac{nr-q}{2q} \cdot \frac{A-B}{B} + \&c.$ is greater than $B + \frac{m}{1} \cdot A - B + \frac{m}{1} \cdot \frac{m-1}{2} \cdot \frac{A-B}{B} + \&c.$ to $\frac{A-B}{B^{m-1}}$ since . . .

$$\left. \begin{array}{l} \frac{nr}{q}, \frac{nr}{q} \cdot \frac{nr-q}{2q}, \&c. \\ \frac{mq}{q}, \frac{mq}{q} \cdot \frac{mq-q}{2q}, \&c. \\ \text{or than } \frac{m}{1}, \frac{m}{1} \cdot \frac{m-1}{2}, \&c. \end{array} \right\}$$

and the ratio $B + \frac{nr}{q} \cdot A - B + \frac{nr}{q} \cdot \frac{nr-q}{2q} \cdot \frac{A-B}{B} + \&c. : B$ is, of course, a greater ratio of greater inequality than the ratio $B + \frac{m}{1} \cdot A - B + \frac{m}{1} \cdot \frac{m-1}{2} \cdot \frac{A-B}{B} + \&c. : B$ is. And it is no less evident that, if nr be less than mq , the antecedent $B + \frac{nr}{q} \cdot A - B + \frac{nr}{q} \cdot \frac{nr-q}{2q} \cdot \frac{A-B}{B} + \&c.$ is less than the antecedent $B + \frac{m}{1} \cdot A - B + \frac{m}{1} \cdot \frac{m-1}{2} \cdot \frac{A-B}{B} + \&c.$

$$\left. \begin{array}{l} \frac{m-1}{2} \cdot \frac{A-B}{B} + \&c. \text{ since } \dots \frac{nr}{q}, \frac{nr}{q} \cdot \frac{nr-q}{2q}, \&c. \\ \text{are then respectively less than } \dots \frac{mq}{q}, \frac{mq}{q} \cdot \frac{mq-q}{2q}, \&c. \\ \text{or than } \dots \frac{m}{1}, \frac{m}{1} \cdot \frac{m-1}{2}, \&c. \end{array} \right\}$$

and the ratio $B + \frac{nr}{q} \cdot A - B + \frac{nr}{q} \cdot \frac{nr-q}{2q} \cdot \frac{A-B}{B} + \&c. : B$ is then, of course, a less ratio of greater inequality than the ratio $B + \frac{m}{1} \cdot A - B + \frac{m}{1} \cdot \frac{m-1}{2} \cdot \frac{A-B}{B} + \&c. : B$ is.

Here then are four magnitudes, and any equimultiples being taken of the 1st and 3d, and also any equimultiples being taken of the 2d and 4th, it is proved that, if the multiple of the 1st be equal to the multiple of the 2d, the multiple of the 3d is also equal to the multiple of the 4th; if greater, greater; and if less, less. Wherefore (5. Def. E. 5.) the magnitudes themselves are proportional, or the ratio $B + \frac{r}{q} \cdot A - B + \frac{r}{q} \cdot \frac{r-q}{2q} \cdot \frac{A-B}{B} + \&c. : B$ is to the ratio $B + A - B : B$ as $r : q$ whatever be the ratio of r to q .

Having thus fully explained the doctrine of proportion, on which this calculus is grounded, we will briefly illustrate Mr. Glenie's derivation of it from the same, and then shew, with how much ease and facility both the differential and fluxionary calculi may be derived from the same source, and in a manner too altogether unexceptionable.

If for R and Q we substitute r and q in the 1st and 5th formulæ, in the 3d theorem of his Universal Comparison, they become respectively $A + \frac{r-q}{q} \cdot A \cdot \frac{A-B}{B} + \frac{r-q}{q} \cdot \frac{r-2q}{2q} \cdot A \cdot \frac{A-B}{B^2} + \frac{r-q}{q} \cdot \frac{r-2q}{2q} \cdot \frac{r-3q}{3q} \cdot A \cdot \frac{A-B}{B^3} + \&c.$ and $B + \frac{r}{q} \cdot A - B + \frac{r}{q} \cdot \frac{r-q}{2q} \cdot \frac{A-B}{B} + \frac{r}{q} \cdot \frac{r-q}{2q} \cdot \frac{r-2q}{3q} \cdot \frac{A-B}{B^2} + \&c.$ the 1st of which is immediately derived from the first, by substituting for A in it, where it stands unconnected with B by the sign minus. $B + A - B$, which is equal to A, and is the very magnitude, which we have just proved to have to B a ratio, which has to the ratio of $B + A - B : B$ or of A to B the ratio of $r : q$, even when r has to q the ratio of any two homogeneous magnitudes whatsoever.

Mr. Glenie, however, takes the 1st of these two formulæ, and supposes $A + N$ to be in the first place substituted in it every where for A. By this substitution he gets $A + N + \frac{A-N}{B} \cdot A + N$ for the magnitude, which has to B the duplicate ratio of $A + N$ to B, exceeding the magnitude $A + A \cdot \frac{A-B}{B}$, which has to B the duplicate ratio of A to B, by $\frac{2AN + N^2}{B}$. In like manner he gets the ex-

CALCULUS.

cefs of the magnitude, which has to B the triplicate ratio of $A+N$ to B above the magnitude, which has to B the triplicate ratio of A to B, equal to the geometrical expreffion $\frac{3AN + 2AN^2 + N^3}{B^3}$. And he thus finds, in general,

that the excefs of the magnitude, which has to B such a ratio, as has to the ratio of $A+N$ to B the ratio of r to q , (when r has to q any given ratio whatever,) above the magnitude, which has to B such a ratio, as has to the ratio of A to B, the fame ratio of r to q is geometrically expreffed by $\frac{r}{q} \cdot A^{\frac{r-q}{q}} \cdot N + \frac{r}{q} \cdot \frac{r-q}{q} \cdot A^{\frac{r-2q}{q}} \cdot N^2 + \frac{r}{q} \cdot \frac{r-q}{q} \cdot \frac{r-2q}{q} \cdot A^{\frac{r-3q}{q}} \cdot N^3 + \&c.$

Precifely in the fame manner he makes it appear, that the excefs of the magnitude, which has to B such a ratio, as has to the ratio of A to B the ratio of r to q , above the magnitude, which has to B such a ratio, as has to the ratio of $A-N$ to B the ratio of r to q is geometrically expreffed by

$\frac{r}{q} \cdot A^{\frac{r-q}{q}} \cdot N - \frac{r}{q} \cdot \frac{r-q}{q} \cdot A^{\frac{r-2q}{q}} \cdot N^2 + \frac{r}{q} \cdot \frac{r-q}{q} \cdot \frac{r-2q}{q} \cdot A^{\frac{r-3q}{q}} \cdot N^3 - + - \&c.$

But if $A+N$ and $A-N$ stand to A in relations nearer to that of equality than by any given or affigned magnitudes of the fame kind, each of thefe general expreffions becomes

$\frac{r}{q} \cdot A^{\frac{r-q}{q}} \cdot N$. Thus he calls the antecedental of the magnitude, which has to B such a ratio, as has to the ratio of A to B the ratio of r to q .

Now if N , the antecedental of A, be denoted by \dot{A} or \ddot{A} (for the notation does not at all alter the cafe) the antecedental $\frac{r}{q} \cdot A^{\frac{r-q}{q}} \cdot N$ becomes $\frac{r}{q} \cdot A^{\frac{r-q}{q}} \cdot \dot{A}$

or $\frac{r}{q} \cdot \frac{A^{\frac{r-q}{q}}}{B^{\frac{r-q}{q}}} \cdot \dot{A}$ and has to \dot{A} or \ddot{A} the ratio of

$\frac{r}{q} \cdot \frac{A^{\frac{r-q}{q}}}{B^{\frac{r-q}{q}}} : B$. If $q=1$ and $r=2, 3, 4, \&c.$ it gives

$\frac{2A\dot{A}}{B}, \frac{3A^2\dot{A}}{B^2}, \frac{4A^3\dot{A}}{B^3}, \frac{5A^4\dot{A}}{B^4}, \&c.$ refpectively. If

$r=1$ and $q=2, 3, 4, \&c.$ it gives $\frac{A^{-\frac{1}{2}}\dot{A}}{2B^{-\frac{1}{2}}}, \frac{A^{-\frac{1}{3}}\dot{A}}{3B^{-\frac{1}{3}}},$

$\frac{A^{-\frac{1}{4}}\dot{A}}{4B^{-\frac{1}{4}}}, \&c.$ refpectively. And if $q=1$ and $r=\sqrt{2},$

$\sqrt[3]{3}, \sqrt[4]{4}, \sqrt[5]{5}, \&c.$ it gives $\sqrt{2} \cdot \frac{A^{\sqrt{2}-1}\dot{A}}{B^{\sqrt{2}-1}},$

$\frac{\sqrt[4]{3} \cdot A^{\frac{1}{3}-1}\dot{A}}{B^{\frac{1}{3}-1}}, \frac{\sqrt[4]{4} \cdot A^{\frac{1}{4}-1}\dot{A}}{B^{\frac{1}{4}-1}}, \&c.$ refpec-

tively, and fo on.

Mr. Glenie then makes ufe of the laft of thefe two formulæ, which is the 5th of theorem 3d, to come at the fame conclufions. By it, when A stands to B in a relation nearer to that of equality than by any given or affigned magnitude of the fame kind, the excefs of the magnitude, (which has to B such a ratio as has to the ratio of A to B the ratio of

r to q), above B is generally expreffed by $\frac{r}{q} \cdot \frac{A-B}{q}$ or

by $\frac{r}{q} \cdot \dot{A}$ or by $\frac{r}{q} \cdot \ddot{A}$, fince in this relation of (A to B),

$A-B$ may be denoted by \dot{A} or \ddot{A} ; which expreffion is always as the meafure or quantity of the ratio, that the faid formula has to B, whatever be the relation of A to B. For in the fimple, duplicate, triplicate ratios, $\&c.$ it gives $\dot{A}, 2\dot{A}, 3\dot{A}, \&c.$ and in the fubduplicate, fubtriplicate ratios, $\&c.$ $\frac{\dot{A}}{2}, \frac{\dot{A}}{3}, \&c.$ or $\frac{\ddot{A}}{2}, \frac{\ddot{A}}{3}, \&c.$ But if the ratio of $\frac{r}{q}$

\dot{A} to \ddot{A} or $\frac{r}{q} \cdot \dot{A}$ to \ddot{A} , which denotes the relation be-

tween the quantities of the ratios, that the magnitude expreffed by this formula and A have refpectively to B, be compounded with the ratio of thefe magnitudes themfelves, when A has to B any ratio whatever, or with that of

$\frac{A^{\frac{r}{q}}}{B^{\frac{r}{q}}}$ to A we get the ratio $\frac{r}{q} \cdot \frac{A^{\frac{r}{q}}}{B^{\frac{r}{q}}} \dot{A}$ to $A \cdot \dot{A}$, which

is equal to the ratio of $\frac{r}{q} \cdot \frac{A^{\frac{r}{q}}}{B^{\frac{r}{q}}}$ to B the ratio of the

antecedentials of $\frac{A^{\frac{r}{q}}}{B^{\frac{r}{q}}}$ and A as found above.

It is certainly worthy of remark, that the antecedental of any fuch magnitude as $\frac{A^{\frac{r}{q}}}{B^{\frac{r}{q}}}$ is a fourth proportional to B

the fandard of comparifon, the magnitude itfelf, and the antecedental of the magnitude of the ratio, which it has to the fandard B. Thus a fourth proportional to B, A , and $\frac{B \cdot \dot{A}}{A}$ is \dot{A} or \ddot{A} the antecedental of A; a fourth pro-

portional

CALCULUS.

portional to B, $\frac{A^2}{B}$, and $\frac{2B \cdot \dot{A}}{A}$ is $\frac{2A \cdot \dot{A}}{B}$; and a fourth

proportional to B, $\frac{\frac{A}{B} \cdot \dot{A}}{\frac{r-1}{r}}$, and $\frac{r}{q} \cdot \frac{B \cdot \dot{A}}{A}$ is $\frac{r}{1}$.

$\frac{A}{B} \cdot \frac{\dot{A}}{A} \cdot \frac{r-1}{r}$. Also $1 : A^2 :: \frac{2A}{A} : 2A \cdot \dot{A}$; and $1 :$

$$A^2 :: \frac{3\dot{A}}{A} : 3A^2 \cdot \dot{A}.$$

By means of the first formula in theorem 1 of his Universal Comparison, which expresses the magnitude, that has to B such a ratio, as arises by compounding any number of ratios C to D, E to F, &c. with the ratio of A to B, he

determines the antecedental of $\frac{A \cdot C}{D}$ to be $\frac{AC + CA^a}{D}$ or

$$\frac{AC + CA^a}{D}, \text{ and that of } \frac{A \cdot C \cdot E}{D \cdot F} \text{ to be } \frac{AC \cdot E}{DF} +$$

$$\frac{AE \cdot \dot{C}}{DF} + \frac{CE \cdot \dot{A}}{DF} \text{ or } \frac{ACE + AEC + CE\dot{A}}{DF}, \text{ and}$$

so on, supposing the consequents D, F, &c. of the ratios to be variable. And it is observable, that the antecedental of $\frac{AC}{D}$ is equal to a fourth proportional to B, the mag-

nitude $\frac{AC}{D}$ itself, and the antecedental of the magnitude

of the ratio of A to B, together with a fourth proportional

to D, the magnitude $\frac{AC}{D}$ and the antecedental of the

magnitude of the ratio of C to D; that the antecedental of $\frac{ACE}{DF}$ is equal to a fourth proportional to B, $\frac{ACE}{DF}$ and

the antecedental of the magnitude of the ratio of A to B,

together with a fourth proportional to D, $\frac{ACE}{DF}$, and the

antecedental of the magnitude of the ratio of C to D, to-

gether with a fourth proportional to F, $\frac{ACE}{DF}$, and the

antecedental of the magnitude of the ratio of E to F; and

so on.

He makes use of the first formula in Theorem 2, Univer-

sar Comparison, which expresses the magnitude, that has to B such a ratio, as arises by compounding any number of

ratios C to D, E to F, &c. with the ratio of A to B to de-

termine the antecedental of $\frac{AD}{C}$, $\frac{ADF}{CE}$, and so on for any

And it is easily shewn, from the principles he has laid

down, that the antecedental of $\frac{A^v}{B^v-B}$ is $\frac{A^v}{B^v-B} \times$

$$\frac{A^v}{B^v-B} \times \left(\frac{VM+MV}{B^2} \right) \text{ or } \frac{A^v}{B^v} \times \left(\frac{VM+MV}{B} \right) \text{ or that the antece-}$$

dental of $\frac{A^v}{B^{v-1}}$ is $\frac{A^v}{B^{v-1}} \times \left(\frac{M+M^a}{B} \right)$. For, if M denote

the magnitude of the ratio A : B to the standard of com-

parifon B, vM will be the magnitude of the ratio of A

to B. But $\frac{A^v}{B^{v-1}} : B ::$ the antecedental of $\frac{A^v}{B^{v-1}}$:

the antecedental of vM ($vM+M^a$). Wherefore the ante-

cedental of $\frac{A^v}{B^{v-1}}$ is $\frac{A^v}{B^{v-1}} \times \left(\frac{vM+M^a}{B} \right)$ or $\frac{A^v}{B^{v-1}} \times$

$$\left(\frac{vM+M^a}{B} \right).$$

The antecedents and their antecedentials will therefore

stand thus, B being the standard of comparison.

Antecedent. Antecedental.

$$A \quad \cdot \quad A^a \text{ or } \dot{A}$$

$$A \cdot \frac{A}{B} \quad \cdot \quad \frac{2A\dot{A}}{B} \text{ or } \frac{2A\dot{A}}{B} \text{ or } 2\dot{A} + \frac{2N\dot{A}}{B} \text{ (putting}$$

$$N \text{ for } A-B), \text{ or, \&c.}$$

$$A^2 \text{ or } A \cdot \frac{A}{B} \cdot B \quad \cdot \quad 2A\dot{A} \text{ or } 2B\dot{A} + 2N\dot{A}, \text{ or \&c.}$$

$$\frac{A^3}{B^2} \text{ or } A \cdot \frac{A^2}{B^2} \quad \cdot \quad \frac{3A^2\dot{A}}{B^2} \text{ or } \frac{3A\dot{A}}{B} + \frac{3AN\dot{A}}{B^2} \text{ or } 3\dot{A} +$$

$$\frac{6N\dot{A}}{B} + \frac{3N^2\dot{A}}{B^2}, \text{ or \&c.}$$

$$A^3 \text{ or } A \cdot \frac{A^2}{B^2} \cdot B^2 \quad \cdot \quad 3A^2\dot{A}, \text{ or } 3B\dot{A} + 3AN\dot{A}, \text{ or } 3B^2\dot{A}$$

$$+ 6BNA + 3N^2\dot{A}, \text{ or \&c.}$$

$$\text{And in } \left\{ \begin{array}{l} \frac{A^2}{B^2} \\ \frac{A^2}{B^2} \end{array} \right. \quad \cdot \quad \frac{r \cdot \frac{A}{B} \cdot \dot{A}}{q \cdot B \cdot \frac{r-1}{r}}$$

$$\text{or } \frac{r\dot{A}}{qB} + \frac{r}{q} \cdot \frac{r-2q}{q} \cdot \frac{AN\dot{A}}{B^2} +$$

$$\frac{r}{q} \cdot \frac{r-2q}{q} \cdot \frac{r-3q}{2q} \cdot \frac{AN^2\dot{A}}{B^3} + \&c.$$

$$\text{or } \frac{r\dot{A}}{q} + \frac{r}{q} \cdot \frac{r-q}{q} \cdot \frac{N\dot{A}}{B} + \frac{r}{q} \cdot \frac{r-q}{q} \cdot \frac{r-2q}{2q} \cdot \frac{N^2\dot{A}}{B^2} + \&c.$$

or \&c. \&c.

Antecedent.

CALCULUS.

Antecedent.	Antecedental.
$\frac{AC}{D}$	$\frac{AC+CA}{D}$ or &c. &c.
$\frac{AC}{DF}$	$\frac{AC+CA}{DF}$, or &c.
$\frac{ACE}{DF}$	$\frac{ACE+AEC+CEA}{DF}$, or &c.
$\frac{ACE}{DF}$	$\frac{ACE+AEC+CEA}{DF}$, or &c.
And so on.	
$\frac{AD}{C}$	$\frac{CDA-ADC}{C^2}$, or &c.
$\frac{BA}{B^2}$	$\frac{BA}{B^2}$
$\frac{DA^n}{B^n}$	$\frac{nDA^{n-1}A}{B^n}$, or &c. &c.
$\frac{B+A+C}{B^n}$	$\frac{A+C}{B^n}$
$\frac{BA+DA^n}{B^n}$	$\frac{BA+nDA^{n-1}A}{B^n}$, or &c.
$\frac{Av}{B^{v-1}}$	$\frac{Av}{B^{v-1}} \times \left(\frac{vM+Mv}{B} \right)$, or &c. calling M the magnitude of the ratio of A to B.

&c. &c.

&c. &c.

Mr. Glenie informs us that this calculus first occurred to him in 1774, and that, as it is purely geometrical and perfectly scientific, he has always since that time used it instead of the fluxionary and differential calculi. In a paper, which was written in a great measure at the request of some of his friends, as he informs us, and is published in the fourth volume of the Transactions of the Royal Society of Edinburgh, explanatory of its principles, to prevent misconceptions and erroneous opinions respecting them, he shews that they are the same with those on which the geometrical formulae in the Universal Comparison itself are founded; that no indefinitely small or infinitely little magnitudes are supposed in it, but only magnitudes less than any that may be given or assigned, and ratios nearer to that of equality than any that may be given or assigned, and proves it to be equally geometrical with the method of exhaustions of the ancients, who never supposed lines, surfaces, or solids to be resolved into infinitely small or infinitely little elements. He says, indeed, that the expression, *infinitely little magnitude*, implies a contradiction, since what has magnitude cannot be infinitely little.

We shall now shew, with what facility both these other calculi may be derived from the same principles.

The general geometrical expressions, from which the

antecedental of $\frac{A^{\frac{r}{q}}}{B^{\frac{r}{q}}}$ was derived,

$$\begin{aligned} & \text{become } \frac{r}{q} \cdot A^{\frac{r}{q}} \cdot N + \frac{r}{q} \cdot \frac{r-q}{2q} \cdot A^{\frac{r}{q}} \cdot N^2 + \&c. \\ & \text{and } \frac{r}{q} \cdot A^{\frac{r}{q}} \cdot N - \frac{r}{q} \cdot \frac{r-q}{2q} \cdot A^{\frac{r}{q}} \cdot N^2 + \&c. \end{aligned}$$

respectively when B the standard or comparison, becomes 1, or arithmetical unity, and when $A+N$ and $A-N$ are to A in relations nearer to that of equality than by any given, or assigned magnitude of the same kind they become

each of them $\frac{r}{q} \cdot A^{\frac{r}{q}} \cdot N$. Now if we denote the differential of A by dA , and substitute this for N we get

$\frac{r}{q} \cdot A^{\frac{r}{q}} dA$ for the differential of $A^{\frac{r}{q}}$, and if we call \dot{A}

the fluxion of A and substitute it for N we get $\frac{r}{q} \cdot A^{\frac{r}{q}}$

\dot{A} for the fluxion of $A^{\frac{r}{q}}$. And it is evident that $\frac{r}{q} \cdot A^{\frac{r}{q}}$

$A^{\frac{r}{q}} dA$ is a fourth proportional to 1 (the arithmetical standard of comparison, to which the expressions both in the fluxionary and differential calculi have a reference),

$A^{\frac{r}{q}}$, and $\frac{r}{q} \cdot \frac{dA}{A}$ the differential of the magnitude of the

ratio $A^{\frac{r}{q}} : 1$ to the said standard 1; and that $\frac{r}{q} \cdot A^{\frac{r}{q}}$

\dot{A} is a fourth proportional to 1, $A^{\frac{r}{q}}$, and $\frac{r}{q} \cdot \frac{\dot{A}}{A}$ the fluxion

of the magnitude of the ratio $A^{\frac{r}{q}} : 1$ to the same standard 1. If, therefore, we make use of x, y, z , &c. instead of the variable magnitudes A, C, E, &c. in the antecedental calculus as delivered by its inventor, the integrals and their differentials will stand as follows:

Integral.

Differential.

x	dx
x^2	$2x dx$
x^3	$3x^2 dx$
x^r	$r x^{r-1} dx$
$\frac{r}{q} \cdot x^{\frac{r}{q}}$	$\frac{r}{q} \cdot x^{\frac{r}{q}-1} dx$
$\frac{xy}{b}$	$\frac{x dy + y dx}{b}$
$\frac{xyz}{b}$	$\frac{xy dz + xz dy + yz dx}{b}$
$\frac{x}{y}$	$\frac{y dx - x dy}{y^2}$
$a+x+y$	$dx+dy$
x^v	$v x^{v-1} dx$ putting m for the magnitude of the ratio of x to 1.
&c. &c. &c.	&c. &c. &c.

And the fluents and their fluxions will stand in the following manner.

Fluent.

Fluxion.

x	\dot{x}
x^2	$2x \dot{x}$
x^3	$3x^2 \dot{x}$
x^r	$r x^{r-1} \dot{x}$

Fluent.

Fluent.	Fluxion
$\frac{r}{x^q}$	$\frac{r}{q} \cdot x^{q-1}$
xy	$xy' + yx'$
$\frac{xy}{b}$	$\frac{xy' + yx'}{b}$
xyz	$xyz' + xzy' + yzx'$
$\frac{x}{y}$	$\frac{yx' - xy'}{y^2}$
$a+x+y$	$x+y$
x^m	$x^m \times (m+1)$ putting m for the magnitude of the ratio of x to 1
&c. &c. &c.	&c. &c. &c.

Thus it is manifest that the fluxionary and differential calculi are legitimately derivable from one and the same source, viz. general arithmetical proportion, and are in fact a branch of it, differing only from each other in words and in the methods of notation. Sir Isaac Newton has not determined the fluxion of $\frac{r}{x^q}$ when r has to q any ratio whatsoever. Neither has Mr. Leibnitz determined the differential of $\frac{r}{x^q}$ when r and q are not integers but have to each other the ratio of any two homogeneous magnitudes whatsoever. But they are obtained immediately by this method of deriving these

calculi, and of course the fluxion and differential of $\frac{r}{x^q}$ in every possible relation, that r can stand into q , whether it be that of two integers, two surds, two lines, two surfaces, or two solids, &c.

CALCULUS, *Arithmetical*, or *Numeral*, is the method of performing arithmetical computations by numbers. See ARITHMETIC.

CALCULUS, *Algebraical*. See CALCULUS *literals* and ALGEBRA.

CALCULUS of *derivations*, denotes a general method of considering quantities, deriving themselves one from the other, particularly developed and illustrated by M. L. F. A. Arbogast, of the National Institute of France, and professor of mathematics at Strasburgh, in a treatise entitled "Du Calcul des Dérivations," &c. 4to. Strasburgh, 1800. "To form an idea (says the author) of these derivations, it is to be observed that quantities or functions, which are deduced the one from the other, by an uniform process of operations, are derived quantities; such are the successive differentials. This idea may be extended, by considering quantities that are derived one from another, not in themselves, but solely in the operations which collect and bind them together; the quantities themselves being any whatsoever, arbitrary and independent. Thus, on the supposition that, out of many different letters, the first enters solely into a function, while the two next enter into the derivative of that function; that the first three, by the same law, enter into the derivative of the derivative, and so on; we shall have the derivatives in the extended sense which I have given to them. In my theory, the quantities designated by different letters are not derived one from another; and the derivatives which I consider are less the derivatives of quantities than of operations; as algebra is less a calculus of quantities than of operations, arithmetical or geometrical, to be performed on quantities. Derivation is the operation by which a derivative is deduced from that which precedes it, or from the function. The method

of derivations, in general, consists in seizing the law that connects together the parcels of any quantities whatever; and in making use of this law as a method of calculation for passing from derivative to derivative."

In order to form the algorithm of derivations, the author has introduced new signs. Accordingly, as Leibnitz has appropriated the symbol d to denote the operation for obtaining the differential of a quantity, M. Arbogast employs the symbol D in the process for obtaining the derivative of a quantity: thus, $D(x^n) = nx^{n-1}$, $D(a^x) = a^x$; and the development of a function, $F(x+x)$, is therefore thus expressed:

$$F_x + \frac{D F_x}{1} x + \frac{D^2 F_x}{1.2} x^2 + \&c.$$

which, according to the notation in the differential calculus, is

$$F_x + \frac{d F_x}{d x} x + \frac{d^2 F_x}{1.2. d^2 x} x^2 + \&c.$$

To avoid writing the factors, 1. 2. 3. &c. in the denominators, let D^n generally represent $\frac{D^n}{1.2.3. \dots n}$; then,

$F(x+x) = F_x + D F_x x + D^2 F_x x^2 + D^3 F_x x^3 + \&c.$ This is the known form for the development of the function of a binomial; and the object of the primary articles of the present treatise is to find a form for the development of the function of a polynomial; viz. $a + \beta x + \gamma x^2 + \delta x^3 + \&c.$ The method of obtaining it may be thus briefly explained:—When a is variable, and $D a = \beta$, write $D \phi a$ for the derivative: when a is variable, and $D x = 1$, write $D \phi x$ for the derivative: therefore,

$$\phi F(a + \beta x) = \phi(F_x + D F_x x + D^2 F_x x^2 + \&c.):$$

$$\text{but } \phi F(a + \beta x) = \phi F_x + D \phi F_x x + D^2 \phi F_x x^2 + \&c.$$

$$\text{put } F_x = a, D F_x = D a, \&c. \text{ and } \phi(a + D a x + D^2 a x^2 + \&c.) = \phi a + D \phi a x + D^2 \phi a x^2 + \&c.$$

Now, to determine $D \phi a$, $D^2 \phi a$, &c. we have

$$D \phi a = D \phi a. D a$$

$$D^2 \phi a = D. (D \phi a) = D (D \phi a. D a) = D \phi a. D^2 a + D^2 \phi a. (D a)^2, \text{ and so on.}$$

To find $\phi(a + \beta x + \gamma x^2 + \&c.)$, put it $= \phi a + D \phi a x + D^2 \phi a x^2 + \&c.$; develop $D \phi a$, $D^2 \phi a$, &c.; and after development put $D a = \beta$, $D^2 a = \gamma$, $D^3 a = \delta$, &c. Hence it appears that $\phi(a + \beta x + \gamma x^2 + \&c.)$ may be converted into a series of the form $A + Bx + Cx^2 + Dx^3 + \&c.$; and the first term A will $= \phi a$.

The coefficient of the second term will $= D \phi a$, or $D A$.

The coefficient of the third term will $= D^2 \phi a$, or $D^2 A$.

The coefficient of the $n+1$ will $= D^n \phi a$, or $D^n A$;

provided that, after the derivations have been made, we put in the results β for $D a$, γ for $D^2 a$, &c. B for $D A$, C for $D^2 A$, &c.

The coefficient of x^n or A^n in the series $A + Bx + \&c.$ equals $D^n \phi a$, which is $= D \phi a. D^{n-1} \beta + D^2 \phi a. D^{n-2} \beta^2 + \&c. = D^n \phi a. \beta^n$.

The method of proof is this:—

$$\text{put } \pi = \beta + \gamma x + \delta x^2 + \&c.$$

$$\text{then } \phi(a + \beta x + \gamma x^2 + \&c.) = \phi(a + \pi x)$$

$$= \phi a + D \phi a. \pi x + D^2 \phi a. \pi x^2 + \&c.$$

$$\text{but } \pi, \pi^2, \pi^3 \dots \pi^n \text{ are functions of the polynomial, } a + \beta x + \gamma x^2, \&c.$$

$$\therefore \text{generally } \pi^n = \beta^n + D \beta \gamma x + D^2 \beta \gamma x^2 + \&c. (2)$$

Write, therefore, in series (1). for $\pi, \pi^2, \pi^3 \dots \pi^n$, the values resulting from (2); collect the terms affected with the same power of x ; and it will easily appear that the coefficient of x^n , or A^n , is such as we have stated it to be.

In this method is comprehended, as is evident, the form for the development of a polynomial raised to any power which

which was first given, but without satisfactory demonstration, by De Moivre, in the Transactions of the Royal Society, and in his "Miscellanea Analytica," p. 87. The above form of M. Arbogast has many advantages; it exhibits compendiously the law of the coefficients by means of the symbol D ; and, when the operations indicated are to be actually performed, the coefficients easily result in terms of the polynomial quantities.

The formula for the function, being general, manifestly serves for the development of expressions, such as

$$ax + \beta x + \gamma x^2 +, \&c., \text{ fin. } (a + \beta a + \gamma x^2 +, \&c.) \&c.$$

After having exhibited the general form for $\phi(a + \beta x + \gamma x^2 +, \&c.)$ M. Arbogast shews how from one term to deduce the next succeeding, and likewise how to calculate any term whatever of the development, independently of all the others. The length and intricacy of the calculations render it impossible for us to give details of these methods.

In the latter part of the first article, the author applies his method of derivation to assign the sum of the powers of the roots of an equation, in terms of the coefficients of the equation; and the formula which he deduces is remarkable for the simplicity of the law by which the coefficients are expressed. Vandermonde (Memoirs of the Academy, 1771, p. 373.), Euler (Comms. Pat. 15 vol.), La Grange (Memoirs of Berlin, 1768), and Waring (Meditationes Algebraicæ, p. 1.), having given general formulæ for the sum of the powers of the roots of an equation, M. Arbogast compares his own with the demonstration of those, and shews how they follow from it. Whoever will take the trouble of examining those several formulæ will find them not only less simply expressed than that of the present author, but less evidently and less rigorously demonstrated.

The author proceeds to the development of functions of two or more polynomials, arranged according to the powers of the same letter. Suppose the series $a + bx + cx^2 +, \&c.$ and $\alpha + \beta x + \gamma x^2 +, \&c. \&c.$ are to be multiplied together; then the product is $\alpha a + \alpha \beta x + \beta \alpha x +, \&c.$ or making $b = D, a = D^2, a, \&c. \beta = D, \alpha, \gamma = D^3, \alpha, \&c.$ the coefficients of the terms affected with $x, x^2, x^3, \&c.$ will be $(a, D, \alpha + D, a, \alpha), (a, D^2, \alpha + D, a, D, \alpha + D^2, a, \alpha),$ or $D(a, \alpha), D^2(a, \alpha),$ and the coefficient of the term affected with x^n will be $D^n, (a, \alpha),$ which may easily be developed.

Hence the form for the product of any number of series, arranged according to the powers of x , may be determined. In four series, for instance, of which the first terms are a, a', a'', a''' , the origin of the derivations will be aa', a'', a''' ; and the coefficient of the term affected with x^n , will be $D^n (aa' a'' a''')$.

In the development of the product of any two functions whatever of polynomials, for instance, of $\phi(a + bx +, \&c.)$ and $\phi(\alpha + \beta x + \&c.)$, the coefficient of the term affected with x^n will be $D^n. (\phi x. \phi a)$; which, by foregoing methods, may be easily developed.—Since $\frac{1}{A}$ and A^{-1} are equivalent ex-

pressions, by the foregoing methods, fractions such as $\frac{a + bx + cx^2 +, \&c.}{\beta x + \gamma x^2 +, \&c.}$ $\frac{1}{(A-x)^r (A-x)^s. (A-x)^t, \&c.}$ may be converted into series of the form $A + Bx + Cx^2 + Dx^3 + \&c.$

M. Arbogast, having applied his method to such fractions as have been already mentioned, shews how to deduce the form for the development of $\phi(a + bx + cx^2 +, \&c., \alpha + \beta x + \gamma x^2 +, \&c.)$ and assigns the form for the coefficient of the term affected with x^n . The law by which these forms are regulated is simple, and easily comprehended.

This author's next object is the developement of functions of one or more polynomials, arranged relatively to the powers and to the products of two or more different letters, into series arranged in the same manner. Accordingly he reduces it to the following general problem. "Any function whatever of one or more simple, double, or triple polynomials being given, to write immediately the series of the developement of this function; and, moreover, to write immediately the developement of any term whatever of this series, independently of the other terms." He then proceeds to various applications of derivations to recurring series, as well simple as double, or triple, &c. of any order whatever.

The authors who have treated of recurring series are De Moivre, in his "Miscellanea Analytica, and Doctrine of Chances;" Euler, in his "Introductio in Analysin Infinitorum;" La Grange, in "Melanges de Turin," in Memoirs presented to the Academy of Paris, and in the Berlin Memoirs; and La Place, in Memoirs presented to the Academy of Paris, and in the Memoirs of the Academy. To the subject of the researches of these great mathematicians, M. Arbogast applies his method of derivations; and he certainly obtains by it, in our opinion, expressions very admirable for their simplicity, and for the facility with which they can be expanded. In the methods of the authors above mentioned, in order to find the general term, the denominator of the generating fraction is resolved into its factors; which is done by finding the roots of the denominator put $= 0$; consequently, if the denominator exceeds an equation of the fourth degree, the general term cannot be found:—but, by the method of derivations, the general term is assigned in terms of the coefficients of the denominator of the generating fraction and other quantities; thus, if the generating fractions be $\frac{a + \beta x + \gamma x^2}{a + bx + cx^2 + dx^3}$, the expression for the general term of the resulting recurring series is $D^n (a a^{-1})$, or $a D^n. a^{-1} + \beta. D^{n-1} a^{-1} + \gamma. D^{n-2} a^{-1}, (D^3. a, D^4. a, \&c. \text{ being } = 0).$

In the course of this article, M. Arbogast shews how to find at once a part of the general term of a recurring series, proceeding from several equal factors in the denominator of

the generating fraction: thus, let $\frac{P}{Q}$ be the generating fraction, and $N \times (a-x)^m = Q$; in $\frac{P}{N}$, put a for x , and suppose P' to be what this fraction becomes: then the required part

of the general term will be $D^n \left[\frac{P' a^{n-1}}{N' a} \right]$, and $D a = -x$ and $n + 1$ the index of the term.

M. Arbogast determines the sine and cosine of any multiple angle in cosines of the simple angle E . His demonstrations for the forms expressing the sines, cosines, &c. are clear and rigorous. He also directly discusses the difficult and complicated subject of double and triple recurring series. The next article of his treatise contains applications of the calculus of derivations to the general reversion of series; and this part of his work is executed with singular ability. His next object is the use of derivations in the differential calculus, which he considers as a particular case of the calculus of derivations. The 7th article of the author's work consists of three divisions: the first containing the application of the formulæ of derivation, to the developement of the functions of polynomials, containing sines, cosines, &c.: the second gives the application of the derivative calculus to the

the product of factors in arithmetical progression; and the third shews the application of the separation of the scales of operations to the direct and inverse method of differences. For a further account of this subject, we must refer to the author's elaborate treatise. See, also, an analysis of it in the Monthly Review (New Series), vol. xxxvi. p. 524—532.

CALCULUS *differentialis* is a method of differencing quantities, or of finding an infinitely small quantity, which, being taken infinite times, shall be equal to a given quantity: or, it is the arithmetic of the infinitely small differences of variable quantities.

The foundation of this calculus is an infinitely small quantity, or an infinitesimal, which is a portion of a quantity incomparable to that quantity, or that is less than any assignable one, and therefore accounted as nothing; the error accruing by omitting it being less than any assignable one. Hence two quantities, only differing by an infinitesimal, are reputed equal.

Thus, in *Astronomy*, the diameter of the earth is an infinitesimal, in respect of the distance of the fixed stars; and the same holds in abstract quantities. The term infinitesimal, therefore, is merely relative, and involves a relation to another quantity; and does not denote any real ens, or being.

Now infinitesimals are called differentials, or differential quantities, when they are considered as the differences of two quantities. Sir Isaac Newton calls them *moments*; considering them as the momentary increments of quantities; v. g. of a line generated by the flux of a point; or of a surface by the flux of a line. The differential calculus, therefore, and the doctrine of fluxions, are the same thing, under different names; the former given by M. Leibnitz, and the latter by Sir Isaac Newton: each of whom lay claim to the discovery.

There is, indeed, a difference in the manner of expressing the quantities resulting from the different views wherein the two authors consider the infinitesimals; the one as moments, the other as differences: Leibnitz, and most foreigners, express the differentials of quantities by the same letters as variable ones, only prefixing the letter *d*: thus the differential of *x* is called *dx*; and that of *y*, *dy*: now *dx* is a positive quantity, if *x* continually increase; negative, if it decrease.

The English, with Sir Isaac Newton, instead of *dx*, write *ẋ* (with a dot over it); for *dy*, *ẏ*, &c. which foreigners and others object against, on account of that confusion of points, which they imagine arises, when differentials are again differenced; on account of the ambiguity of the fluxionary expressions, owing to the position of the index; because the fluxionary expression cannot be so readily extended as the differential notation; and, besides, the printers are more apt to overlook a point than a letter.

Stable quantities are always expressed by the first letters of the alphabet *da = 0*, *db = 0*, *dc = 0*; wherefore *d(x + y - a) = dx + dy*, and *d(x - y + a) = dx - dy*. So that the differencing of quantities is easily performed, by the addition or subtraction of their compounds.

To difference quantities that multiply each other; the rule is, first, multiply the differential of one factor into the other factor, the sum of the two factors is the differential sought: thus, the quantities being *xy*, the differential will be *x dy + y dx*, i. e. *d(xy) = x dy + y dx*. Secondly, if there be three quantities mutually multiplying each other, the factum of the two must then be multiplied into the differential of the third: thus, suppose *vxy*, let *vx = t*, then *vxy = ty*; consequently *d(vxy) = t dy + y dt*; but *dt = v dx + x dv*. These values, therefore, being substituted

VOL. V.

in the antecedent differential, *t dy + y dt*, the result is, *d(vxy) = v x dy + v y dx + x y dv*. Hence it is easy to apprehend how to proceed, where the quantities are more than three.

If one variable quantity increase, while the other *y* decreases, it is evident *y dx - x dy* will be the differential of *xy*.

To difference quantities that mutually divide each other; the rule is, first, multiply the differential of the divisor into the dividend; and, on the contrary, the differential of the dividend into the divisor; subtract the last product from the first, and divide the remainder by the square of the divisor; the quotient is the differential of the quantities mutually dividing each other. See FLUXIONS and FUNCTION, under which article will be stated La Grange's method of divesting the principles of the differential calculus of all reference to infinitely small or evanescent quantities.

M. La Croix in his "Treatise on the Differential and Integral Calculus," considers the differential calculus in precisely the same point of view in which M. La Grange regarded it in the Berlin Acts for 1772, and subsequently in an express and formal treatise on the subject. An ingenious anonymous writer has given the substance and spirit of M. La Croix's reasoning, without adhering closely to his notation and method.

Let *u = fx* be any function of *x*; then, if for *x* we substitute *x + h*, the development of *f(x + h)* will be of this form:

$$f(x+h) = fx + f'xh + \frac{f''xh^2}{1.2} + \&c.$$

the coefficients *f'x*, *f''x*, &c. being derived from the primitive function *fx*, and independent of *h*.

$$\text{Hence } f(x+h) - fx = f'xh + \frac{f''xh^2}{1.2} + \&c.$$

which quantity represents the difference between *fx* and what *fx* becomes when *x* is increased to *x + h*. Let the first term of this difference be called the differential, and be denoted by the expression *dfx*; hence we have *dfx = f'xh* ∴ *f'x = \frac{dfx}{h}*

Hence to have *f'x*, divide the difference between two successive values of *fx* by the increment: but, since *f'x* is independent of *h*, *h* must disappear by this division, and may be represented by any symbol at pleasure. Hence, for the sake of uniformity in the signs, let *h* be represented by *dx* ∴ *f'x = \frac{dfx}{dx}*. Hence to find *dfx*, or the differential of *fx*,

write in *fx*, *x + dx*, for *x*, develope *f(x + dx)* as far as the terms affected with the first power of *dx*, and subtract *fx*—

$$\text{Since } f(x+dx) - fx = f'xdx + \&c.$$

$$\begin{matrix} f'(x+dx) - f'x = f''xdx + \&c. \\ \&c. & = \&c. \end{matrix}$$

$$\begin{matrix} f'xdx = dfx & , & f''xdx = df'x \\ & & \frac{df'x}{dx} = d\left(\frac{dfx}{dx}\right) \\ \text{therefore } f''x = \frac{df'x}{dx} \end{matrix}$$

But since *dx* is invariable,

$$\begin{matrix} f'(x+dx) dx - f'xdx = f''xdx \\ \text{hence } df'xdx = f''xdx^2 \end{matrix}$$

but *df'xdx = ddfx = d'fx* (*d'* not meaning a symbol *d* squared, but denoting the second differential of *fx* to be taken): hence

it appears, since *f''x = \frac{d\left(\frac{dfx}{dx}\right)}{dx}* and *= \frac{d'fx}{dx^2}*; that *\frac{d\left(\frac{dfx}{dx}\right)}{dx} =*

$\frac{d^2fx}{dx^2}$; and thus the derived functions $f'x, f''x, f'''x, \&c.$ may be represented by the quantities $\frac{dfx}{dx}, \frac{d^2fx}{dx^2}, \frac{d^3fx}{dx^3}, \&c.$ so that the development of $f(x+b)$ takes this form,

$$fx + \frac{dfx}{dx}b + \frac{d^2fx}{1.2.dx^2}b^2 + \&c.$$

the celebrated theorem of Taylor.

CALCULUS, differentio-differential, is a method of differencing differential quantities. As the sign of a differential is the letter d prefixed to the quantity, so that dx is the differential of x , that of a differential of dx is ddx , and the differential of ddx is ddd , $\&c.$; similar to first, second, and third, $\&c.$ fluxions, $x, x', x'', \&c.$: thus we have degrees of differentials. The differential of an ordinary quantity is a differential of the first order or degree, as dx : that of the second degree is ddx , $\&c.$ The rules for differentials are the same with those for fluxions. See FLUXIONS.

CALCULUS exponentialis, is a method of differencing exponential quantities, or of finding and summing up the differentials or moments of exponential quantities; or at least bringing them to geometrical constructions.

By exponential quantity, is here understood a power, whose exponent is variable; v.g. $a^x, x^x, ay^x, x^y, \&c.$ where the exponent x does not denote the same in all the points of a curve, but in some stands for 2, in others for 3, in others for 5, $\&c.$

To difference an exponential quantity: there is nothing required but to reduce the exponential quantities to logarithmic ones; which done, the differencing is managed as in logarithmic quantities.—Thus, suppose the differential of the exponential quantity xy required, let

$$\begin{aligned} x^y &= z \\ \text{Then will } y \ln x &= \ln z \\ \ln x dy + \frac{y dx}{x} &= \frac{dz}{z} \\ \frac{z \ln x dy + y dx}{x} &= dz \end{aligned}$$

That is, $xy \ln x dy + xy^{-1} dx = dz$. Bernouilli Opera, tom. i. p. 183. See EXPONENTIAL.

CALCULUS fluxional. See FLUXIONS.

CALCULUS integralis, or *summatorius*, is a method of integrating, or summing up moments, or differential quantities; i. e. from a differential quantity given, to find the quantity from whose differencing the given differential results.

The integral calculus, therefore, is the inverse of the differential one: whence the English, who usually call the differential method, *fluxions*, give this calculus, which ascends from the fluxions, to the flowing or variable quantities: or, as foreigners express it, from the differences to the sums; by the name of the *inverse method of fluxions*.

Hence, the integration is known to be justly performed, if the quantity found, according to the rules of the differential calculus, being differenced, produce that proposed to be summed.

Suppose f the sign of the sum, or integral quantity; then $\int y dx$ will denote the sum, or integral of the differential $y dx$.

To integrate, or sum up a differential quantity. It is demonstrated, first, that $\int dx = x$: secondly, $\int (dx + dy) = x + y$: thirdly, $\int (x dy + y dx) = xy$: fourthly, $\int (mx^{m-1}$

$dx = x^m$: fifthly, $\int (n \cdot m) x^{\frac{n-m}{m}} dx = x^{\frac{n}{m}}$: sixthly, $\int (y dx - x dy) : y^2 = x : y$. Of these, the fourth and fifth cases are the most frequent; wherein the differential quantity is integrated, by adding a variable unity to the exponent, and dividing the sum by the new exponent multiplied into the differential of the root; v. g. the fourth case, by $m - (1 + 1) dx$, i. e. by mdx .

If the differential quantity to be integrated, doth not come under any of these formulas, it must either be reduced to an integral finite, or an infinite series, each of whose terms may be summed.

It may be here observed, that, as in the analysis of finites, any quantity may be raised to any degree of power; but *vice versa*, the root cannot be extracted out of any number required: so in the analysis of infinites, any variable or flowing quantity may be differenced; but, *vice versa*, any differential cannot be integrated. And as, in the analysis of finites, we are not yet arrived at a method of extracting the roots of all equations; so neither has the integral calculus arrived at its perfection: and as in the former we are obliged to have recourse to approximation; so in the latter we have recourse to infinite series, where we cannot attain to a perfect integration.

The first traces of the integral calculus are to be found in the arithmetic of infinites of Dr. Wallis. The author, by summing series of rational ordinates, was enabled to assign the quadratures of the curves to which they belonged. Newton, the inventor of the fluxionary method, advanced far beyond Wallis, and assigned the quadrature of curves to which the ordinates were irrational. What this great man performed with regard to the doctrine of fluents, or the integral calculus, is to be found in his treatise, “De Quadratura Curvarum.” In his “Principia” he concealed his analysis, and adhered to the manner of the ancients. It does not appear by what method he solved the 34th proposition of the 2d book of the “Principia” concerning the solid of least resistance; whether he effected it by a particular artifice, or whether he really possessed the calculus of variations, of which Leibnitz and the Bernouillis are now esteemed the inventors. The mathematicians to whom the integral calculus is chiefly indebted for its improvement, are John Bernouilli, who integrated rational fractions; James Bernouilli, who integrated the fluxional equation, $y' + P y = Q x$; Cotes, who published in 1714, “Theoremata tum Logometrica tum Trigonometrica”; Riccati, who integrated the fluxional equation $y' + a y^2 x = Q x$; Maclaurin, author of a treatise in 2 volumes, 4to.; Simpson, Fontaine, Clairaut, D’Alembert, and Euler, whose researches on the integral calculus occur in the volumes of the academies of Paris, Berlin, Turin, and Petersburg. The last author published in 1768 his “Institutiones Calculi Integralis,” highly enriched with original inventions; and in the same year Le Seur and Jacquier published a work in two volumes, 4to. which superseded a work of M. Bougainville, published in 1754, intended as a supplement to the “Analyse des Infinites Petits of the Marquis de L’Hospital. Condorcet, La Grange, La Place, Monge, and Le Gendre, have also made considerable additions to the integral calculus. M. La Croix has likewise published a comprehensive and valuable treatise on the differential and integral calculus (Traité du Calcul Differential, &c. 2 vols. 4to. Paris). In the plan of this work it is proposed to comprehend and systematize all that has been written on the differential and integral calculus. It commences with a history of the subject which properly originates with the times of Euclid and Archimedes; because the methods of ex-

fluxions and limits rest on the same foundation. The questions that led to its discovery have been discussed since the earliest æra of geometry. The 12th proposition of the 12th book of Euclid's Elements is a problem of this kind, and the first that has come down to us. Archimedes, by similar methods, advanced to the solution of more difficult problems, than that which investigated the relation of circles to one another; such as the relations between the surfaces and solid contents of the cylinder and sphere, the quadrature of the parabola, and the proportion of spirals. M. La Croix then proceeds in his history of the differential calculus, as connected with the several discoveries made by Cavalieri, Reberval, Descartes, Fermat, Huggens, Gregory de St. Vincent, Pascal, Wallis, Barrow, Leibnitz, and Newton. See FLUXIONS.

M. la Croix's treatise consists of two parts: the first part gives an account of the differential calculus; and the subject of the second part is the integral calculus. This part begins with the integration of functions of one variable quantity; and the author has furnished various formulae for integrating rational and irrational functions, logarithmic and exponential functions, circular functions, &c. and he then applies the integral calculus to the quadrature and rectification of curves, to the quadrature of curve surfaces, and to the content of the solids comprehended by them. He subjoins an exposition of the methods which Euler employed in his researches concerning curves that are quadrable, rectifiable, &c. His next object is the integration of differential equations of two variable quantities; and in reference to this he has collected all that has been written on this intricate subject. Accordingly this chapter of his work contains methods for separating the variable quantities in differential equations of the first order; for investigating a factor proper to render a differential equation of the first order integrable; for integrating differential equations of the first order; in which the differential quantities pass the first degree: for obtaining particular solutions of differential equations of the first order; for resolving by approximation, differential equations of the first order; for constructing, geometrically, differential equations of the first order; for integrating differential equations of the second order by means of transformations; for investigating a factor proper to render differential equations of the second order integrable; for resolving, by approximation, differential equations of the second order; and for integrating differential equations of orders superior to the second. The subject of the next chapter is the integration of fractions containing two, or a greater number of variable quantities. The fifth and last chapter treats of the method of variations.

The calculus of variations originated from certain problems concerning the maxima and minima of quantities having been proposed by John Bernouilli, to the mathematicians of Europe. Such a problem was that in which it was required to find, of all curves passing through two fixed points, and situated in the same vertical plane, that one down which a body would descend from the highest to the lowest point in the least time possible. The first geometers, remarking that nothing was obtained by putting the differential of the time, $\sqrt{\frac{dx}{x}} = 0$, found that they could obtain a solution by making the time a minimum for two successive elements of the curve; thus, if x, x', x'' were three vertical abscissas, and y, y', y'' the corresponding ordinates, the time would be expressed by

$$\frac{\sqrt{(x'-x) + (y'-y)^2}}{\sqrt{x}} + \frac{\sqrt{(x''-x')^2 + (y''-y')^2}}{\sqrt{x'}}$$

the differential of which being taken, and put $= 0$, gave a

resulting equation $\frac{dy}{\sqrt{x} \sqrt{dx^2 + dy^2}} = b$ a constant

quantity; and consequently proved the curve to be a cycloid. — Euler, with far greater analytical knowledge than John Bernouilli, next treated these problems in a general manner, in his tract intitled, "Methodus inveniendi lineas curvas maximi minimive proprietate gaudentes; sive solutio problematis isoperimetrici latissimo sensu accepti." M. La Grange afterward gave greater generality to this calculus, by making variable not only y, dy, d^2y , &c. but x .

The explanation of M. La Croix affords a clear idea of the calculus of variations:

"Suppose (says he) the variable quantities at first connected together by an equation, or by any other dependence, to change by reason of the form of the equation, or of the relation that results from the dependence established between them ceasing to be the same; this circumstance cannot be expressed in a more general manner, than by regarding the increments of x and y , as absolutely independent of each other; since, in effect, this hypothesis, not designating any particular relation between x and y , comprehends all. It follows thence, that the calculus of variations can only be employed for expressions, to which the differential calculus has already been applied; and it differs from the last only by the independence which it supposes between the variable quantities, which before were considered as connected by constant relations. The following

example will illustrate this notion. The expression $\frac{ydx}{dy}$,

which belongs to the subtangent of a curve, represents a determinate function of x , when y is considered as a function whose composition in terms of x is known: and if this last changes, the first changes also. There will be, perhaps, some difficulty in conceiving how we can submit to calculation the variability of a function which is only the abstract dependence in which several quantities are with regard to each other: but this difficulty is removed, by considering that the connection between the quantities y and x changes, if the first be made to vary independently of the second. Thus, in the example before us, if we suppose x to remain the same, and y and $\frac{dy}{dx}$ to change, the relation between x and

y must necessarily have changed also, since these quantities are the immediate consequences of that relation: $\frac{dy}{dx}$, in the

form $\frac{ydx}{dy}$, may alone be made to vary, since it depends only on one value of y : but, if an expression affected by the sign \int be considered, y and $\frac{dy}{dx}$ must be made to vary at the same

time; for it follows from the theory for the formation of integrals, that the value of a like function depends on the consecutive values of y which are deduced from those of $\frac{dy}{dx}$.

"It is evident that, to take under this point of view the differential of any expression whatever, it is sufficient to make y, dy, d^2y , &c. vary without altering x : but, in treating this latter quantity, as variable as the first, we arrive at results more general and symmetrical than what are otherwise obtained, and which lead to very interesting remarks on the nature of the differential forms. For these reasons, we shall adopt in this chapter the method of making x, dy, d^2y vary. That the symbols of this new species of differentiation, in which x and y are considered as independent, may not be confounded with the symbols of the

CALCULUS.

first, in which one of the variable quantities is regarded as a function of the other, we shall employ, after the manner of La Grange, the characteristic δ ; and we shall suppose, with him, that, when y changes only by virtue of the change of x which becomes $x + dx$, its differential is dy : but that, when the relation of y and x varies, these two quantities become respectively $x + \delta x$, $y + \delta y$; and we note by the name of variations, the increments δx and δy .

"Hence it follows that, as $du = \frac{du}{dx} dx + \frac{du}{dy} dy$,

u being a function of x and y ,

so, $\delta u = \frac{\delta u}{\delta x} \delta x + \frac{\delta u}{\delta y} \delta y$.

"In applying this to the example $\frac{y dx}{dy}$ we must regard

$\frac{dx}{dy}$ as a function of x and y ; whence it results that

$$\delta \frac{y dx}{dy} = \frac{dx \delta y}{dy} + y \delta \left(\frac{dx}{dy} \right)$$

$$\text{and } \delta \left(\frac{dx}{dy} \right) = \frac{dy \delta dx - dx \delta dy}{dy^2} = \frac{dy \delta dx - dx \delta dy}{dy^2}$$

for $\delta dx = d\delta x$, $\delta dy = d\delta y$.—"

M. La Croix then proves $\delta dx = d\delta x$, &c. After the methods for finding the variations of any function whatever, is given the application of the calculus to the problems of maxima and minima.

CALCULUS literalis, or *literal CALCULUS*, is the same with specious arithmetic, or algebra, so called, from its using the letters of the alphabet: in contradistinction to numeral arithmetic, which uses figures.

In the literal calculus, given quantities are expressed by the first letters, a, b, c, d ; and quantities sought by the last x, y, z , &c. Equal quantities are denoted by the same letters. See **ALGEBRA**.

CALCULUS, in *Medicine*, the disease of the stone in the bladder or kidneys. The calculus in the bladder is called *lithiasis*; and in the kidneys, *nephritis*. See **STONE**.

CALCULUS, Biliary. Small, hard, roundish, concrete substances are often found in the gall bladder, or in the ducts leading from the liver and gall-bladder to the intestine, which occasion in their passage most acute pain to man, and probably other animals, and have attracted some attention from chemists.

Biliary calculi (or *gall-stones*, as they are also termed) vary both in external appearance, and in chemical properties. The colour is generally green or yellowish-brown, sometimes, though rarely, white; in shape they are mostly oblong, often tuberculated. When cut through, they most frequently consist of a radiated semi-crystalline mass, internally often resembling spermaceti, coated with several concentric laminæ. The radiated part is mostly white and tasteless; the laminated is sometimes bitter.

Gall-stones are distinguished for their lightness and inflammability, few of them being so heavy as to sink in water; and when put to a lighted candle, most of them melt like wax, and burn with a very bright flame, and very little ammoniacal smell. From the infinite minute varieties in gall-stones, no natural arrangement is indicated, but the most important differences, shewn by chemical analysis, rest upon the proportion of the radiated, crystallized, central part, and the general lightness and inflammability.

The radiated gall-stones are largely soluble in oil of turpentine, and in all the essential oils by heat. Alcohol when cold has but little action, but when boiling it dissolves almost all the inflammable part of the calculus, leaving an earthy

residue behind. On cooling, this solution deposits very copious specular crystals, strongly resembling those of spermaceti treated in this way, and this singular substance forms by far the most curious part of these morbid concretions. Poulletier and Fourcroy have both attended minutely to this matter. The former discovered similar crystalline concretions in a piece of liver long hung up in a dry air.

When the hot alcoholic solution of this concrete is dropped into a large quantity of water, a white flacculent precipitate is formed, which when dried is found to be of a resinous nature. The supernatant liquor by saturation with muriatic acid and evaporation gives muriat of soda, by which it is evident that the soda of the bile remains in union with its resin during its conversion into biliary calculus; but the chemical nature of this conversion is very obscure.

Ether dissolves the spermaceti-like concrete as well as oil of turpentine, and deposits the greater part on cooling. Hot nitric acid is decomposed on it, and nitrous gas is given out, and when cool, a white oil is found concentered on the surface of the acid, now no longer of a crystalline texture, but altered in its properties, being brittle and friable like a resin, and when re-dissolved in alcohol it has lost its power of crystallizing by cooling. It is still, however, insoluble in water. Ether dissolves this altered concrete as it did when in its natural state, but water now separates it in the form of drops of oil. Saunders on the Bile. Fourcroy. Boissac in Phil. Journ. vol. vi.

CALCULUS Minerva, among the *Ancient Lawyers*, denoted the decision of a cause, wherein the judges were equally divided. The expression is taken from the history of Orestes, represented by Æschylus and Euripides; at whose trial, before the Areopagites for the murder of his mother, the votes being equally divided for and against him, Minerva interposed, and gave the casting vote, or calculus, in his behalf.

M. Cramer, professor at Marburg, has a discourse expressive, "De Calculo Minervæ;" wherein he maintains, that all the effect an entire equality of voices can have, is to leave the cause *in statu quo*.

CALCULUS Tiburtinus, a sort of figured stone, formed in great plenty about the cataracts of the Anio, and other rivers in Italy; of a white colour, and in shape oblong, round, or echinated. They are a species of the *stiria lapideæ*, and generated like them; and so like sugar-plums in the whole, that it is a common jest at Rome to deceive the unexperienced by serving them up at desserts.

CALCULUS, urinary. See **URINARY calculi**.

CALCUTTA, in *Geography*, a city of Hindoostan, and capital of Bengal, and of all the British possessions in India, is situated on the river Hoogly, the western arm of the Ganges, at the distance of about 100 miles from the sea; and the river is navigable up to the town, for the largest ships that visit India. Its citadel is placed in N. lat. 22° 33'. E. long. 88° 27' 45". It is comparatively a modern city, having been built towards the close of the 17th century on the site of the village called Govindpour. The English factory obtained leave to remove thither from Hoogly in the year 1689 (see **BENGAL**), when Mr. Channock was agent in Bengal; and who fixed upon this spot for the British emporium, though from several circumstances it was at that time the most unhealthy he could have chosen. For 3 miles to the north-east there was a salt-water lake, that overflowed in the months of September and October; and in the two following months, when those floods withdrew, prodigious quantities of fish were left dry, the putrefaction of which was supposed to affect the air; and this, together with the fetid putrid exhalations from the ooze and slime, conveyed by the north-east wind to Fort William, occasioned a yearly mortality.

CALCUTTA.

lty. During the rapid increase of this town, diseases were fatal to thousands, and particularly, according to the testimony of Dr. Lind, among such as had lately arrived from Europe. Hamilton mentions an instance, from his own knowledge, of 400 burials in six months, at a period when all the English resident here did not exceed 1200. Besides, when this spot was chosen, every man was allowed to build as best suited his convenience and taste, without regard to the disposition of the whole; and, therefore, the different houses bore no resemblance to one another either in their position or architecture. From this small and unpromising beginning, Calcutta is now become a large, populous, and in many respects, an elegant city. The quarter inhabited by the English is composed entirely of brick buildings, many of which appear more like palaces than private houses; and though they add much to the beauty of the place, they would have a much better effect if the streets were laid out with greater symmetry and order: but the rest of the city, and, indeed, much the greater part of it, consists of houses like those of the other Indian cities; all of which are constructed on the same plan, with very narrow, confined, and crooked streets, in which are interspersed an incredible number of reservoirs and ponds, and a great many gardens. Some few streets are paved with brick. The houses are variously built; some with brick, others with mud, and a still greater proportion with bamboos and mats; and these different kinds of edifices, being intermixed with one another, form a motley appearance. Those of the latter kind are invariably of one story, and covered with thatch. The brick houses seldom exceed two floors, and have flat terraced roofs. The two former classes far outnumber the last, which are often so thinly scattered, that fires, which frequently happen, do not sometimes meet with the obstruction of a single brick house through a whole street. The structure of the European houses serves to secure them from fire; as only a small portion of wood enters into the materials, for the partition-walls, as well as the flat roofs, are chiefly constructed of brick and mortar, which last article, under the denomination of "Chunam," the natives have brought to great perfection. The buildings of the place extend full 3 miles along the river, and about half as much in breadth from it. Within the last 30 or 40 years, Calcutta is wonderfully improved, both in appearance and in the salubrity of its air; for by draining the streets and filling up the ponds, they have removed a vast surface of stagnant water, the exhalations of which were particularly injurious. The local situation of Calcutta, as we have already observed, is not fortunate; for it has some extensive muddy lakes, and a vast forest close to it. More still remains to be done before Calcutta can merit the character of a healthy town. In the middle of the city a large open place has been left, in which there is a spacious tank or reservoir, covering upwards of 25 acres of ground. It was dug by order of the government, to provide the inhabitants of Calcutta with water; as in the dry season the water of the Ganges becomes brackish by the influx of the tide, while that in the tank is very sweet and pleasant. The number of springs which it contains preserves the water always nearly at the same level. It is railed round, nor is any person suffered to wash in it; but all are at liberty to take as much water from it as they like. Near this tank is a handsome obelisk, erected by Mr. Holwell, one of the few survivors in the tragic scene of the black hole, of which we shall subjoin an account; it is about 50 feet high, inscribed with the names of the persons who died on this execrable occasion, and whose bodies were promiscuously thrown, the next morning, into the ditch of the fort. A little farther is the court-house, over which are two handsome assembly-rooms. Close to the court-house is a theatre,

where plays are sometimes performed. Beyond this is an Armenian church, which is a large and noble building, with a handsome steeple. There is also an English church of modern construction. The citadel, called "Fort William," is situated about a quarter of an hour's walk from the city, by the side of the Ganges, in an extensive plain. This citadel is superior in every point, as it regards strength and correctness of design, to any fortrefs in India; but it is formed on too extensive a scale to answer the useful purpose intended, that of holding a post in case of extremity; since the number of troops required properly to garrison it, could keep the field. It was begun in the year 1757, immediately after the victory at Plassey, which insured to the British an unlimited influence in Bengal; and it was the intention of lord Clive to render it as permanent as possible, by providing for all times a tenable post. However, he had no foresight of the vast expence attending it, which may perhaps have been equal to two millions sterling. It is a regular pentagon, with several outworks. The ramparts are built of brick, half-way up, finished with clay, and faced with gazons. Both the body of the fortrefs and the outworks are surrounded by a wet ditch, which has a small cunette, 6 or 7 feet deep, in the middle. The water from the Ganges may be let into the moat, to the height of 8 feet, by means of flood-gates, of which there are two to each outwork, constructed in such a manner, that if an enemy be master of one, he cannot prevent both the main ditch, and those of the other outworks, from retaining their water. If all the works were mounted with cannon, there would be room for 600 pieces of artillery. Within the fort are bomb-proof barracks for 10,000 men. All the works are guarded by mines and countermines. No ship can pass up or down the Ganges without being exposed to the fire of this fort; nor can any enemy approach by land without being discerned at the distance of 3 or 4 leagues. The population of Calcutta is supposed to amount at present to more than half a million of inhabitants; and their different aspect and manners present a very picturesque and interesting scene. The black Hindoo, the olive-coloured Moor or Mahometan, contrast with the fair and florid countenances of the English; and the charms of the European damsel receive a foil from the dark Hindoo beauties. "The mixture of European and Asiatic manners," says a traveller in India, "which may be observed in Calcutta, is curious; coaches, phaetons, single-horse chaises, with the palankeens and hackeries of the natives, the passing ceremonies of the Hindoos, the different appearances of the Fakirs, form a sight more novel and extraordinary than any city in the world can present to a stranger." "To the luxuries of the Asiatic (says Mr. Pinkerton) are added the elegance and science of the English life. Even the newspapers are drawn up with care, and printed with elegance;" and the Asiatic Society, instituted by the late admirable sir William Jones (in January 1784), may perhaps rival the Academy of Inscriptions at Paris, if the papers of the latter were adopted as a model. "The Asiatic Researches, which are the productions of this society, form a noble monument of British science in a distant country."

Calcutta is eminently distinguished as the emporium of Bengal, and the residence of the governor-general of India. It is also the seat of justice, under four judges, who dispense judgment according to the laws of England. Its flourishing state may be ascribed, partly, among other causes and circumstances that have contributed to it, to the unlimited toleration which it affords to all forms of religion; the Pagans being suffered to carry their idols in procession, the Mahometans not being discountenanced, and the Roman Catholics being allowed a church.

The police of the city is chiefly committed to a superintendent

C A L C U T T A.

tendant of police, and several inferior justices of the peace, with certain stated salaries. Before these all petty delinquencies are tried, and by them they are punished. "Tannahs," or guard-houses, are erected in the different districts of the town; and the peace is maintained by a few companies of native soldiers who patrol the streets, and prevent disturbance from quarrels, robbery, or theft. Offences of a higher nature, committed by either Europeans or natives, are cognizable by the supreme court of judicature, which, about 25 years ago, was substituted in place of the mayor's court, with superior authority, and more extensive jurisdiction. The powers of this court extend not only to the company's territories in this part of India, but also to every case civil or criminal, that may occur between the Coromandel and Malacca coasts. Its jurisdiction, however, does not extend to the higher stations; nevertheless in these, all the European settlers enter into an engagement to be amenable to its authority.

The commerce of Calcutta is very considerable in salt, sugar, opium, yielded by the poppy particularly cultivated in the province of Bahar, silks, muslins, &c. Musk, borax, and other commodities, used to be imported from Thibet, in exchange for European cloths, and hardware; but this trade is probably interrupted since Thibet became subject to the jealous Chinese. On the Ganges are transported to Asam cargoes of salt, in exchange for gold, silver, ivory, musk, and a particular kind of silky cotton. The cowry shells, used as a small coin, are imported from the Maldives in exchange for rice. The fine muslins are chiefly fabricated in the rainy season, from May to September, and with callicoes form a great part of the exports to Europe.

The merchants and agents of this capital are by no means confined to transactions with their constituents employed in different branches of the service: they engage largely in foreign commerce to every port of note either in Asia or in Europe. In some houses, the extent of their dealings has been estimated, probably by an account somewhat exaggerated, at two crores of rupees annually, or above two millions sterling. Nevertheless, no mercantile house has accumulated sums equal to the fortunes acquired by many individuals in the service. The charges of clerks, freight, insurances, and other circumstances, particularly house-rent, must deeply affect the profits arising from every concern not uncommonly lucrative. The extent of the private trade of Calcutta cannot be estimated justly, either from the number or the burden of the ships belonging to that port. In a period not very remote, there were only 60 that properly belonged to the British merchants here, and their burden was about 27,000 tons. But their concern in foreign ships is very considerable. The Dutch, Danish, and French settlements on the river afford opportunities for indirect trade to any extent; nor are they negligent in availing themselves of this advantage. The company affords considerable employment to the country-built ships, independently of the merchants. It possesses a marine establishment, under the direction of a board instituted for that purpose. During war, cruisers are frequently employed; as well as transports, and store-ships, for its own troops. These transactions fall under the direction of the marine board, consisting of five members, and a number of subordinate officers and clerks. It also superintends the pilot-service, which is an important part of the marine establishment in a river of such dangerous navigation as the Hoogly, in which sand banks formed by the sand and mud washed down this branch of the Ganges during the rains, are continually fluctuating in their size and position. Constant attention is, therefore, necessary to place the different buoys so that they shall not mislead the mariner.

Freight in this climate is high; and yet commerce appears to be as adventurous as in any part of the world. The freight of boats in the inland trade upon the river is far from being low; and this is owing to the time necessary for performing a moderate voyage on that winding stream. The larger boats upon the Ganges carry from 300 to 600 mauns; and their hire per month amounts to 20, 30, or even 60 rupees, according to their different sizes. Budge-rows (see BUDGE-ROW), for the accommodation of gentlemen and their families, are to be had of all sizes from 8 to 24 oars; the rate of hire for the first is 60 rupees per month; for the largest, 230. The pinnace is another kind of travelling boat, still more expensive than the budge-row. It has superior accommodation, and from its resembling European craft in its structure, both in its hull and rigging, it is better fitted for encountering a gale in the great river. Besides the high rate of freight charged in the inland, and maritime trade, the merchants in Calcutta pay a considerable commission on the purchase of goods by their agents; and this on most articles is 5 per cent. The masters of the country-built ships, or the supercargoes, are the immediate agents by whom the trade of this part of the world is conducted; and they are an enterprising body of men, and in general better informed than those of the same profession in Europe. With the common Malays, and a mixture of Chinese, and Bengalese seamen, who never become very expert and intelligent in their profession, the country-ship-masters perform voyages in those dangerous seas with astonishing security. These vessels are termed "Donies"; and their enterprises at sea are chiefly to be ascribed to the example of Europeans; for, before their appearance, the Hindoos were hardly known as navigators. In Calcutta there are six different assurance-companies; which cover the property of individuals from the risks of the sea, at as low a rate of insurance as it can be done in Europe. Of the ships already mentioned belonging to Calcutta, there is not a single one commanded by a native. The internal navigation is, indeed, conducted by the natives. See GANGES.

The Armenians are the most respectable, and perhaps the most numerous body of foreign merchants in this capital. They carry on an extensive trade from China, and most of the sea-ports to the eastward, and also to the west, as far as the Persian gulf. Their information from all the different quarters is deemed the most accurate and minute of any body of men in their profession. They are attentive, regular, and diligent in business; their houses are of old standing; and many of them are possessed of large capitals. As members of society, they are peaceable and loyal, polite and inoffensive. Some few priests of their persuasion are maintained by them, not only in affluence, but in some degree of splendour. In their fondness for shew and elegance, the Armenians approach nearer to the English than any merchants at Calcutta; but they are more guarded in their expenditure.

The Mogul merchants are the next body of strangers, who have indeed long resided in this country; they have 13 different mercantile houses of considerable note, besides many other counting-houses of inferior importance. Some individuals among the Moguls are very wealthy, and are inferior in riches only to some of the native rajahs, banians, and shroffs: of these some are more opulent than the first noblemen in England. A million sterling, or even half of that sum, which several of them are said to possess, yields a revenue of three times the amount of any capital in Britain, from the exorbitant rate of interest at which these people lend their money. In the dress and table of the Hindoo, little is devoted to the purposes either of elegance or magnificence.

nificence. The greatest drains upon his income are his pious contributions, and the expences of his Zenana. The notches, marriages, and religious festivals furnish occasions of profusion; but these ceremonies are under the direction of the Bramins; and, according to the ideas which these spiritual guides have formed of his wealth, must be the otto, rose-water, and other perfumes, and sweetmeats served in vessels of gold, under a large canopy illuminated with beautiful lustres, to many hundreds of guests of all ranks and denominations. On such occasions the Hindoo is gratified by the appearance of a large company; and deems himself particularly honoured by the attendance of Europeans. Although the notches are intended to do honour to some deity, who is supposed to preside over the festival; yet they seem of all institutions least calculated to excite religious ideas. Part of the ceremony consists in listening to the music of the singing girls, who draw out their monotonous ditties with a non-chalance and dulness which can only be equalled by the sluggish dance, and inanimate gestures with which they are accompanied. Of all entertainments an Hindoostance notch is probably the most insipid; and they are sometimes accompanied with pantomimical performances of no delicate nature.

The number of Greek merchants in Calcutta is not considerable; they, however, maintain one clergyman, who performs religious worship according to the rites of that church. Portuguese houses of agency are, with respect to number, next to those of the English. A very considerable number of the descendants of that nation by native women, reside at Calcutta. No people in Europe seem to have assimilated themselves so closely to the manners of the country. Many of this class are held in low estimation. With a complexion darker than that of the Hindoos, with habits so similar, and with full possession of the language, it is strange that none of these have been able to make converts from the Heathen to the Roman Catholic faith. This circumstance evinces the complete dominion, which the Bramin superstition possesses over the minds of the common people; for no denomination of Christians can be more devoted to the work of conversion than the church of Rome.

The British merchants at Calcutta are a numerous and respectable body of men. Several of them have acquired large fortunes, and in the acquisition of these fortunes they have displayed those mercantile talents, and that enterprising spirit which distinguish their character in every part of the world. At Calcutta the peculiar habits of their profession have in no degree encroached on the liberality of their minds or the elegance of their equipage and tables. They here display an expence and splendour in their mode of living seldom aspired after by the same order of men in any part of the world; and it redounds much to their honour, that their acts of charity and munificence to indigent persons have, perhaps, never been equalled by any similar number of men of any rank whatever. Few of these gentlemen are engaged in the service. The service of the company attaches to itself certain ideas of rank and consequence, which often produce ludicrous effects upon the intercourse of society. All persons in civil and military departments affect a degree of superiority over such as are not in the service, which is frequently ill supported by their talents, birth, or character.

Among the various classes of the mercantile part of the community, we have made no mention of the Jews. Few of that nation ever settle in India, and Calcutta is perhaps the only opulent town in which they are not to be found. The native Banians, Sarkars, and Writers, carry on the greatest part of the retail trade of Calcutta. They go about hawking

commodities from morning to night, or searching after cheap purchases. To this class of the Hindoos appertain that low cunning, stratagem, and deceit, which characterise the money-transactions of persons of narrow intellects. With all their propensity to cheat, the native shop-keepers generally sell their goods on lower terms than those on which they are to be obtained in the European ware-rooms; but they are commonly neither of the first fashion nor best quality. Their house-rent is another cause of their under-selling the Europeans. The shops of the natives, though better than their houses, are mean and disagreeable; and from their situation in the common bazars, are much cheaper than the larger and more splendid rooms in which the British merchants expose their wares. House-rent and servants' wages are the most expensive parts of the charges of house-keeping in Calcutta. The common articles of provision are much cheaper than in Europe; but house-rent till lately, has been a very exorbitant charge. Only a few years ago, a house sufficient to accommodate a genteel family could not be procured under 600 or 800 pounds a-year; and many even let at a larger sum. The number of servants necessary in a private family, to persons resident in this country, exceeds all belief. This is an evil which admits of no remedy as long as the superstition of the natives shall deter them from performing service beyond one specific kind of work. The wages vary according to the different stations they occupy, from 4 rupees per month to 20. The salary of servants, added to the house-rent, and the incidental charges of a family, will enhance its expenditure to 3, 4, and 5 thousand rupees a-year, according to its number.

The maintenance and education of the children belonging to Europeans in India have, on account of their increasing number, become objects of great importance. With a view to these objects, several persons have done honour to themselves and to their country, by establishing schools for the relief of the orphan children of the military servants of the company. Two institutions have been formed for this purpose: one for the children of officers, and the other for those of private soldiers. Each is provided with teachers of both sexes, qualified to instruct the children in such branches of knowledge and industry as seem to be adapted to their rank and prospects in society. The fund for the support of these institutions is supplied by a fixed contribution raised from the military, or by the donations of the benevolent. Besides the two institutions already mentioned, there are seven or eight others for the education of boys; and nearly an equal number for girls. Besides these foundations, there are some others of inferior note, equally laudable, established by the munificence of the inhabitants of Calcutta. A free school, which provides for the education of nearly 200 children, under the management of the vestry, is, in part, supported by voluntary contributions only. Two lacks of rupees were originally devoted to the education of the children of the poor. The interest of that sum continues to be applied for that purpose. Another school, equally numerous, has been added to this upon a fund raised merely by casual benefactions. An oratorio has lately been performed annually to aid its funds, which promises a considerable supply of revenue. To these institutions, so creditable to the humanity and benevolence of the inhabitants of Calcutta, the native hospital must be added. This institution is also supported by voluntary contribution, and was formed for the relief of natives, who, from accident or disease, might need medical aid. A very expensive establishment for the education of the junior servants of the company has lately been instituted; but as it is for business, and not for education, that these gentlemen are sent to India,

India, the utility of this measure has been questioned, and the expence of it must have been enormous. Instruction, in the native dialect, is, in general, the only requisite to qualify them for the exercise of their duty, and this they have hitherto received from "Moonshees" at the leisure hours that are not employed in their different vocations. Accordingly the court of directors have abolished this college; and they are at this time forming an establishment at home which is likely, under proper conduct, to answer the purpose at a much less expence.

Notwithstanding the perfection to which the medical art has arrived by long experience, and its happy effect in preserving the lives of many Europeans; and the knowledge that has been acquired with respect to the fevers and the whole train of bilious complaints that are incidental to the country, and with respect to the most efficacious mode of treating them; the climate of India proves a severe trial to every European constitution. Many fall sacrifices to its first attacks: many more linger on in a state of increasing debility, and painful disease; and others, who for years continue to combat its influence, apprehending that the conflict must terminate fatally, are glad to retreat to Europe, there to eke out or to husband the remains of life. A sallow and livid complexion is so universal in Bengal, that when you behold a face of the roseate hue, you may venture to pronounce that its owner is newly arrived. Even in the ordinary health of persons not supposed to be materially injured by the climate, they are capable of little exertion or fatigue; and in the hot season of hardly any at all. It is not uncommon to find, at that period, all the officers of a battalion, except perhaps one or two, incapable of doing duty; and this without any extraordinary or alarming complaint. The fair sex are almost equally liable with the men to suffer by the climate. Their regularity is often more uniform, and their exposure to the weather less frequent; yet there is hardly a single female complexion in Bengal that retains the bloom of health. Formerly female adventurers in India were few; but highly successful. Emboldened by their success, and encouraged by their example, such numbers have embarked in this speculation, as threaten to defeat its purpose. The irregularities of our government, which formerly afforded an opportunity to some of rapidly accumulating wealth, and enabled them to marry, are now in a great measure done away. Few comparatively find themselves in circumstances that invite to matrimonial engagements; and on this account a number of unfortunate females are seen wandering for years in a single and unconnected state. Some are annually found to abandon the forlorn hope, and return to Europe, after the loss of beauty, too frequently their only property.

Having mentioned the "black hole" at Calcutta, which is become proverbial among Englishmen for a place of insufferable torment, we shall now recite some further particulars concerning the tragic event to which we have referred. When Surajah Dowlah in 1756 reduced Calcutta, the English prisoners to the number of 146, of whom Mr. Holwell was one, were confined in the black hole prison. It was about eight o'clock when these 146 unhappy persons, exhausted by continual action and fatigue, were thus crammed together into a dungeon about eighteen feet square, in a close sultry night in Bengal; shut up to the east and south, the only quarters from whence air could reach them, by dead walls, and by a wall and door to the north; open only to the west by two windows, strongly barred with iron, from which they could receive scarce any circulation of fresh air.

They had been but few minutes confined before every one fell into a perspiration so profuse, that no idea can be

formed of it. This brought on a raging thirst, which increased in proportion as the body was drained of its moisture. Various expedients were thought of to give more room and air. Every man was stripped, and every hat put in motion: they several times sat down on their hams; but at each time several of the poor creatures fell, and were instantly suffocated or trod to death.

Before nine o'clock every man's thirst grew intolerable, and respiration difficult. Efforts were again made to force the door; but still in vain. Many insults were used to the guards, to provoke them to fire in upon the prisoners, who grew outrageous, and many delirious. "Water, water," became the general cry. Some water was brought; but these supplies, like sprinkling water on fire, only served to raise and feed the flames. The confusion became general, and horrid from the cries and ravings for water; and some were trampled to death. This scene of misery proved entertainment to the brutal wretches without, who supplied them with water, that they might have the satisfaction of seeing them fight for it, as they phrased it; and held up lights to the bars, that they might lose no part of the inhuman division.

Before eleven o'clock, most of the gentlemen were dead, and one third of the whole. Thirst grew intolerable; but Mr. Holwell kept his mouth moist by sucking the perspiration out of his shirt-sleeves, and catching the drops as they fell, like heavy rain, from his head and face. By half an hour after eleven, most of the living were in an outrageous delirium. They found that water heightened their uneasiness; and "Air, air," was the general cry. Every insult that could be devised against the guard, all the opprobrious names that the viceroy and his officers could be loaded with, were repeated, to provoke the guard to fire upon them. Every man had eager hopes of meeting the first shot. Then a general prayer to heaven, to hasten the approach of the flames to the right and left of them, and put a period to their misery. Some expired on others; while a steam arose as well from the living as the dead, which was very offensive.

About two in the morning, they crowded so much to the windows, that many died standing, unable to fall by the throng and equal pressure round. When the day broke, the stench arising from the dead bodies was insufferable. At that juncture, the Soubah, who had received an account of the havoc death had made among them, sent one of his officers to inquire if the chief survived. Mr. Holwell was shown to him; and near six, an order came for their release.

Thus they had remained in this infernal prison from eight at night until six in the morning, when the poor remains of 146 souls, being only 23, came out alive; but most of them in a high putrid fever. The dead bodies were dragged out of the hole by the soldiers, and thrown promiscuously into the ditch of an unfinished ravelin, which was afterwards filled with earth. See BENGAL. Rennell's Memoirs, Pinkerton's Geog. vol. ii. Tennant's Indian Recreations, vol. i.

CALDA, or CALDUM, in the *Ancient Diet*, denotes hot water, used much among the Romans, anciently, as a drink, partly for pleasure, and partly for health.

The word is formed from *calidus*, hot; *aqua* being understood; *calda*, q. d. *calida aqua*.

Lipius, Castalio, Mercurialis, Baccius, and Freinshemius, have treated largely *de potu calda*, or *caldi*. Aët. Erud. Lips.

CALDAO, in *Geography*, a river of Portugal, which runs into the sea, at Setuval.

CALDARA, ANTONIO, in *Biography*, and *Musical History*, was a native of Venice, a great harmonist and com-

poser of the old school, and extremely voluminous both for the church and the stage. His first opera, *Argine*, was composed for his native city, in 1689, and after furnishing different parts of Italy with 12 operas and oratorios, in 1714, he went to Vienna, where he was appointed second Maestro di Capella, under Fouché, to the Imperial court, and where his grave style of writing pleased the emperor Charles VI. so much, that he hardly ever employed any other composer of sacred or secular music than Caldara, till after his decease in 1736. So that he not only set most of Apostolo Zeno's operas for the first time, but 13 of his oratorios; and was the first composer of Metastasio's operas and oratorios, during the first six or seven years of his residence at Vienna.

The masses and motets that we have seen of his composition, are admirable: a gravity of style, a purity of harmony, learning, facility, and correctness in the texture of the parts, are manifest in them all; but with his secular music, we are little acquainted: Metastasio, in his letters, seems to complain of his want of invention, taste, and elegance, in setting his dramas; and he first set seven of his best productions for the Imperial theatre.

Metastasio began his Imperial laureatship at Vienna in 1731, by writing an oratorio, *Sant'Elina in Calvario*. His first operas were "Adriano in Syria;" the second, "Demetrio;" then "Olimpiade," "L'Amor d'Amore," "Le Grazie," "Demotonte," "La Clemenza di Tito," "Ciro riconosciuto," and "Zenobia." All these were set to music by Caldara; but there must have been some material deficiency of style or invention, which prevented this music from penetrating into the rest of Europe; for these admirable dramas were never heard of till they had been set by other composers.

CALDARADI CARAVAGGIO, POLILORO. See POLILORO.

CALDARIA *Judiciaria*, the method of trial, or *purgation* by boiling water. See ORDEAL.

CALDARIUM, in the *Ancient Baths*, denoted a brazen vessel or cistern, placed in the hypocaustum, full of hot water, to be drawn thence into the *piscina*, or bath, to give it the necessary degree of heat.

In this sense, the *caldarium* stood contradistinguished from the *tepidarium* and *frigidarium*.

CALDARIUM also denoted the stove, or sudatory, being a clove vaulted room, wherein by hot dry fumes, without water, people were brought to a profuse sweat.

In which sense, *caldarium* was the same with what was otherwise denominated *vaporarium*, *sudatorium*, and *laconium*; in the Greek baths, *hypocaustum*, *υποκαυστον*.

CALDARIUM *as*, denotes *Pot-metal*.

CALDAS, in *Geography*, a small town of Portugal, in the province of Estremadura, a league from Obidos, and 13 miles E. of Peniche; much frequented for its sulphureous waters. The town is built in an irregular quadrangular form, and the houses are small, generally consisting merely of a ground-floor, and only a few of them have windows. To this place the rich merchants and principal nobility of Lisbon resort twice a year, *viz.* in May and September. Over the warm spring is a spacious and handsome bathing-house, and adjoining to it an hospital for poor patients. Besides the springs used for drinking, three others supply four baths: and the united water from all the springs turns a mill near the bathing-house.

CALDAS de Rey, a town of Spain, in Galicia, 20 miles south of Santiago.

CALDER, a town of Mid-lothian in Scotland, is situated in a pleasant country, at the distance of 12 miles west of Edinburgh. Here are two annual fairs, and a weekly market; but as there are no manufactories, the population

VOL. V.

is but small. In 1792, it amounted to 562 inhabitants. A short distance west of the town, is *Calders-house*, the seat of lord Torphichen. This mansion is memorable in the ecclesiastical history of Scotland, as the place where the Sacrament was first administered after the reformation. The ceremony was performed by John Knox, the celebrated reformer; a portrait of whom is preserved in the house.

CALDER, a river of England, which runs into the Aire, about two miles N. of Pontefract in Yorkshire. It is navigable to Halifax. Also a river, which runs into the Ribble, three miles S. of Clitheroe in Lancashire.

CALDER Water, a river of Scotland, which runs into the Clyde, about five miles above Glasgow.

CALDERA, a sea-port of South America, in the country of Chili, on the coast of the Pacific Ocean, two leagues N.E. by E. from the lee of an island at the mouth of the river Copiapo. S. lat. 27°. W. long. 7°.

CALDERINI, DOMITIO, in *Biography*, an eminent philologist, was born about the year 1446, at Torri, in the territory of Verona, and at the age of 24 years, he was invited, in consequence of the recommendation of cardinal Bessarion, by pope Paul II. to the professorship of belles lettres at Rome. In this office he continued, under Sixtus IV. and died in 1478, in the flower of his age. All his scholars attended him to his grave in mourning. He was much distinguished by the assiduity of his literary labours, and printed commentaries upon Martial, Juvenal, Virgil, Ovid, Statius, and Propertius, and several others of the Latin poets: he also published a translation of the two first books of Pausanias, into Latin. He, moreover, cultivated jurisprudence, philosophy, and mathematics, and exercised himself successfully in Latin poetry. He is reckoned one of the literary wonders of his age. Tiraboschi.

CALDERINO, in *Geography*, a place of Italy, in the Veronese, celebrated for its baths, called "the baths of Verona."

CALDERO, a remarkable mountain in the gulf of Venice, which is a guide at sea for the harbour Rovigno, which see.

CALDERO, *Cape*, lies on the north coast of South America, W. of Otclier bay, and about 12 leagues E. by S. from the Caracas fort, called the White Cape. It lies nearly S. or a little westward from the west end of Margarita Island, on the coast of the Spanish main.

CALDERON, DE LA BANA, DOM. PEDRO, in *Biography*, a celebrated Spanish dramatic writer, flourished about the year 1640, and after having borne arms, and sustained the rank of a knight of the order of St. James, became an ecclesiastic, and a priest and canon of Toledo. Turning his attention to the theatre, he acquired the reputation of the most copious and esteemed writer for the stage, in Spain, and was sometimes denominated the Spanish Shakspeare. The fertility of his invention, and the taste of his age and country, rendered him incorrect in the observance of the rules of the drama, and very unequal in his style and composition. His characters are unnatural, and his diction inflated. His chief excellence consisted in the contrivance of plots, which are full of business, and abound in intricacies happily resolved in the catastrophe. Most of his works were collected and published at Madrid, in nine vols. 4to. 1689; the three first containing his comedies, and the six last, a number of dramatic pieces on religious subjects, like the Old Mysteries, under the title of "Autos Sacramentales." His scanty knowledge of history has betrayed him into several blunders. Nouv. Dict. Hist.

CALDERON, in *Geography*, lies on the coast of Coromandel, in India, six leagues N. from Tranquebar.

CALDESBURG, a township of Orleans county, in the state of Vermont, America, about 151 miles N.E. from Bennington, and 11 miles W. of Connecticut river.

CALDERWOOD, **DAVID**, in *Biography*, a presbyterian divine of the church of Scotland, was the descendant of a good family in that kingdom; and being early destined to the ministry, he acquired, in the course of his education, an extensive acquaintance with those subjects that were peculiarly appropriate to his profession. About the year 1604, he was settled at Crelling near Jedburgh. Zealously attached to the Presbyterian establishment, he disapproved the project formed by king James I. of Great Britain, for bringing the church of Scotland to a nearer conformity with that of England; and when Mr. James Law, the bishop of Orkney, made a visitation of the presbyteries of Merse and Tiviotdale, as a preliminary towards assuming episcopal powers, he declined his jurisdiction by a paper under his hand, dated May 5, 1608. Thus did he commence that resistance to the measures of the king and episcopal party, which uniformly directed and influenced his future conduct. Accordingly, he did not assist at the general assembly held at Glasgow, June 8, 1610, in which lord Dunbar, the high-treasurer of Scotland, presided as commissioner; and it appears from his writings, that he regarded all the transactions of this assembly as null and void. He also excepted against the proceedings of another general assembly held in 1616, at Aberdeen. When a parliament was held by the king in the following year at Edinburgh, and the clergy met, at the same time, in one of the churches, in order to confer with the bishops, thus contriving an assembly which was intended to resemble the English convocation; Mr. Calderwood, though he attended, publicly declared, that he did not consider any such meetings as resembling a convocation: and when he was informed that a bill was depending to empower the king, with the advice of the archbishop, bishops, and such a number of the ministry as his majesty might think proper, to consider and conclude as to matters decent for the external policy of the church, not repugnant to the word of God; and that such conclusions should have the force of ecclesiastical laws; he concurred, with other ministers, in a formal protest against the measure, for reasons which were subjoined. This protest was presented; and though the clerk-register refused to read it before the states in parliament, it had its effect; for although the bill had the consent of parliament, yet the king thought fit to set it aside, and soon after called a general assembly at St. Andrew's. In consequence of this protest, Mr. Calderwood was summoned before the high-commission court at St. Andrew's, on the charge of mutinous and seditious behaviour. The king was present, and examined him in person; but Calderwood defended himself with such spirit and presence of mind, persisting in his refusal to acknowledge that he had been guilty of any crime, that he was first committed to prison; and then sentenced, by the privy council, to banish himself out of the king's dominions, and not to return without licence. All his efforts for mitigating this sentence proving ineffectual, he retired to Holland, where he steadily maintained his former principles, and in 1623, published his famous book, entitled "*Altare Damascenum, seu Ecclesiæ Anglicanæ Politia, Ecclesiæ Scoticanæ obtrusa, à Formâ lista quodam delineata, illustrata et examinata.*" This work contains a close and rigorous examination of the polity of the English church, under various heads, in which the origin and authority of episcopacy, and all the other points of difference, between that and the Presbyterian churches, are discussed. King James is said to have expressed a high opinion of this work, though he was extremely displeased with

it; and it is certain, that it made a great impression in England, and was very much admired by all avowed Puritans, and by such as were well-wishers to their opinions. The modern dissenters, however, would not concur in many of the author's sentiments; nor would they contend for the "*Jus Divinum*" of Presbyterianism. Soon after the publication of this work, Mr. Calderwood returned to Scotland, and lived privately for several years. As his situation was unknown, and he had been afflicted in 1624, with a long and dangerous fit of sickness, a person, whose name was Patrick Scot, taking it for granted that he was dead, wrote a recantation in his name, purporting, that before his decease, he had changed his sentiments; but when this imposture was detected, he went over to Holland, and made diligent search for him, with a design, as Mr. Calderwood believed, to have dispatched him. During his retirement, it is not unlikely, such were his talents and temper, that he wrote several books against the proceedings of the clergy in Scotland. But it is more certain that he employed himself in diligently collecting all the memorials relative to the ecclesiastical affairs of that kingdom, from the commencement of the reformation to his own time. These he digested and methodized with great care, and the whole is extant in MS. in the library of the University of Glasgow, in six folio volumes. Of these, an extract has been published, under the title of "*The true History of the Church of Scotland,*" printed in 1618, which comes down to the death of king James. Although the perusal of this work, on account both of its spirit and style, cannot be agreeable, and the representations contained in it must have acquired a strong tinge from party; it has, nevertheless, been always regarded as a source of much authentic information. How much longer the author survived is not known; but it seems probable, from his mentioning the death of Robert Bruce, which happened in 1631, that he lived pretty far in the reign of Charles I.; and we find that he was minister of Pensaith-land, near Edinburgh, in 1638. *Biog. Brit.*

CALDONAZZO, in *Geography*, a lake of Germany, in the county of Tyrol; 8 miles E.S.E. of Trent.

CALDRON, a large kitchen utensil, commonly made of copper; having a moveable iron handle, whereby to hang it on the chimney-hook.

The word is formed from the French *chaudron*, or rather the Latin *caldarium*.

CALDRONS, *boiling in*, *caldariis decoquere*, is a capital punishment spoken of in the middle age writers, decreed to divers sorts of criminals, but chiefly to debasers of the coin.

One of the torments inflicted on the ancient Christian martyrs was boiling in caldrons of water, oil, &c.

CALDUBA, in *Ancient Geography*, a town of Spain, placed by Ptolemy in Bætica, in the territory of the Turdetani.

CALDUENDO, in *Geography*, a town of Spain in the province of Guipuscoa; 8 leagues east of Vittoria.

CALDY, a small island in the great bay of Carmarthen, in South Wales; on its west side, at S.S.E. from Tenby, forming an inner limit on that side to the bay, though it stretches out circuitously to St. Gouan's point. It is about 3 miles from Tenby, and 5 leagues almost west from Worms-head, and has upon it a white tower appearing at a distance like a white sail, and serving to shew where the land lies. Ships may anchor on every side of this island, and be sheltered from all winds. N. lat. 51° 33'. W. long. 5° 19.

CALE, or **KALE**, in *Botany*. See **BRASSICA**, **BORECOLE**, and **CRAMBE**.

CALE, in *Scripture Geography*. See **CALAH**.

CALEA, in *Botany*, Linn. gen. 941. Schreb. 1277. Willd. 1466. Juss. p. 185. Gært. 975. Class. and order, *Syngenesia*

syngenesia polygamia equalis. Nat. ord. *Compositæ oppositifolia*, Linn. *Corymbifera*, Jussieu.

Gen. Ch. *Cal.* imbricated; scales oblong, rather loose. *Cor.* uniform; florets hermaphrodite, numerous, equal, funnel shaped; border five-cleft. *Stam.* filaments five, capillary, very short; anthers forming a cylindric tube. *Pist.* germ a little oblong; style thread-shaped, the length of the corolla; stigmas two, recurved, acute. *Peric.* the permanent calyx. *Seeds* solitary, oblong; down simple or none. *Receptacle* chaffy; scales a little longer than the calyx, standing out conspicuously among the florets.

Eff. Ch. *Calyx* imbricated. *Receptacle* chaffy. Sp. 1. *C. jamaicensis*, Linn. (*Santolina subhirsuta*, &c. Brown. Jam. 315. *S. Conyza fruticosa*, &c. Sloane Jam. 124. hist. 1. p. 257. t. 151. f. 3.) "Flowers about three, peduncled; leaves ovate oblong, somewhat serrated, petioled." Perennial. *Stems* six or seven feet high, shrubby, slender, round, slightly downy. *Leaves* opposite, hairy, rugged, three-nerved. *Flowers* terminating, yellow with a red tinge; calyx coloured: chaffy scales of the receptacle coloured, the length of the calyx; down rugged, as long as the flower. A native of Jamaica; in woods. Obs. As several other species are natives of Jamaica, the trivial name is a bad one. 2. *C. aspera*, Willd. Jacq. ic. rar. 3. t. 383. Collect. 2. p. 290. "Flowers solitary, peduncled, axillary; leaves oblong, trebly nerved, unequally serrated, rough." Willd. Annual. *Stem* four-cornered; leaves opposite. A native of the warmer parts of America. 3. *C. oppositifolia*, Linn. (*Santolina erecta foliis linearibus*; Brown. Jam. 315. 4. *Acmella jamaicensis*; Sloane hist. 1. p. 256. *Coipatlis*, Hern. 36.) "Corymbs close; peduncles very long; leaves lanceolate; stem herbaceous." *Stem* two feet high, upright, rather stiff, striated, pubescent; branches opposite. *Leaves* opposite or ternate, nearly sessile, entire or slightly toothed, nerved, acuminate, soft. *Flowers*, white. *Seeds* without down, (with three or four very minute awns, Swartz). Inner scales of the receptacle longer than the rest. A native of Jamaica. 4. *C. Amellus*, Linn. (*Amellus ramosus*, &c. Brown. Jam. 317.) "Flowers somewhat panicled; calyxes short; seeds naked; leaves ovate-lanceolate, petiolated." *Stem* shrubby, branched. *Leaves* opposite. *Flowers* yellow. A native of Jamaica. Willdenow suspects that it does not differ from *Bidens scandens* of Linnæus. This and the preceding were cultivated by Mr. Miller in 1768. 5. *C. lobata*, halbert-weed, Willd. Gært. Tab. 174. fig. 5. (*Conyza lobata*; sp. pl. *Conyza arborescens*, Plum. Spec. 9. ic. 96. *Santolina erecta subhirsuta floribus comosis*, Brown Jam. 315. 2. *Virga aurea major*, five Doria; Sloane Jam. 125. Hist. 1. 260. tab. 152. fig. 4) "Corymbs close; leaves alternate; upper ones ovate-lanceolate; lower ones halbert-shaped, sinuate-serrated." Swartz. Perennial. *Stem* four or five feet high, leafy, branched. *Flowers* yellow. Sloane. *Receptacle* rather convex; scales similar to those of the calyx. *Seeds* small, oblong, smooth; down simple, a little toothed, shorter than the scales of the receptacle, but equal in length to the flower, caducous. Gært. Brown speaks of it as an excellent bitter, and says that a spirituous infusion of the tops is kept in moist plantations, and administered as an active stomachic. Introduced into England by Dr. Houlton before 1733. 6. *C. pinifolia*, Willd. Martyn. Forst. prod. 288. "Flowers somewhat umbellate, terminating, close; leaves nearly smooth, alternate, linear, revolute at the margin; stem shrubby; branches pubescent." Willd. Perennial. *Peduncles* short, one-flowered. A native of New Zealand. 7. *C. leptophylla*, Willd. Martyn. Forst. Prod. 287. "Flowers somewhat umbellate, terminating; leaves growing by fours, spreading, linear, obtuse, revolute at the margin,

down underneath; stem shrubby; branches downy." Willd. Perennial. Younger leaves imbricated, adult ones spreading; old ones rather reflexed. A native of New Zealand. 8. *C. scoparia*. See *SERGILUS Scoparius*.

Obs. A feed with a simple down forms part of the generic character of *Calea*, as drawn up by Linnæus; and yet that character is found in only one of his own species. We have therefore found it necessary to exclude it from the essential character, in order to admit the *oppositifolia* and *amellus*; as Martyn and La Marek had already in some degree done; though we confess that, with the omission, the genus is not sufficiently discriminated from some others. The whole class *syngenesia* certainly stands in need of accurate investigation and cautious reform. But this is a task on which we have not leisure to enter. We apprehend that we discharge our duty to the public, if we lay before it the present state of the science, and point out such deficiencies as occur to our notice. The *scoparia*, which Linnæus at first made a *chrysocoma*, having a naked receptacle, cannot be a *calea*. As it differs from *chrysocoma* in the structure of its down, we have adopted the genus formed for it by Gærtner.

Propagation and Culture. These plants may be propagated by seeds, treated like other natives of warm climates.

CALEAL, in *Geography*, a town of Persia, in the province of Aiderbeitzan, 142 miles S.E. of Tauris.

CALEB, in *Scripture History*, the son of Jephunneh, one of the messengers deputed by Moses to explore the land of Canaan. Caleb and Joshua returned with a favourable report, revived the dejected spirits of the Israelites, and assured them of success in their projected invasion of the country. On this account it was predicted by Moses that they were the only two persons of all the people that came out of Egypt, who should live to enter the land of Canaan. Caleb was at this time 40 years old. After the Israelites, under the command of Joshua, had taken possession of Canaan, B. C. 1451, he divided the land in the year B. C. 1455; upon which Caleb obtained for his portion the mountains and city of Kirjath-Arba, or Hebron, a district possessed by the three sons of Anak. Finding it difficult to expel them from the town of Debir, he promised his daughter Achsah as wife to any one who should take it. This was effected by Othniel, the son of Kenaz, Caleb's younger brother, who accordingly married Achsah. Caleb then settled at Hebron, and is said to have lived in peace to his 114th year. Numb. xiii. xiv. Joshua xv. Judges 1.

CALEB, in *Scripture Geography*, a district of Judah, in which were the cities of Kirjath-Sepher, and Hebron, belonging to the family of Caleb. 1 Sam. xxx. 14.

CALECASIA, in *Geography*, a market town of Corsica, in the district of Niolo.

CALED, or KHALED, EBEN AL WALID, in *Biography and History*, one of the most valiant, successful, and ferocious of Mahomet's captains, belonged to the tribe of Koreish, and began his military career with opposing the pretended mission of the prophet: and at the battle of Ohod, contributed by means of the wing which he commanded to the defeat of the Moslems. Being afterwards converted, he became a principal champion in the impostor's cause, and obtained from Mahomet the honourable title of "one of the swords of God." This title was conferred upon him in consequence of the battle of Muta, A. D. 630, in which, after the fall of three successive commanders of the Moslems, he assumed the standard, and by his valour withstood and repulsed the superior numbers of the Christians. Upon the accession of Abubeker, he was deputed with a small army to counteract the revolt of several Arabian tribes, whom he com-

pletely subdued. He afterwards obtained a more important victory over the impostor Moseilama, who fell in the battle, and whose surviving followers were compelled to embrace the religion of Mahomet. In his subsequent invasion of Irak, the ancient province of Babylon, he was eminently successful, and terminated his expedition by the capture of the city Hira near the Euphrates, and the extinction of the kingdom, which took its name from that capital. From thence he was summoned into Syria to support the Moslems under the command of Abu Obeidah, who had met with several checks from the Greeks; and being appointed to supercede that general, he soon changed the aspect of affairs. Having refused the detachment that besieged Bostera, he invested this place, and, aided by treachery, took it. To the inhabitants who fled for quarter, he shewed himself unusually merciful, and restrained the carnage which they were suffering. On his arrival before Damascus, he vanquished by his personal valour two Christian commanders, and on their refusal to embrace islamism, put them to death in cold blood. Having collected a powerful body of Moslems at Aizaadin, in the year 633, he totally discomfited Werdan, the general of Heraclius, and destroyed the greatest part of his army. During the progress of the siege of Damascus, many exploits of valour were performed by both parties; at length, however, the siege having been prolonged 70 days, the inhabitants sought refuge in the mild and generous disposition of Abu Obeidah from the fury of Caled, and stipulated to surrender the place on moderate terms. In the mean while Caled interposed, prevented the execution of the treaty, and with savage ferocity, put to the sword all that came in his way; and meeting with Abu Obeidah, who was peaceably entering the city, a contest ensued; one insisting on the right of the sword, and the other urging the sacredness of a capitulation. Caled in the issue yielded to the pleas of mercy and true policy; and the sword was sheathed, on condition of admitting to tribute and toleration of religion those inhabitants who chose to continue in the city. The adherents of Thomas, however, who had fought under his banner in the defence of the city, embraced the alternative of poverty and exile. Accordingly in an adjacent meadow they formed an encampment of priests and laymen, of soldiers and citizens, of women and children; and being allowed to take with them their most precious moveables, and arms necessary for their defence, they prepared to abandon their native homes. Caled, whose inflexible soul was not touched by the spectacle of their distress, hastened and incommoded their departure; and sternly declared, that after a respite of three days, they might be pursued and treated as the enemies of the Moslems. Unfated with blood and vengeance, and further urged by the intreaties of Jonas, a noble Damascene, whose betrothed spouse had accompanied the fugitives, Caled at the head of 4000 horse, in the disguise of Christian Arabs, undertook the pursuit. Accordingly he traced their march across the mountains of Libanus, encountering incredible hardships, to the vicinity of Laodicea, and in a pleasant valley where they had pitched their tents, rushed on the promiscuous multitude, insufficiently provided with arms, and already vanquished by sorrow and fatigue. In consequence of this furious onset and indiscriminate slaughter, the Arabs enjoyed the satisfaction of believing, that not a Christian of either sex escaped the edge of their scymetars; and all the rich spoils of the victims fell into the hands of the conquerors. In the tumult of the battle Jonas found the object of his pursuit; but her resentment was inflamed by the last act of his perfidy; and as Eudocia struggled in his hateful embraces, she struck a dagger to her heart. Caled had penetrated, on this occasion, about 150 miles into the Roman territory; and having

completed this bloody tragedy, which has afforded a striking subject both to history and poetry, he returned to Damascus with the same secrecy and speed.

On the accession of Omar, who succeeded Abubeker in the caliphate, Caled was removed from the command; and it was again transferred to the more gentle and conciliatory Abu Obeidah. The army expressed their dissatisfaction with this change; but Caled, notwithstanding the characteristic ferocity of his temper, submitted to it with magnanimity; and having caused Omar to be proclaimed caliph at Damascus, resigned his command without hesitation, declaring his readiness to serve the Mussulman cause in any post which it should please the head of the religion to assign him. Soon afterwards his activity and enterprise were of signal service in relieving a party of the Moslems, who had incautiously marched to plunder a famous monastery in the neighbourhood of Abyla, and who were surrounded by a much superior force. Caled himself had been relieved in similar circumstances of danger, on a reconnoitering party, by a detachment sent by Abu Obeidah. Under this chief Caled served in Syria and Mesopotamia, and he always distinguished himself in seasons of peculiar difficulty and peril. Of his subsequent exploits the most eminent was the victory obtained by him in the battle of Yermuk, A. D. 636; on which interesting occasion the public voice, and the modesty of Abu Obeidah restored the command to him, who was esteemed the most deserving of the Moslems. The combat was obstinate and bloody; 4030 of the Moslems were buried in the field of battle; and the skill of the Armenian archers enabled 700 to boast that they had lost an eye in that meritorious service. The Syrian veterans acknowledged that it was the hardest and most doubtful of the days which they had seen; but it was likewise the most decisive. Many thousands of the Greeks and Syrians fell by the swords of the Arabs; many were slaughtered, after the defeat, in the woods and mountains; many, by mistaking the fords, were drowned in the waters of the Yermuk; and however the loss may be magnified, it was undoubtedly very great. Abu Obeidah, in his letter to the caliph, states the number killed to have been 150,000, and the prisoners at 40,000. This computation exceeds all belief. Such was the success of the Saracens, that the Greek army durst no longer appear in the field; and the conquest of Jerusalem was the speedy result. In 638, Caled took Aleppo, and he carried his victorious arms beyond the Euphrates. He survived about three years the pestilence of 639, which proved fatal to many Mussulman chiefs; but no account remains of the time or manner of his death. His tomb is shewn in the neighbourhood of Emesa. The valour of this champion was supported by fanaticism; for as long as he wore a cap, which had been blessed by Mahomet, he deemed himself invulnerable. *Mod. Un. Hist. vol. i. Gibbon's Hist. vol. ix.*

CALEDON, in *Geography*, a small town of Ireland, in the county of Tyrone, and province of Ulster, near the river Blackwater, 70 Irish miles N. by E. from Dublin.

CALEDONIA, in *Ancient Geography*, an appellation by which that part of Great Britain now called Scotland was formerly distinguished. See SCOTLAND. The etymology of this name, as well as the precise boundaries of the country to which it has been applied, have been variously assigned. According to Camden, the appellation of Caledonia is derived from the Celtic or British *kaled* or *caled*, hard; whence Caledonii, signifying a people, *hardy*, *uncivilised*, and *rustic*. Buchanan derives it from the old Scottish word, *calden*, denoting a hazle-tree. Others (See Preface to Ossian's Poems, vol. ii. p. 4.) compound it of the two British words *cail* and *dun*, which signify the Gauls or Britons of the mountains,

tains. Accordingly it is said, that this was a very proper name for the real Caledonians of Badenoch, Braidalbin, and the adjacent tracts, which are the most mountainous parts of Scotland, and not very unsuitable to the other nations, to whom it was given by the Roman authors. Others again affirm, that *Gael-doch* is the only appellation, which the Scots, who speak the Gaelic language, know for their own division of Britain: And *Gael-doch* is a compound of *Gael* or *Cael*, the first colony of the ancient Gauls who transmigrated into Britain, and *doch*, a district or division of a country. The Romans, by transposing the letter *l* in *Cael*, and softening into a Latin termination the *ch* of *doch*, formed the well known name of Caledonia.

The ancient Caledonia comprehended all that country which lay to the north of the rivers Forth and Clyde; or, as others state its boundaries, from the wall of Severus, connecting the east coast near Tinemouth with the Solway Firth, at Boulness, on the west coast, to the northern shore. The Caledonii of Ptolemy possessed that extensive tract of country which reached from the Lelannian bay, or Loch-fenn, on the west, to the estuary of Vara or Firth of Tayne on the east coast, and included Badenoch, Braidalbin, the inland parts of the shires of Murray, Banff, Aberdeen, and Perth. The Greek and Roman historians and poets, who flourished in the first, second, and third centuries, when they have occasion to mention the affairs of Britain, give the general name of Caledonii to all the British nations without the limits of the Roman province, and that of Caledonia to their country. The reason of this might be, that the Caledonii were the most powerful or warlike of those nations, and maintained some kind of superiority over the rest, who were contented to fight under their conduct against their common enemies, the Romans and provincial Britons. Hence the name of the Caledonii, from being the proper name of one nation, became the common denomination of many.

Caledonia seems to have been unknown to the Romans till Agricola entered it with his army, in his third campaign, A. D. 80. Marching from south-west towards the north-east, he traversed the territories of several British tribes, and penetrated to the river Tay, without opposition. The Caledonii seemed to have retired, hoping to recover in the winter, after the retreat of their enemies, what they had lost in the summer. But Agricola disappointed their expectations by employing the remainder of the season in building forts in the most convenient situations for keeping possession of the country. As soon as these forts were finished and stored with provisions, he put his army into them for their winter-quarters, that his troops might be every where at hand to check the attempts of the natives to shake off the yoke. Tacitus does not inform us, whether Agricola spent this winter in Caledonia, or in the more southern parts of Britain. See AGRICOLA.

When Adrian arrived in Britain A. D. 121, he actively employed himself in securing the frontiers of the Roman province against the incursions of enemies. With this view he erected his famous rampart or wall, as the boundary of the Roman province, from the mouth of the river Tyne on the east, to the Solway firth on the west, near the track where Agricola had built his first chain of forts. See ADRIAN. Under the reign of Antoninus Pius, A. D. 138, Lollius Urbicus was governor of Britain; and in order to secure the peace of the Roman province in this island, it was found necessary to enlarge its limits. Accordingly Lollius Urbicus defeated the Mœatæ in several engagements, and recovered the country as far as the isthmus between the firths of Forth and Clyde. In order to secure his con-

quest, and to keep the Caledonians at a greater distance, Urbicus, by direction of the emperor, raised another strong rampart, in imitation of that of Adrian, between those two firths, along the line of forts which had been constructed there by Agricola. This rampart, with its ditch and forts, was intended for the utmost boundary of the Roman empire in Britain. In the year 180, the Caledonians, having broke through the wall of Antoninus, and being joined by the Mœatæ, invaded the Roman province. To repel this invasion, the government of Britain was bestowed upon Ulpus Marcellus, who, having first restored the discipline of the Roman troops, led them against the enemy, and defeated them in several battles. During the contest which took place on the accession of Septimus Severus to the imperial throne, Britain became a scene of great confusion, A. D. 193. The Mœatæ and Caledonians, observing the defenceless state of the Roman province, made incursions into it, and spread desolation in their progress. When Lupus was deputed by Severus to repel these invaders, he found himself unable to accomplish this object by force, and therefore bribed the plunderers to retire, by purchasing their prisoners with a sum of money. Their incursions, however, were renewed with greater violence for several years; and it was found necessary for Severus himself to visit Britain in person. The news of his arrival, A. D. 207, alarmed the Mœatæ and Caledonians, and induced them to send ambassadors to promise submission, and sue for peace. Severus, however, dismissed the ambassadors without any satisfactory answer, and advanced northward at the head of a very large army. When he had passed the wall of Adrian, he encountered many difficulties and dangers. His army was harassed with continual skirmishes, and decoyed into many ambushes; and in his progress, he was obliged to employ one part of his army in cutting down woods, draining lakes and marshes, making roads, and casting bridges over rivers, whilst the other part defended the labourers from the enemy. In this expedition Severus lost no fewer than 50,000 men, though he fought no battle, and saw no enemies in a body. At length he penetrated into the very heart of Caledonia, and struck such terror into its inhabitants, that they renewed their supplications for peace, which was at last granted them, on condition of relinquishing a part of their country, and delivering up their arms. Having concluded a peace with the Caledonians, and conducted his army back into the northern parts of the Roman province, he employed his troops for about two years in constructing his famous wall. Towards the disastrous decline of his life, A. D. 210, the Mœatæ and Caledonians took advantage of his weakness and the distraction of his family, and renewed the war in hopes of recovering that part of their country which they had been obliged to resign. The aged emperor, who had retired to York, became peevish by his complicated sufferings, was enraged by the news of this revolt, and issued orders for exterminating these two nations, without sparing the very infants in their mothers' wombs. The execution of these cruel orders was prevented by the emperor's death. His eldest son Caracalla, as soon as he heard of his father's death, concluded a peace with the Mœatæ and Caledonians, and soon after left Britain.

When the emperor Severus invaded Caledonia, A. D. 207, we are told (Xiphilin. ex Dio Nicæo in Sever.) "that the Mœatæ and Caledonians (who possessed all the island beyond the wall of Adrian), inhabited barren uncultivated mountains, and desert marshy plains; that they had neither walls, houses, nor cultivated lands; but lived on the milk and flesh of their flocks and herds, on what they got by plunder, or caught by

by hunting, and on the fruits of their trees." Having been obliged by Severus to surrender part of their country to the Romans, that industrious people, in the course of the third century, built several towns and stations, constructed highways, cut down woods, drained marshes, and introduced agriculture into the country between the walls, many parts of which are very level, fertile, and fit for tillage. Although the Romans never formed any large or lasting establishment to the north of the wall between the Forth and Clyde, yet many of them, and of the provincial Britons, retired into Caledonia at different times, and on various occasions, particularly about the end of the third century, in order to escape from the Dioclesian persecution. It is, therefore, highly probable, that these refugees instructed the people among whom they settled, not only in their religion, but also in their arts, particularly agriculture. The eastern coasts of Caledonia were remarkably fit for cultivation, and the Picts, who inhabited these coasts, were very early acquainted with agriculture, which they undoubtedly learned from the Romans, or the provincial Britons. The name which was given to the Caledonians on the east, by those of the west, was "Cruitnich," which signifies wheat or corn cakes; a proof that they were husbandmen, and expressing the contempt or envy of the carnivorous highlander. There is also reason to believe, that the Caledonians of the west, who, in the fourth century, began to be called "Scots," denoting, in the Celtic language, wanderers or vagrants, though they were of a more restless and wandering disposition than those of the east, and their country was more mountainous, and not so fit for cultivation, were not altogether ignorant of agriculture at this period. The vicinity of the Hebrides, profusely scattered along the western coast of Scotland, tempted the curiosity of these western Caledonians or Scots, and improved their skill; and they acquired, by slow degrees, the art, or rather the habit, of managing their boats in a tempestuous sea, and of steering their nocturnal course by the light of the well-known stars. The ancient Caledonians, and other Britons, educated in the midst of arms, and accustomed from their infancy to hear nothing admired or celebrated but valiant deeds in war, looked upon every profession but that of arms as dishonourable; and every employment but war as unworthy of a man of spirit. To such an extravagant height did they carry these absurd and pernicious notions of honour, that they imagined that those who followed any other employment, except that of arms, not only lived despised, and died unlamented; but that their souls, after death, hovered in the lower regions, among fens and marshes, and never mounted the winds, nor mingled with the souls of warriors in the airy halls. Dio and Herodian seem to intimate, that the Mœætæ and Caledonians were naked in the beginning of the third century, when they were invaded by the emperor Severus. But these authors probably meant no more than that these people were very imperfectly clothed, or almost naked; and they use expressions which admit of this interpretation. As the Romans never conquered the Caledonians, or northern Britons, they cannot be supposed to have made any material change in their language; which is still spoken by their posterity, in the highlands, and western islands of Scotland, with less variation from the original Celtic (if we may believe some of the best judges in these matters,) than in any other part of Europe.

As early as the reign of Constantine, the inhabitants of Caledonia were divided between the two great tribes of the "Scots," and of the "Picts;" the former possessing, as we have observed, the western; and the latter, the eastern division of that country. The power, and almost the me-

mory of the Picts have been extinguished by their successful rivals; and the Scots, after maintaining for ages the dignity of an independent kingdom, have multiplied, by an equal and voluntary union, the honours of the English name. Tacitus Vit. Agric. Critical Dissertations on the Origin, Antiquities, &c. of the Caledonians, by Dr. J. Macpherson, Lond. 1768. 4to. J. Macpherson's Introd. to the Hist. of Great Britain and Ireland, Lond. 1773. 4to. Henry's Hist. vol. i. and ii. Gibbon's Hist. vol. iv. See ATTACOTTI, HIGHLANDERS, PICTS, and SCOTLAND.

CALEDONIA, a town in the country above described; which, according to Buchanan, gave name to the country, the people, and adjacent ocean.

CALEDONIA *Sylva*, a large forest in the same country, covered with lofty trees, and affording shelter to wild and fierce beasts.

CALEDONIA, in *Geography*, a sea-port settlement, on the north-west side of the isthmus of Darien, near the gulf of Mexico, founded in 1698, by some Scots families; but which, by the influence of the East India Company, they were obliged to abandon, in the year 1700. N. lat. 9° 30'. W. long. 77° 36'.

CALEDONIA, a county of Vermont, in America, containing 24 townships, and having to the S.E. Connecticut river; to the N.W. Orleans and Chittenden counties; to the N.E. Essex-county; and to the S.W. Orange-county, of which, till of late, it formed a part.

CALEDONIA, *New*, a large island of Australasia, in the Southern Pacific Ocean, extending from 19° 37' to 22° 30', S. lat.; and from 163° 37' to 167° 14', E. long. Its length from north-west to south-east is about 80 leagues; but its greatest breadth does not exceed 10 leagues. It was discovered by captain Cook, in 1774. He explored the north-western part of this island, and says that this district was called "Balade;" but D'Entrecasteaux, who commanded the expedition fitted out by the Constituent Assembly of France in search of La Perouse, in 1791—1794, visited its south-western coast. The reefs by which this part is bounded, are generally from 25 to 30,000 toises from the land; and it is rendered still more dangerous by the south-west winds that blow in that quarter. Many mountainous islands and detached rocks stretch from N.N.E. to E.N.E. and render this extremity of the island more dangerous than the southern part. Some of these islands are several hundred toises in extent; they are very numerous, and encircled with reefs. These islands seem to be a continuation of the mountains of the large island; their bases being covered by the sea, and their summits rising above it, and forming so many little islands. The gradual diminution of the height of these mountains affords reason to suppose, that in these seas, shoals extending to a great distance contribute to augment the dangers of navigation. The reefs that abound in the vicinity of this island, are coral rocks, the well-known work of polypi. The land of New Caledonia, which is low towards its southern extremity, rises into mountains of moderate elevation, in a south-east or north-west direction, inclining towards the north. Hills, almost destitute of vegetation, rise like an amphitheatre towards the principal chain of mountains, and appear to be at least 900 toises in perpendicular height, and directed towards the north-west. D'Entrecasteaux and his companions observed three ranges of mountains of different degrees of elevation, and hollows apparently formed by the fall of the rains, which were continued to the summits of the most arid mountains. Behind these high mountains they saw about 20,000 toises within the land, which seemed to tower above all the rest, and to be at least 1200 toises in perpendicular elevation. From the middle of one of these ravines or hollows

lows issued a torrent, which appeared at a considerable distance white with its foaming waters; and trees are found growing in the bottoms of the ravines with which the hills are furrowed. These torrents are numerous, and, in some places, form fine cascades; and they serve also to fertilize the plains and valleys that are interspersed among the barren mountains, and which exhibit traces of culture and population. The soil of the plains is a sandy black mould: the sides of the hills are yellow clay with mica; and the higher parts consist of quartz and mica, tinged red, or orange, with iron. Garnets are also found in petro-silex, and in several places white transparent quartz, with layers of gold, coloured mica, blended with serpentine, hornblende, talc, and garnets. New Caledonia differs from all the other islands yet discovered in the South Sea, by being entirely destitute of volcanic productions. Every part of the coast seems to be inhabited; and the plantations in the plains are cultivated with much labour. On the sides of the mountains small walls are raised above one another to prevent the rolling down of the ground which was cultivated. But as the country is for the most part rocky and barren, the inhabitants chiefly subsist on roots and fish. Some of them eat the earth called *steatite*, which they probably make choice of to allay their hunger, because it is soft and crumbles, and is easy of digestion. They also boil, and eat a species of spiders, which are found in the woods. Like many other savages, they feed on the flesh of their enemies, which they previously broil on a fire of charcoal. This horrible practice of eating human flesh is confirmed by several facts recited by D'Entrecasteaux; notwithstanding the favourable accounts given of these islanders by captain Cook and Dr. Forster. They preferred water to wine or brandy; and in drinking it, inclined their heads at about two feet distance above the surface of the water, and then threw it up against their faces with their hands, opening their mouths very wide, and catching as much as they could.

The bread-fruit and cocoa-nut are scarce, and obtained with difficulty; although in some of the interior vallies there are considerable plantations of these, as well as of bananas, Caribbee cabbages (*arum esculentum*), yams, sugar-canes, &c. but the island furnishes several new plants, birds, and fishes. The natives seem to be altogether unacquainted with goats, hogs, dogs, or cats, as they had not any name by which to distinguish them. The inhabitants are stout and tall, some of them measuring six feet four inches, and generally well proportioned; their features mild; their hair black and woolly; but many, who seemed to be desirous of having the appearance of long hair, fastened to their own locks two or three tresses, made with the leaves of some plants of the grass kind, and covered with the hair of the Vampire bat, which hung down to the middle of their backs. Some of them cropped their hair short, and used a kind of comb, formed of a number of sticks of hard wood, generally about 20, which they fastened together at one end, and parallel to, and nearly one tenth of an inch from one another; and these combs they always wore in their hair, on one side of the head; on their heads they wore a kind of concave, cylindrical black cap, made of strong paper, which they seemed to consider as an ornament, and which, it was supposed, was worn only by the chiefs and warriors. The custom of pulling out their beards by the root is very general, although some of them let their beards grow. Their skin is nearly of as deep a black as that of the inhabitants of Diemen's Cape, whom they very much resemble in the cast of their countenance. These islanders are wholly naked, except that they wore round the middle pieces of coarse stuff, made of bark, or large leaves of trees.

In some cases, pieces of this kind of cloth were fastened by a string round the neck, and to this string were hung small round beads of a pale green stone. They were not destitute of coarse garments made of matting, but they never seemed to use them except in their canoes, and when unemployed.

The women in this island seemed to be in a subordinate and servile state, and employed themselves in various kinds of labour. Their colour is generally a dark chestnut, or a mahogany brown; their stature is middle-sized, rather tall, and their whole form stout and clumsy. They had no other garment besides a kind of fringe, made of the filaments of the bark of trees, which served them as a girdle and passed several times round the waist. Their character of chastity is superior to that of the females in the other isles of the Pacific; nor did any instance occur of their permitting any indecent familiarity with an European during capt. Cook's stay at the island. But the account of their chastity given by D'Entrecasteaux is not so much to their reputation. The lower lobe of the ears, both of males and females, perforated with a very large hole, hung down to their shoulders; and into these holes some introduced leaves of trees, others a piece of wood, in order to stretch them bigger. Several had this lobe jagged; probably from having been torn either in battle, or in running through the woods. Their general ornaments are ear-rings of tortoise-shells, necklaces, or amulets, made both of shells and stones, and some of twisted threads, suspended from which they usually carried at the end of a string a small piece of human bone, or hard stone, indifferently carved; and bracelets made of large shells, which they wear above the elbows. By the account of Cook and Forster, the Caledonians are represented as different from the other natives of the South Sea islands, with regard to their honesty and the inoffensiveness of their disposition and manners. This account is not confirmed by D'Entrecasteaux. He says, that whilst they asked for stuffs and iron in exchange for their effects, they soon gave evidence of their being audacious thieves; and he mentions several instances of the ferociousness of their dispositions, such as their feeding on the flesh of children, &c. Of their being cannibals there is no doubt; and they are furnished with an instrument, made of stone, with sharp edges, for cutting up the limbs of their enemies, which they divide among them after a battle. Their houses or huts are circular, formed in the shape of bee-hives, about 14 toise in height, and as much in breadth, close and smoky, as there is no passage for the smoke but through the door. Some of these huts are scattered at the distance of three or four hundred paces from each other, and overshadowed by a few cocoa-trees. Some of them are surrounded by palisades 1½ yard high, and 3½ feet from the borders of the hut, with a narrow walk before the door. The door, about a yard high and half a yard wide, is sometimes closed by a piece of the limb of a cocoa tree, the leafy branches of which are interlaced. Of these doors some had two posts, at the upper extremity of which a man's head was rudely carved. The lower part of these huts is erected perpendicularly to the height of a yard, and then tapered off in a pretty regular cone, and terminated by the upper end of a post, fixed in the centre of the floor. The frame of the hut consists of poles, bearing against the upper end of the post, which rises from the middle of the floor, and is near three inches in diameter at the bottom. A few pieces of wood bent to an arch, render these little habitations sufficiently strong. They are covered with straw to the thickness of two or three inches; and the floor, on which the natives are perfectly sheltered from the weather, is spread with mats. Within the hut on one side is a board, fastened with cords in an horizontal position, about a yard from the ground, on

which they deposit any thing out of the way. The musquitoes, however, are so troublesome in these huts, that they are obliged to light fires to drive them away when they go to sleep; and as there is no vent for the smoke, except at the door, they must be extremely incommoded by it. Near some of these dwellings are little hillocks of earth, 12 or 14 inches high, with a very open trellis in the middle, of the height of two or three yards, called by the natives "Nbouet," which are the graves in which they bury their dead. Those in which their chiefs, slain in battle, are interred, are decorated with spears, darts, paddles, &c. stuck upright in the ground about them. Their canoes are made of two trees, hollowed out, having a raised gunnel about two inches high, and closed at each end with a bulk-head of the same height; so that the whole resembles a long square trough about three feet shorter than the body of the canoe. Two canoes thus fitted are fastened to each other about three feet asunder, by means of cross-spars, which project about a foot over each side, and form a platform. Their mast is fixed at an equal distance from the two canoes, and towards the fore-part of the platform, by which they are joined together. On the platform they have a fire-hearth, and generally a fire burning. They are navigated by one or two latteen sails, extended to a small latteen yard, the end of which is fixed in a notch or hole in the deck. Each canoe has a large stone, fastened to a long rope, which serves as an anchor. These canoes, however, are not so skilfully constructed as those of the Friendly islands, to which they are much inferior in point of sailing. As the Caledonians are a warlike people, they are furnished with a variety of offensive weapons, as clubs, spears, darts, and slings for throwing stones. Most of these islanders are armed with spears and clubs, and carry at their waist a little bag full of stones, cut into an oval shape, which they throw with slings. Their clubs are of different forms; and, as well as their darts and spears, are curiously carved, neatly constructed, and highly polished. Their javelins, which are commonly 15 feet long, are not more than $2\frac{1}{2}$ inches in circumference at the middle. They are peculiarly dextrous in their mode of throwing them, and of accelerating their motion. For this purpose they employ a very elastic cord, made of the covering of the cocoa-nut and fish-skin, one extremity of which they fix to the end of the fore-finger, and the other which terminates in a sort of round button, is twisted round the end of the dart, but in such a manner as to quit its hold as soon as that weapon is thrown into the air. It is somewhat surprising that they are unacquainted with the use of bows and arrows. Their language is different from that of the Friendly islands, though some of their terms resemble those used by the inhabitants of the other islands. D'Entrecasteaux has annexed a vocabulary of their language. Their vocal music, however agreeable to themselves, is harsh and discordant to the ears of Europeans. The only musical instrument, which they seem to possess, is a kind of whistle, formed of a little polished piece of brown wood about two inches long, shaped somewhat like a bell, suspended with a rope fixed at the small end; it has two holes near the base, and another near the insertion of the rope, all which communicate with one another; by blowing in the uppermost, a shrill sound, like whistling, is produced. These islanders set less value on nails and hatchets than any other inhabitants of the South sea islands. They appeared, however, to be acquainted with iron, for they had a term for expressing it; but as they used hard stones for purposes to which iron instruments might be applied, this metal was less important to them than to some of the other islanders. The variation of the needle in this island was $9^{\circ} 30'$ towards the east. The mercury in the

barometer never rose above 28 inches, 2 lines, and 2-10ths, and never fell below 28 inches, 1 line, and 4-10ths. Notwithstanding the excessive heat which the French voyagers felt on the coast, Reaumur's thermometer never exceeded 25° , and on board never rose above 21° . The tides were not observable above once a day; the flood taking place at half past six, and the waters, rising in perpendicular height, 4 feet 7 inches. Of the government and religion of the Caledonians nothing is known. Labillardiere's Voyage in search of La Perouse.

CALEDONICA, in *Ornithology*, a species of ARDEA, called by Latham the Caledonian night heron, from its being a native of New Caledonia. The general colour of the plumage is ferruginous, and beneath white: crest on the hind head of three feathers; frontlet black; eye-brows white.

Obs. This bird is an inhabitant of various parts of the Australasian regions as well as New Caledonia. Its length is 22 inches; bill black; area of the eyes green; legs yellow.

CALEFACIENTIA, in *Medicine*, are those substances which, when taken internally, increase the temperature of the body, or produce a sensation of local or general warmth. In the language of the present day, they are denominated cordials or stimulants. They may produce a sensation of warmth by their immediate impression on the nerves, without any actual increase of temperature; but they also tend to accelerate the circulation, and therefore to augment the actual heat. For it has been ascertained that the animal temperature is generated by the chemical changes which take place in the blood in the course of circulation, in consequence of the absorption and evolution of different gaseous fluids. Whenever, therefore, the rapidity of the circulation at large is increased by general stimulants; or the vessels of any particular part are, by a local stimulus, excited to greater action, and transmit a larger proportion of blood; the evolution of heat will necessarily be augmented; there will be a sensation of warmth in the general system, or in the particular parts respectively. See STIMULANT and CARDIAC.

CALEFACTION, denotes the production of heat in a body by the action of fire; or the impulse which the particles of a hot body impress on other bodies around it.

The word is particularly used in pharmacy; where calefaction is distinguished from coction: the first being applied where the thing is only heated, without boiling.

CALETTA, or CALLELIA, in *Geography*, a fishing village of Catalonia in Spain, 4 leagues from Matara. Its population consists of 886 persons, and it employs near 50 fishing-boats.

CALEMUT. See SALAMANIE.

CALEMBERG, a principality of Germany, in the circle of Lower Saxony, which takes its name from an ancient castle, now in ruins, situated on the Leine, about 11 miles S. from Hanover. Calenberg is divided into two parts by a portion of the principality of Wolfenbittel; of which the northern part is surrounded by the principality of Lüneburg, the diocese of Hildesheim, the principality of Wolfenbittel, the counties of Pyrmont, Lippe, Schauenberg, and Hoya, and the principality of Minden; and the south part by the principalities of Wolfenbittel and Grubenhagen, and the territories of Eichsfeld and Lower Hesse. This principality constitutes a part of the duchy of Brunswick, and is chiefly formed of counties, lordships, and ecclesiastical states. The country is in some parts mountainous, in some marshy, and in others sandy, but generally fertile; producing wheat, rye, barley, oats, lentils, peas, beans, vetches, buck-wheat, excellent garden-stuff, tobacco, hops, flax, and plenty of good fruit.

fruit. It has likewise forests of oak, beech, alder, pine, birch, &c., which afford timber for the building of ships and houses, and also wood for fuel and other uses. It also supplies large breeds of horses, black cattle, and sheep, together with venison and fish. In several places are marl-pits, quarries of free-stone, and mill-stones, with brick-kilns, turf, and coal-pits, rich iron ore, and salt-springs. It has also numerous manufactories of woollen and linen, cotton and silk, oil-skins and carpets, leather and paper, and stone-ware, both for home consumption and for exportation. Its foreign trade is greatly facilitated by means of the Weser, and the country where the Leine has been rendered navigable. In this principality are 19 cities, the principal of which are Hanover and Gottingen; 17 market towns, 210 Lutheran parochial churches, 5 Calvinistic, 6 Catholic, 2 Lutheran abbeys, one Catholic monastery, 5 Lutheran convents for ladies, and 24,170 taxable hearths. Several of the cities possess both the civil and criminal jurisdiction, but in these appeals lie from the magistrate to the upper courts of justice. The other cities are entirely dependent on the bailiwick. The states of the country are composed of the prelates and nobility, which are divided into three departments: viz. those of Hanover, Gottingen and Hameln, with the department of Lavenau. These states have their syndic and other officers, but of the nobility of each department two provincial deputies are elected. This principality has a vote both in the imperial college of princes and the diets of Lower Saxony. Its matricular assessment is 22½ horse and 140 foot; or 686 florins. All the rivers in this principality discharge themselves, either into the Leine or the Weser.

The bailiwick of *Calenburgh* is four German miles in length, and three broad, extending as far as Hanover. The culture of grain and flax is the principal occupation of the inhabitants. In the whole bailiwick are one town, viz. Gehrden, and 60 villages.

CALENDAR, **CALENDARIUM**, or **KALENDAR**, a distribution of time, accommodated to the uses of life; or a table, or almanac, containing the order of days, weeks, months, seasons, &c. happening throughout the year. See **ALMANAC**, **TIME**, **MONTH**, **YEAR**, &c. It is called *calendar* from the word *calenda*, anciently wrote in large characters, at the head of each month. See **CALENDI**.

The days in calendars were originally divided into octoades, or eighths; but afterwards, in imitation of the Jews, into hebdomades, or sevenths; which custom, Scaliger observes, was not introduced among the Romans till after the time of Theodosius.

There are divers calendars, according to the different forms of the year, and distributions of time, established in different countries. Hence the Roman, the Jewish, the Persian, the Julian, the Gregorian, &c. calendars.

The ancient Roman calendar is given by Ricciolus, Struvius, Damer, and others; by which we see the order and number of the Roman holy-days, and work-days:

The three Christian calendars are given by Wolfius in his *Elements of Chronology*.

The Jewish calendar was fixed by rabbi Hillel, about the year 360, from which time the days of their year may be reduced to those of the Julian calendar.

CALENDAR, the Roman, owed its origin to Romulus; but it has undergone various reformatations since his time. That legislator distributed time into several periods, for the use of the people under his command; but as he was much better versed in matters of war than of astronomy, he only divided the year into ten months, making it begin in the spring, on the first of March: imagining the sun made his course

through all the seasons in three hundred and four days. According to Plutarch, (in Numa,) these months had no certain or equal number of days, some consisting of 20, some of 35, and some of more. But Macrobius informs us, (Saturn. l. i. c. 12.) that Romulus settled the number of days with greater equality, allotting to March, May, Quintilis, and October, 31 days; and to April, June, Sextilis, September, November, and December, 30; making up in all 304 days. From a passage in Plutarch, (ubi supra,) it appears, that two intercalary months were added to every year; for he says, that the Latins, not understanding the difference between the solar and lunar years, nevertheless provided, that the year should contain 360 days. But these intercalary months were not inserted in the calendar. To these no names were affixed until the succeeding reign.

The calendar of Romulus was reformed by Numa, who, at first, intended to make a complete lunar year of 354 days. With this view, he added 50 days to the 304, which had been divided into 10 months. From every one of the months of 30 days, he borrowed one day, which he added to the 50 already mentioned: of these 56 days he composed two months, calling the one January, and the other February. Not long afterwards, he added one day to January; and thus made his year to consist of 355 days; adding one odd day more than he ought to have done, merely out of superstition, to make the number fortunate. However, he would not allow more than 28 days for February; and therefore, that month was always accounted unlucky. Moreover, he transferred the beginning of the year from March to January, reckoning March the second, April the third, &c.; placing February in the end of the calendar. (Ovid. Fast. l. ii. v. 47.) In order to adjust the lunar year to the solar, he added 90 days in eight years; because the latter is $11\frac{1}{4}$ days greater than the former, and $11\frac{1}{4} \times 8 = 90$. Of these 90 days four months were composed, consisting of 22 and 23 days alternately; and one was intercalated every two years; i. e. to the second year 22 days were added; to the fourth 23 days; to the sixth 22 days; and to the eighth 23 days; in all 90 days. The intercalary month formed of these days was called "Mercedinus," or "Mercedonius," from the Latin word "merces," signifying wages, probably, because this time was appointed for the payment of workmen and domestics; and it was inserted after the 23d of February; and the remaining five days of that month were subjoined. By these intercalations, the quantity of the year became too great; and the excess in eight years amounted to 8d 14' 29" 56" nearly. To cut off this excess, it was proposed, in every third octennial period, that is, from 16 to 24 years, to insert not 90, but 66 days, or three months of 22 days, a quantity still too great by 4h 28' 20"; but sufficiently accurate for all the purposes of common life. The year of Numa admitted of no alteration until the year B. C. 452, when the decemviri changed the order of the months, reckoning January the first, February the second, March the third, &c. This arrangement has never been disturbed.

However, the intercalations above-mentioned being ill observed by the pontiffs, to whom Numa committed the care of them, occasioned great disorders in the constitution of the year, which Julius Cæsar, with the advice and assistance of Sosigenes, a celebrated mathematician of Alexandria in Egypt, undertook to rectify, A. U. C. 708. B. C. 46. He found that the months had considerably receded from the seasons to which they had been adjusted by Numa, and that the dispensation of time in the calendar could never be settled on any sure footing, without having regard to the annual course of the sun. In order to bring forward the

months to their proper places, he took into the account 90 days which had been lost by the former method of reckoning, and formed a year of 15 months, or 445 days, which, on account of its quantity and design, has been called "the year of confusion." This year terminated, and the Julian year commenced on the 1st day of January, B. C. 46. From this epoch, the civil year and months were regulated by the course of the sun. The year of Numa being 10 days shorter than the solar year, two days were added by Julius Cæsar to each of the months of January, August, and December, and one to April, June, September, and November. Moreover, as the annual revolution of the sun is completed in 365 days, and about six hours, he made the year to consist of 365 days for three years successively, and every fourth year, of 366, in order to comprehend the odd six hours. Accordingly, he ordained, that an intercalary day should be added every fourth year, to the 23d of February; that is, the 24th day, or sixth of the calends of March, was to be twice reckoned; and hence this year was called *Bissextile*, which see. It is also styled "Leap-year," from its leaping a day more that year, than in a common year. Hence it appears, that the Roman, called also the *Julian Calendar*, from its reformer Julius, is disposed into quadriennial periods; of which the first three years, which he called *communis* or common, consist of 365 days; and the fourth *bissextile*.

The regulations which Julius Cæsar had established were misapplied by those who had the direction of the calendar. They intercalated every third, instead of every fourth year; so that, in the interval of 36 years, three days more than the due number were inserted. This error, however, was soon perceived. For the correction of it, Augustus ordained, that the intercalations should be omitted in the following years; viz. in the 41st, 45th, and 49th of the Julian æra. This form of the year, thus corrected, was adopted in Italy, and in several other provinces of the Roman empire. By some nations, the lunar year was retained, and the days and months were reckoned by the course of the moon. Modern chronologers have used the Julian year, being a measure of time extremely simple, and sufficiently accurate: and to this standard they refer all events that have happened from the beginning of the world.

The Julian year, however, though admirably adapted to common use, was still imperfect: for as the time in which the sun performs his annual revolution is not exactly 365 days six hours, but 365 days five hours, 48 minutes, and 45½ seconds, the civil year must therefore have exceeded the solar year by 11 minutes, 14½ seconds; which, in the space of about 130 years, amounted to a whole day; and consequently, in 47450 years, the beginning of the year would have advanced forwards through all the seasons; and in half this interval of time, the summer solstice according to the calendar, would have fallen in the midst of winter, and the earth have been covered with frost, when the bloom of vegetation was expected. It cannot be imagined that Sostigenes was totally unacquainted with this error: though he probably thought it much smaller than it is, and therefore neglected it. Among the first of those who discovered the imperfections of the Julian calendar, were the venerable Bede, about the year 730, Johannes de Sacro Bosco, about 1232, and Friar Bacon, about 1255. These great men had observed, that the true equinox preceded the civil one by about a day in 130 years. Sostigenes, in the reign of Julius Cæsar, had observed the vernal equinox on the 25th day of March. At the council of Nice, held in 325, it was fixed on the 21st of March; and from that time to the year 1582, when the next reformation was effected, the error,

accumulated by this means, amounted to about 10 days; so that the vernal equinox was now found to happen on the 11th of March, instead of the 21st, as it ought to have done, if the Julian account had agreed with the course of the sun. This constant anticipation of the equinox, which, in the course of more than a thousand years, had become too considerable not to be noticed, was first represented to the councils of Constance and Lateran, by two cardinals, Petrus ab Alliaco, and Cusa, who showed the cause of the error, and the means of correcting it. In the year 1474, pope Sixtus IV. being convinced of the necessity of a reformation, sent for Regiomontanus, a celebrated mathematician of that period, to Rome, and presented him to the archbishopric of Ratisbon, in order to engage him in this undertaking. But a premature death preventing his assistance, and no one being thought worthy to be his successor, the project was, for that time, suspended. Although the necessity of some alteration was acknowledged, it was after the lapse of 100 years, that pope Gregory XIII. had the honour of accomplishing what several preceding pontiffs and councils had attempted in vain. He invited to Rome a considerable number of mathematicians and astronomers, employed 10 years in the examination of their several formulae, and, finally, gave the preference to the plan proposed by Aloisius and Antoninus Lilius, two brothers of Verona. He transmitted copies of this plan, A. D. 1577, to all catholic states, academies, &c. A council of the most learned prelates was convened by the pope, and the subject being finally settled, a brief was published in the month of March, A. D. 1582, by which the use of the ancient calendar was entirely abrogated, and the new one substituted in its stead, called, from the pope's name, the *GREGORIAN CALENDAR*, or *NEW STYLE*.

The first object of the reformers was to correct the errors of the former method of reckoning, and to make the length of the year agree more exactly with the course of the sun. For this purpose it was agreed, that the 10 days which had been gained by the old account, should be taken from the month of October of the year then current, and the equinox brought back to the 21st of March, as it had been settled by the council of Nice. And, in order to prevent the future recurrence of a similar variation, it was ordered, that, instead of making every hundredth year a bissextile, as was the case in the former method, every four-hundredth year only should be considered as a bissextile, and the rest be reckoned as common years. The length of the solar year, and the time of the vernal equinox, were by these means very accurately settled; for as a day was gained by the former method of reckoning, in every interval of 130 years, this was nearly equivalent to a gain of three days in every interval of 400 years; and, consequently, by making the years 1700, 1800, and 1900, to be common years, instead of leap-years, the error arising from the odd time would be properly corrected. The great difficulty, however, consisted in making the lunar year agree with the solar one, and in settling the true time for the observance of Easter, and other moveable feasts, which had been subject to no fixed rule. It had been ordered by the council of Nice, that Easter should be celebrated upon the first Sunday after the first full moon, following the vernal equinox. And, in order to the due observance of this rule, it became necessary to know the days when the full moons would happen, in the course of every year. But this knowledge was not easily obtained; for the period of Meton, which made 19 years exactly equal to 235 lunations, or revolutions of the moon, was found to be too long by about one hour and thirty-two minutes; and, consequently, after 16 of these periods,

periods; the true phases of the moon would precede those shown by the calendar, by more than a whole day. At the time when the Gregorian Calendar was first introduced, the error thus occasioned amounted to four days; and if the old method of computation had continued, the calendar, in time, would have announced the full moon at the time of the change, and Easter would have been celebrated at a period directly opposite to that established by the church. It was necessary, therefore, to devise some method for correcting these errors; and Lilius was so fortunate as to discover, that the 19 years or cycle of Meton had a particular property, which would render it subservient to the purposes required. The new and full moons, which according to Meton, were imagined to happen at the same time precisely as they had occurred 19 years before, were usually indicated in the following manner: they observed on what day of each calendar month the new moon fell in each year of this period, and against those days they placed the number answering to that year, reckoning from 1 to 19, through all the years of the cycle. These numbers were called "Primes," or, "Golden Numbers" (which see); but as Lilius found them to be erroneous and inconvenient, he rejected them from his system, and made use of others, called "Epacts," in their stead. See EPACT. These epacts, being placed against the days of the month in the calendar, on which the new moons fell in each year, would have answered the same purpose with the golden numbers; and if the Metonic cycle had been complete, the form would have required no alteration: but this is not the case, for after about 16 of these periods, or 300 years, the new moons arriving sooner by 24 hours, would happen on the preceding day; and, therefore the epacts answering to these new moons ought to be augmented by unity. For, supposing that the second year of the lunar cycle had 11 for the epact, then, because the new moon, in the preceding year, arrived 11 days before the end of December, after 300 years, the same new moon, of the first year of the cycle, would arrive 12 days before the end of the year; and, consequently, the second year ought now to have 12 for the epact. This number 12, therefore, will be the index of the new moons in that second year; and it is easy to perceive, that all the new moons which happen sooner by a day will take place upon the day preceding that which in the former period was marked 11. After 300 years more, the epact will be 13, which will be a day still preceding that in the latter period: and the same will happen with all the other epacts of the cycle. It was this kind of analysis that suggested to Lilius the idea of placing the epacts in their natural order against the days of the new moons in every year, for the first 300 years; and after that period, to place them in the order 1, 12, 23, 4, 15, 26, 7, 18, 29, 10, &c. instead of the former one; and so on.

This arrangement was simple and ingenious; but the omission of 3 days in every 400 years was a circumstance that occasioned some embarrassment. These years having a day less than in the Julian account, the new moons would happen a day later, and consequently, the epact at the end of the year, must be diminished accordingly. But, as this order is only interrupted once in 100 years, Lilius imagined, that by subtracting unity from each of the epacts belonging to those new moons, they might be made to serve for the subsequent century. And as there are only 20 possible series of these numbers, it was sufficient to shew by a table, what series belonged to every century, by which the times of the new moons might be readily discovered.

When pope Gregory had reformed the calendar in the manner above stated, he ordered all the ecclesiastics under his jurif-

diction to conform to this new method of reckoning, and exhorted the Christian princes to adopt it in their dominions. Accordingly it was immediately introduced into all catholic countries. In Spain, Portugal, and part of Italy, it was received on the same day as at Rome; but it was not admitted in France until the month of December, when the 10th was reckoned the 20th day, according to letters patent of king Henry III. dated the 3d of November preceding. The catholic states in Germany adopted the Gregorian calendar, A. D. 1583. But the protestant states at that time refused it. The reformed religion was in its infancy; the zeal of its professors was violent, and their opposition to the pope unbounded. Whatever bore the appearance of his authority was rejected as an unwarrantable encroachment upon their newly-acquired liberties; and though the propriety of the alteration was acknowledged, it was condemned on account of its originating with a party so extremely obnoxious to them. Hence arose a difference of 10 days between the methods of reckoning afterwards used in Catholic and Protestant countries. When a bissextile was suppressed, the difference amounted to 11 days. This difference between the old and new style, as the Julian and Gregorian accounts are generally called, occasioned great confusion in the commercial affairs of the different states of Europe; and therefore the Gregorian style was, at length, generally received. The Protestant states in Germany reformed their calendar in Feb. A. D. 1700. The new style was introduced into Denmark about the same time; and into Sweden, March 1753. In Great Britain the inconvenience arising from these two modes of reckoning was much felt, and several attempts were made to introduce the reformed calendar. But popular prejudices were for a long time too obstinate to be easily overcome. The mathematicians, indeed, more influenced by scientific considerations than by cavils about points of religion, incessantly urged the necessity of some correction, and proposed various methods of effecting it, which might be adopted without inflaming the minds of the multitude. Among others it was proposed, that an act should be passed, declaring that there should be no leap-year for 40 years to come, by which means, the 10 days that had been gained by the old account would have been imperceptibly lost, and the old style reduced to the new, without any sensible variation in the fixed times of feasts and other observances. A proposal of this kind was sent to Dr. Wallis, professor of geometry at Oxford, for his opinion; but the doctor, with a degree of prejudice altogether inconsistent with his extensive erudition, observed, that the proposal was specious enough in appearance; but that the hand of Joab might be perceived in it. He imagined it to have originated with the papists; and though he acknowledged the propriety of it, he was afraid of its being adopted, lest it should open the door to further encroachments. But though all proposals were at that time rejected, those who wished for a reformation still renewed their applications; and in 1752, an act of parliament, after much debate, was obtained for this purpose. As 170 years had elapsed since the Gregorian alteration took place, the old style had consequently gained above a day more upon the course of the sun than it had at that time: it was therefore enacted, that, instead of cancelling 10 days, as the pope had done, 11 days should be left out of the month of September; and, accordingly, on the 2d day of that month, the old style ceased, and the next day, instead of being the third, was called the 14th. See STYLE. By the same act, the beginning of the year was changed from the 25th of March to the 1st of January. Russia is the only civilized state of Europe that now retains the old style.

CALENDAR.

CALENDAR, Julian Christian, is that wherein the days of the week are determined by the letters A, B, C, D, E, F, G, by means of the solar cycle; and the new and full moons, especially the paschal full moon, with the feast of Easter, and the other moveable feasts depending thereon, by means of golden numbers, rightly disposed through the Julian year. See the preceding article. See also **CYCLE**, and **GOLDEN NUMBER**.

CALENDAR, Gregorian, is that which, by means of epacts, rightly disposed through the several months, determines the new and full moons, and the time of Easter, with the moveable feasts depending thereon, in the Gregorian year. The Gregorian calendar, therefore, differs from the Julian, both in the form of the year, and in that epacts are substituted in lieu of golden numbers; for the use and disposition whereof, see **EPACT**.

Though the Gregorian calendar be preferable to the Julian, yet it is not without its defects (perhaps, as Tycho Brahe and Cassini imagine, it is impossible ever to bring the thing to a perfect justness). For, first, the Gregorian intercalation does not hinder but that the equinox sometimes succeeds the 21st of March, as far as the 23d; and sometimes anticipates it, falling on the 19th; and the full moon, which falls on the 20th of March, is sometimes the paschal; yet not so accounted by the Gregorians. On the other hand, the Gregorians account the full moon of the 22d of March the paschal; which yet, falling before the equinox, is not paschal. In the first case, therefore, Easter is celebrated in an irregular month; in the latter, there are two Easters in the same ecclesiastical year. In like manner, the cyclical computation being founded on mean full moons, which yet may precede or follow the true ones by some hours, the paschal full moon may fall on Saturday, which is yet referred by the cycle to Sunday; whence, in the first case, Easter is celebrated eight days later than it should be, in the other, it is celebrated on the very day of the full moon, with the Jews and Quartodeciman heretics, contrary to the decree of the council of Nice. Mæstlin, Vieta, Scalliger, Calvisius, and other mathematicians, shew other faults in the Gregorian calendar, arising from the negligence and inadvertency of the authors.

Clavius, to whom the conduct of this business was assigned, after the death of Lilius, composed in 1603 a large work in vindication of it, and successfully combated its adversaries. Defects, it is acknowledged, are to be found in this calendar; but the reformers deserve praise for what they actually did, in an undertaking which does not admit of perfection. Dr. Playfair, in his "System of Chronology," p. 19, observes, that the method of intercalation used in the Gregorian calendar is not the most accurate. Ninety-seven days, or 100-3, are inserted in the space of four centuries. This supposes the tropical year to consist of 365^d, 5^h, 49', 12". On this supposition, the interpolation would be exact, and the error would scarcely exceed one day in 268,000 years. But the reformers of the calendar made use of the Copernican year of 365^d, 5^h, 49', 20". Instead, therefore, of inserting 97 days in 400 years, they ought to have added, at proper intervals, 41 days in 169 years, or 90 days in 371 years, or 131 in 540 years, &c.

Recent observations have determined the quantity of the tropical year to be 365^d, 5^h, 48', 45¹/₂". Admitting this to be the true quantity of it, the intercalations ought to be made as follows:

+	-	+	-	+	+	+	+	+
$\frac{4}{1}$	$\frac{17}{4}$	$\frac{33}{8}$	$\frac{128}{31}$	$\frac{545}{132}$	$\frac{673}{163}$	$\frac{801}{199}$	$\frac{929}{225}$	$\frac{1057}{256}$

+	+	-	-	-	+	-
$\frac{1185}{287}$	$\frac{1313}{318}$	$\frac{1441}{349}$	$\frac{2754}{667}$	$\frac{4067}{985}$	$\frac{9447}{2288}$	$\frac{51303}{12425}$
+	-					
$\frac{60749}{14713}$	$\frac{172800}{41851}$					

; that is, one day ought to be intercalated in the space of 4 years, or rather 4 days in 17 years, or 8 days in 33 years, &c. If 41,851 days were intercalated in 172,800 years, there would be no error. The signs + and - indicate, that the number of intercalary days above which they are placed is too great or too small. Every succeeding number is more accurate than that which goes before. As this method of interpolation is different from that now in use, it is obvious that the Gregorian calendar must be corrected after a certain period of years. The correction, however, will be inconsiderable for many ages, as it will amount only to a day and a half, which is to be suppressed in the space of 5000 years.

CALENDAR, reformed or corrected, is that which, setting aside all apparatus of golden numbers, epacts, and dominical letters, retrenches 11 days from the calendar, and determines the equinox, with the paschal full moon, and the moveable feasts depending thereon, by astronomical computation, according to the Rudolphine tables of Kepler, agreeably to the first council of Nice. The person who projected this plan was Erhard Weigel.

Upon the death of Weigel in 1699, the project was submitted by the diet to the consideration of Sturmius, professor of mathematics at Altdorff; Hamberger, professor at Jena; and Meyer, professor at Ratibon. In consequence of their report, this calendar was introduced among the protestant states of Germany, in the year 1700, when 11 days were at once thrown out of the month of February; so that in 1700, February had but 18 days; by this means the corrected style agrees with the Gregorian. This alteration in the form of the year they admitted for a time, in expectation that the real quantity of the tropical year being at length more accurately determined by observation, the Romanists would agree with them on some more convenient intercalation.

CALENDAR, French or Republican. Soon after the government was changed in France, it was decreed on the 2d of January 1792, that this year should be denominated the fourth of liberty on their coins, and in their acts. After the death of Louis XVI. in 1793, it was determined that this year should be called the first of the republic, and this suggested the idea of a republican calendar. Accordingly, on the 12th of January, 1793, the deputy Romme, president of the committee of public instruction under the convention, applied to the Academy of Sciences for a commission to deliberate on this subject; but M. de la Lande protested against the change of the calendar. He was obliged, however, to acquiesce, and to prepare a new calendar. After the example of the Egyptians, he preferred 12 equal months, with five intercalary days, and he adapted their denominations to the climate of Paris, which Fabre d'Églantine expressed by the following terms, viz. *Vendémiaire*, or vintage month; *Brumaire*, or foggy month; *Frimaire*, or sleety month; *Nivôse*, or snowy month; *Pluviose*, or rainy month; *Ventose*, or windy month; *Germinal*, or budding month; *Floréal*, or flowery month; *Prairial*, or meadow month; *Messidor*, or harvest month; *Thermidor*, or hot month; and *Fructidor*, or fruit month. The first month begins September 23; the second, October 23; the third, November 22; the fourth, December 23; the fifth January 21; the sixth, February 20; the seventh, March 22; the

CALENDAR.

the eighth, April 21; the ninth, May 21; the tenth, June 20; the eleventh, July 20; and the twelfth, August 19; making in all 360 days. The remaining five days are called the complementary days; of which the first is the 18th of September; the second the nineteenth; the third, the 20th; the fourth the 21st; and the fifth, the 22d of September, being the last day of the French year.

The first decree was issued the fifth of October 1793; and it was followed by another on the 24th of November, or the 4th of Frimaire, in the second year of the republic, settling the commencement and organization of the year, and the names of the days and months. The decree of the national convention comprehends four articles, viz. That the French æra should be reckoned from the foundation of the republic, September 22, 1792, of the vulgar æra, on the day when the sun arrived at the true autumnal equinox, in his entrance into the sign Libra, at 9^h 18' 30" in the morning, according to the observatory at Paris; that the vulgar year should be abolished in all civil concerns; that each year should commence at midnight, with the day on which the true autumnal equinox falls, according to the observatory at Paris; and that the first year of the French republic had actually commenced at midnight of the 22d of September, 1792, and terminated at midnight, between the 21st and 22d of September, 1793. The decree for adopting a rule of intercalation, in order to preserve the seasons at the same epochs of the year, comprises the following four articles: viz. that the fourth year of the republican æra should be the first sextile; that it should receive a sixth complementary day; and that it should terminate the first franciade: that the sextile, or leap years, should succeed one another every four years, and mark the end of each franciade: that the four following secular years in succession should be excepted from the last article: namely, the first, second, and third, secular years 100, 200, 300, which should be common; and that the fourth should be sextile; and that this should be the case every four centuries until the 40th, which should close with a common year, the year 4000.

In this new calendar or almanac, the months consist of 30 days each, and are divided into three decades. The days of each decade are known by the names of *Primidi*, *Duodi*, *Triidi*, *Quartidi*, *Quintidi*, *Sextidi*, *Septidi*, *Octodi*, *Nonodi*, and *Decadi*. The day, which begins at midnight, is distributed into ten parts, and these are decimally divided and subdivided. To the five supernumerary days in common years, and six in leap years, was applied the absurd appellation of *Sans Culottides*, borrowed from a term of reproach (*Sans Culotte*), which had been originally bestowed on the republican party, on account of the meanness of their rank and fortune; but which the same party afterwards attempted to render honourable and popular; and this appellation also serves to distinguish the leap years.

TABLES for reducing the Dates of the new French Calendar to the Dates of the Gregorian Calendar.

TABLE I.

Of the new French Calendar compared with the Gregorian Calendar for 40 years; that is, from 1802 to 1842.

Years of the Republic.	Gregorian Year.	Franciade.	Commencement of the French Year.		
			Year.	Sept.	Autumnal Solstice
11	1802-03	4 s	1802	21	7 9. 15' 10"
12	1803-04 b	1	1803	24	1 3 59 m
13	1804-05	2 iv	1804 b	23	7 52 48 m
14	1805-06	3	1805	23	0 41 37 a
15	1806-07	4 s	1806	23	6 30 26 a
16	1807-08 b	1	1807	24	0 19 15 m
17	1808-09	2 v†	1808 b	23	6 8 4 m
18	1809-10	3 vi†	1809	23	11 56 53 m
19	1810-11	4	1810	23	5 45 42 a
20	1811-12 b	5 s	1811	23	11 34 31 a
21	1812-13	1	1812 b	23	5 23 20 m
22	1813-14	2 vi	1813	23	11 12 9 m
23	1814-15	3 vii	1814	23	5 0 58 a
24	1815-16 b	4 s	1815	23	10 49 47 a
25	1816-17	1	1816 b	23	4 38 36 m
26	1817-18	2 vii	1817	23	10 27 5 m
27	1818-19	3 viii	1818	23	4 16 14 a
28	1819-20 b	4 s	1819	23	10 5 3 a
29	1820-21	1	1820 b	23	3 53 52 m
30	1821-22	2 viii	1821	23	9 42 41 m
31	1822-23	3	1822	23	3 31 30 a
32	1823-24 b	4 s	1823	23	9 20 19 a
33	1824-25	1	1824 b	23	3 9 8 m
34	1825-26	2 ix	1825	23	8 53 57 m
35	1826-27	3 ix	1826	23	2 42 46 a
36	1827-28 b	4 s	1827	23	8 31 35 a
37	1828-29	1	1828 b	23	2 20 24 m
38	1829-30	2 x	1829	23	8 9 13 m
39	1830-31	3 x	1830	23	1 58 2 a
40	1831-32 b	4 s	1831	23	7 46 51 a
41	1832-33	1	1832 b	23	1 35 40 m
42	1833-34	2 xi	1833	23	7 24 29 m
43	1834-35	3 xi	1834	23	1 13 18 a
44	1835-36 b	4 s	1835	23	7 2 7 a
45	1836-37	1	1836 b	23	0 50 76 m
46	1837-38	2 xii	1837	23	6 39 45 m
47	1838-39	3 xii	1838	23	0 28 4 m
48	1839-40 b	4 s	1839	23	6 17 2 m
49	1840-41	1	1840 b	23	0 6 12 m
50	1841-42	2 xiii†	1841	23	5 55 1 m
51	1842-43	3 xiii†	1842	23	11 43 50 m
	&c.		&c.		&c.

b signifies *Bisextile*, or leap-year—s *sextile*, or French leap-year—c common year of 365 days—m morning—2 afternoon.

The French decree does not determine the proper rule for fixing the leap-year: the necessity for determining this rule will happen in 1811. The most convenient method appears to be the common one, when after 7 Franciades of 4 years, a Franciade of 5 years occurs: according to this regulation, the 5th and 13th Franciades are of 5 years each. The *Bureau des Longitudes* will doubtless ascertain this point with more accuracy.

TABLE II. By means of which the first day of each month of the new French Calendar is made to correspond with that of the common Calendar.

Argument from Table I.	1 Vendémiaire	1 Brumaire	1 Frimaire	1 Nivôse	1 Pluviose	1 Ventose	1 Germinal	1 Floreal	1 Prairial	1 Messidor	1 Thermidor	1 Fructidor	First Intercalary Day.
22 September	22	22	21	21	20	19	21	20	20	19	18	17	17 Sept.
23	23	23	22	22	21	20	22	21	21	20	19	18	18
24	24	24	23	23	22	21	23	22	22	21	20	19	19

* When a Gregorian leap-year occurs, one day must be subtracted from all those days in the year which are marked with asterisks.

TABLE III. By means of which the first day of each month of the common Calendar is made to correspond with the first day of the French Calendar.

Argument from Table I.	1 January	1 February	1 March	1 April	1 May	1 June	1 July	1 August	1 September	1 October	1 November	1 December
22 September	12 Nivôse	13 Pluviose	11 Ventose	12 Germinal	12 Floreal	13 Prairial	13 Messidor	14 Thermidor	15 Fructidor	15 Vendém.	16 Brumaire	16 Krénaire
23	11	12	10	11	11	12	12	13	14	14	15	15
24	10	11	9	10	10	11	11	12	13	13	14	14

The Argument is always the first day of the French year, which falls in the preceding Gregorian year, taken from Table I.

When a leap-year occurs, one day must be superadded to each of the following days.

The Argument is here the commencement of the year in the foregoing Gregorian year.

* The French have abolished their new calendar, and restored the Gregorian, which is used in all their dates after the 1st of January, 1800.

CALENDAR, *Persian*, is founded on the Persian æra, called "Yezdegerd," or "Jezdegerd," which derives its name from the last king of the race of Sassanians, or 5th dynasty, that reigned in Persia. Some suppose the ancient Persian æra to have been established by Gemshid, one of the Pishdadian kings, about 800 B. C. On the day when the sun entered Aries, he is said to have made his public entry into Persopolis, which he had just finished, and to have ordained the æra to commence from that time, in honour of the sun, and in commemoration of the building of his capital city. He divided the year into 12 months of 30 days each; to the last of which five supplementary days were added. But no attention was bestowed on the odd quarter of a day, till astronomers, in the reign of Yezdegerd, observing that the beginning of the year had moved in a retrograde direction from Aries to Pisces, corrected this error, and appointed one month to be intercalated at the end of every 120 years, and the intercalary month of 30 days restored the integrity of the solar year. By this reformation of the calendar a new æra was produced, which is still adopted in many parts of Persia. All, however, do not agree in the epocha of its commencement. Some refer the date of it to the beginning of Yezdegerd's reign, which they place on the 16th of June, in the 11th year of the Hegira, A. D. 1632. Of this opinion are Ulugh Beigh and Herbeiot (Bib. Orient.) Others compute from the time of his defeat by the Arabs at Cadesia, A. D. 636. Some few reckon from his death, A. D. 651 or 652, among whom are Astruc, Scaliger, &c. The best modern chronologists have adopted the first of these opinions, which is most conformable to the testimony of the eastern writers. In vindication of which it may be observed, that Yezdegerd had lived as a private person, as his father had always done, till the Persians, understanding how just a title he had to the kingdom, set him upon the throne. The Arabs say, this was done with the consent of their caliph, who therefore regarded him as his tributary, reckoning the kingdom of Persia among the rest of his dominions from this time, and considering the subsequent reduction of that country not as a conquest, but as the re-union of that part of his empire which had been severed from it by a rebel. This is plainly the cause why the commencement of this æra is and ought to be fixed at the accession of Yezdegerd. The years of this æra are Nabossæan; for each year consists of 365 days, or 12 months of 30 days each, with the addition of five intercalary days to the month Aban, or to the end of the year.

Besides this form of the year, Persian astronomers use the Gelalæan year, so called on account of the title "Gelalædin," which was conferred on Malekshah, sultan of Khorassan. This great prince, A. D. 1074, assembled the most celebrated astronomers of his time, in order to reform the calendar, which he found imperfect, to ascertain the vernal equinox for astronomical purposes, and for the regulation of their solemn festival "Neuruz," or new-day, and to change the order of the months, under the idea of restoring the ancient mode fixed by Gemshid. The year, as he reformed it, was twofold, civil and astronomical. He fixed the beginning of both on the 14th of March, the season of the equinox, A. D. 1074, or, according to Zacuti, a Jewish author, A. D. 1079. In the correction of the civil year, besides five intercalary days, in every fourth year he added, six or seven times in succession, a sixth day; after which the intercalation was not to occur more frequently than once in five years. The Persian astronomical year was of the same form, and nearly of the same quantity with the solar tropical year; for it consisted of $365^d 5^h 49' 53''$. From these frequent reformations of the Persian calendar, there has arisen no small disagreement among different writers with regard to the seasons

and days when several festivals were to be celebrated, which it would be difficult to reconcile. Playfair's Chronology, p. 55. See EPOCH and YEAR.

CALENDAR, *construction of a, or almanac.* See ALMANAC.

CALENDAR is also applied to divers other compositions respecting the twelve months of the year.

In this sense, Spencer has given the shepherd's calendar, Evelyn and Miller the gardener's calendar, &c.

CALENDAR is used for the catalogue, or fasti, anciently kept in each church, of the saints, both universal, and those particularly honoured in each church; with their bishops, martyrs, &c. Calendars are not to be confounded with martyrologies, for each church had its peculiar calendar; whereas the martyrologies regarded the whole church in general; containing the martyrs and confessors of all the churches. From all the several calendars were formed one martyrology; so that martyrologies are posterior to calendars. See MARTYROLOGY.

CALENDAR is also extended to an orderly table, or enumeration of persons or things. Lord Bacon wishes for a calendar of doubts. A late writer has given a calendar of the persons who may inherit estates in fee-simple.

CALENDAR, *Kalendarium*, originally denoted among the Romans a book containing an account of monies at interest, which became due on the calends of January; the usual time when the Roman usurers let out their money. Senec. de Benef. lib. vii. c. 10. Idem. lib. i. c. 2. Ejuſd. Epit. 14. Idem. Ep. 87. Fab. Theſ. p. 413.

CALENDAR *months*, the solar months as they stand in the calendar, viz. January 31 days, &c.

The number of days in each month may be suggested to the memory by the following canon:

“Thirty days hath September,
April, June, and November,
February has twenty-eight alone,
And all the rest have thirty-one.”

CALENDAR, *astronomical*, an instrument engraved upon copper-plates printed upon paper, and pasted on board, with a brass slider which carries a hair, and shews by inspection the sun's meridian altitude, right ascension, declination, rising, setting, amplitude, &c. to a greater exactness than our common globes will shew.

CALENDAR *of prisoners*, is a list of all their names, with their separate judgments in the margin, which the judge signs, and the execution of which is committed to the respective sheriff. In the case of a capital felony, the words “hang by the neck” are annexed to the prisoner's name, instead of “*suſ. per col.*” for *suspendatur per colium*, which was the ancient form. Judge Blackstone well observes, that the execution of a man seems to be too important and terrible a task to depend on a marginal note. Blackst. Com. vol. iv. p. 396.

CALENDAR-*glass*, *vitrum calendare*, a name formerly given by some writers to a thermometer, or graduated tube, whereby to measure the degrees of heat.

CALENDAR-*brothers*, *fratres calendarii*, a sort of devout fraternities, composed of ecclesiastics as well as laymen; whose chief business was to procure masses to be said, and alms distributed, for the souls of such members as were deceased. They were also denominated *calend brothers*, because they usually met on the calends of each month, though in some places only once a quarter.

CALENDARIO, PHILIP, in *Biography*, a celebrated architect and sculptor, flourished at Venice in the time of Martin Falieri, doge of that republic in 1354. He constructed those beautiful porticos supported by marble columns, which surround the place of St. Mark, above which

are seen superb buildings ornamented with bas-reliefs and rich paintings. By these works he established both his fame and fortune. Moreri.

CALENDARIUM *festum*. The Christians retained much of the ceremony and wantonness of the calends of January, which for many ages was held a feast, and celebrated by the clergy with great indecencies, under the names *festum kalendarum*, or *hypodiaconorum*, or *stultorum*, that is, the feast of fools: sometimes also *libertas decembria*. The people met masked in the church, and in a ludicrous way proceeded to the election of a mock pope, or bishop, who exercised a jurisdiction over them suitable to the festivity of the occasion: fathers, councils, and popes long laboured to restrain this licence, to little purpose. We find the feast of the calends in use as low as the close of the fifteenth century. Du-Cange.

CALENDER, a machine used, in the manufactories, for pressing certain stuffs, silks, calicoes, and even linens; to make them smooth, even and glossy. It is also used for watering, or giving the waves to tabbies and mohairs.

The word is formed from the French *calandre*, or Spanish *calandra*, which signify the same; and which some derive further from the Latin *cylindrus*; because the whole effect of the machine depends upon a cylinder. Borel derives the name from that of a little bird, of the swallow kind; on account of the agreement between the feathers of the bird, and the impression of the machine.

The calender consists of two large wooden rollers, round which the pieces of stuff are wound: these are put between two large, close, polished planks of wood, or plates of iron, the lower serving as a fixed base, and the upper moveable, by means of a wheel like that of a crane; with a rope, fastened to a spindle, which makes its axis: this upper part is of a prodigious weight, sometimes twenty or thirty thousand pounds. It is the weight of this part, together with its alternate motion, that gives the polish, and makes the waves on the stuffs, by causing the cylinders on which they are put to roll with great force over the lowest board. The rollers are taken off, and put on again by inclining the machine.

At Paris they have an extraordinary machine of this kind, called the *royal calender*, made by order of M. Colbert; the lower table or plank of which is made of a block of smooth marble, and the upper lined at bottom with a plate of polished copper.

This is called the great calender; they have also a small one with two tables of polished iron or steel.

There are also calenders without wheels, which are wrought by a horse harnessed to a wooden bar, which turns a large arbor placed upright; at the top of which, on a kind of drum, is wound a rope, the two ends of which being fastened to the two extremities of the upper plank of the engine, give it motion. But the horse calender is in less esteem than the wheel kind, as the motion of this latter is more equable and certain.

We read of calendering worsteds. To improve linen farther, the drapers get several sorts of their cloths calendered: whereby their threads are made to lie flatter and smoother.

CALENDER also denotes the workman who manages the machine above described; applying the cloth or stuff underneath, after having first wound it on the rollers.

CALENDERS is also the name of a sort of dervises spread through Turkey and Persia, whose order is not in general esteem among the Mahometans, as being reputed less abstemious and strict in morals than some other orders. They derive their name from Calenderi, their founder, who went bareheaded,

bareheaded, without a shirt, and with the skin of a wild beast thrown over his shoulders. Before, he wore a kind of apron, the strings of which were adorned with counterfeit precious stones. In Persia and Arabia these dervises were called *Abdals* or *Abdallat*, i. e. Persons consecrated to the service or honour of God. They preach in the market-places, and live upon alms. See *DERVIS*.

CALENDS, CALENDÆ, in the *Roman Chronology*, the first day of every month.

The word is formed from *καλεω*, *I call*, or *proclaim*; because, before the publication of the Roman Fasti, it was one of the offices of the pontifices to watch the appearance of the new moon, and give notice thereof to the *Rex Sacri ficulus*; upon which a sacrifice being offered, the pontiff summoned the people together in the capitol, and there, with a loud voice, proclaimed the number of *calends*, or the day whereon the nones would be; which he did by repeating this formula, as often as there were days of *calends*: *Calo Juno Novella*. Whence the name *calendæ* was given thereto, from *calo*, *calars*. This is the account given by Varro. Plutarch, and after him Gaza, derive the word from *clam*; *Quia luna calendis clam fit*: but this is far fetched. Others derive the appellation hence: that the people being convened on this day, the pontifex called or proclaimed the several feasts or holidays in the month; a custom which continued no longer than the year of Rome 450, when C. Flavius, the curule ædile, ordered the fasti, or calendar, to be set up in public places, that every body might know the difference of times, and the return of the festivals.

The calends were reckoned backwards, or in a retrograde order: thus, v. g. the first of May being the *calends* of May; the last, or thirtieth of April, was the *pridie calendarum*, or second of the calends of May; the twenty-ninth of April, the third of the calends, or before the calends; and so back to the thirteenth, where the *ides* commence; which are, likewise, numbered invertedly to the fifth, where the nones begin; which are numbered after the same manner to the first day of the month, which is the calends of April. See *IDES* and *NONES*.

The rules of computation by calends are included in the following verses:

“Prima dies mensis cujusque est dicta calendæ:
Sex Maius nonas, October, Julius, & Mars;
Quatuor at reliqui: habet idus quilibet octo.
Inde dies reliquos omnes dic esse calendaras;
Quas retro numerans dices a mense sequente.”

To find the day of the *calends* answering to any day of the month we are in; see how many days there are yet remaining of the month, and to that number add two: for example; suppose it the 22d of April; it is then the 10th of the calends of May. For April contains 30 days; and 22 taken from 30, there remains 8; to which 2 being added, the sum is 10.

The reason of adding *two* is, because the last day of the month is called *secundo calendaras*, the last but one *tertio calendaras*, &c.

The Roman writers themselves are at a loss for the reason of this absurd and whimsical manner of computing the days of the month: yet it is still kept up in the Roman chancery; and by some authors, out of a vain affectation of learning, preferred to the common, more natural, and easy manner.

CALENDS, Kalendæ, are also used in *Church History* to denote conferences anciently held by the clergy of each deanery, on the first day of every month, concerning their duty

and conduct, especially in what related to the imposition of penance. Du-Cange.

CALENDS of January, in *Roman Antiquity*, was a solemn festival consecrated to Juno and Janus; wherein the Romans offered vows and sacrifices to those deities, and exchanged presents among themselves, as a token of friendship.

It was only a melancholy day to debtors, who were then obliged to pay their interests, &c. Hence Horace calls it *tristes calendæ*. Lib. i. Sermon. Sat. 3.

CALENDULA, in *Botany*, (according to Martyn, a diminutive from *Caltha*, the name of the most common species in old authors; Ventenat derives it from *Calendæ*, the Latin term for the first day of every month, because it continues long in flower, whence one of its Italian names *Fiore d'ogni Mese*.) Linn. gen. 990. Schreb. 1339. Willd. 1559. Gært. 991. Juss. p. 183. Vent. v. 2. p. 545. Marigold. Class and order, *Syngenesia polygamia necessaria*. Nat. ord. *Compositæ discoideæ*. Linn. *Corymbifera*. Juss. Vent.

Gen. Ch. *Calyx* simple, nearly upright, with numerous linear-lanceolate, nearly equal divisions. *Cor.* radiate: florets of the disk numerous, tubular, femiquinquefid, the length of the calyx; the ray strap-shaped, very long, three-toothed, hairy at the base, without nerves, with pistils only. *Stamens* of the disk: filaments five, capillary, very short; anthers the length of the floret, united in a hollow cylinder. *Pist.* of the disk: germ oblong; style thread-shaped, scarcely the length of the stamens: stigma obtuse, bifid, straight. *Pistil* of the ray: germ oblong, three-cornered; style thread-shaped; stigmas two, oblong, acuminate, reflexed. *Pericarp*, the permanent calyx converging and depressed. *Seeds* in the centre of the disk none; in the circumference, sometimes but rarely solitary, membranous, inversely heart-shaped, compressed; in the ray, solitary, larger, oblong, incurved, triangular, with membranous angles, marked on the outside longitudinally with the figure of a vegetable. *Dorsum* none. *Recept.* naked, flat.

Eff. Ch. Receptacle naked. Down none. Calyx with many divisions. Seeds in the circumference of the disk membranous.

Obs. As the seeds in the circumference of the disk are very different in form from those of the ray, Linnæus was in doubt whether they were not abortive; but Gærtner asserts that both kinds are fertile.

Sp. 1. *C. arvensis*, Linn. Sp. Pl. (*Caltha arvensis*, Bauh. Pin. 275. minima, Bauh. Hist. 3. p. 105: officinalis, Scop. Carn. 1040.) “Seeds boat-shaped, muricated, incurved, outer ones erect, lengthened, and standing out,” Linn. (lanceolate-awl-shaped, muricated on the back, Willd.) Annual. Stem slender, branching, spreading near the ground. Leaves narrow, spear-shaped, hairy, half surrounding the stem at their base. Flowers pale yellow, small, terminating the branches, on long peduncles. La Marck. Seeds of the disk curved inwards, so as to form a semi-circle; by no means boat-shaped or margined, but roundish; compressed in the belly part to a sharp edge, convex on the back, and muricated with short, harmless prickles: of the ray longer, upright, crooked, lessened upward, and lengthened into a lamellate, two-lobed beak, with little prickles on the outside, smooth within, and augmented near the base with a lamellate process. Gært. Tab. 168. fig. 4. A native of cultivated fields in the South of Europe. 2. *C. Stellata*, Willd. Cav. ic. 1. p. 3. tab. 5. Desf. atl. 2. p. 304. “Seeds boat-shaped, incurved, muricated; five outer ones ovate-lanceolate, membranous, and toothed at the margin, muricated on the back.” Willd. Annual. Stem, as well as the whole plant, rugged; three feet high, herbaceous

herbaceous, striated, much branched. *Leaves* ovate-oblong, toothed in a sinuate manner, somewhat ciliate, thick, bright green. *Flowers* yellow, terminating: florets of the ray about sixteen, equal in number to the divisions of the calyx: of the disk few, barren. A native of Barbary, cultivated by Cavanilles in the garden of the Duke del Infantado, near Madrid, from seeds sent by Lemonier. It flowers and perfects its seeds there from June to August. 3. *C. sancta*, Linn. Sp. Pl. "Seeds pitcher-shaped, inversely egg-shaped, even; calyxes a little mucicated." Annual. Whole plant smooth. *Leaves* rugged at the edge. Similar to the *arvensis*, but the calyx is mucicated on the outside, the seeds belly out more, and are not at all mucicated; nor are the seeds of the ray prickly. Linn. A native of Palestine. 4. *C. officinalis*, Linn. Sp. Plant. (*Caltha vulgaris*: Bauh. Pin. 275. "All the seeds boat-shaped, incurved, mucicated." Annual. Stem loftier, and more divaricated than that of *C. arvensis*, angular, downy. *Leaves* sessile; lower ones spatula-shaped; upper ones lanceolate. La Marck. *Seeds* of the disk boat-shaped; divided on their concave side by a longitudinal partition, and marked on the middle of their convex side with an elevated mucicated furrow: those of the ray roundish, bent in a semicircular manner, mucicated on the outside, smooth within, and often furnished near the base with an erect, lamellated process. Gært. tab. 168. fig. 4. A native of cultivated ground in the south of Europe. Flowering most part of the summer. It was cultivated by Gerard in 1597, and is still one of the most common annuals in our gardens, where numerous varieties have been produced in the colour and luxuriance of its flowers. The florets of the ray are in many parts of England boiled in broth; and numerous medical virtues were formerly attributed to it, which have now lost their credit. 5. *C. suffruticosa*, Willd. Vahl. Symb. 2. p. 94. "Seeds boat-shaped, incurved, mucicated; outer ones lanceolate-awl-shaped, mucicated, erect: leaves lanceolate, toothed in rather a sinuate manner, rough. Stem somewhat shrubby." Perennial. Branches ascending, terminated by a single flower on a long peduncle. *Flowers* and *Seeds* like those of *C. arvensis*. A native of the coast of Barbary. 6. *C. incana*, Willd. (*C. tomentosa*, Desf. atl. 2. p. 305. tab. 245. *Caltha maritima* lusitanica laezuginosa. Tourn. Inst. 499. Vail. act. 1720. p. 289.) "Seeds boat-shaped, even; outer ones awl-shaped, erect, a little mucicated; leaves oblong-spatula-shaped, downy on both sides." Willd. Annual. Whole plant white with down. Flowers yellow. A native of Morocco and Portugal on the sea coast. 7. *C. pluvialis*, Linn. Sp. Pl. (*Caltha africana*, Moris. tab. 3. fig. 8. Tourn. Inst. 499.) "Leaves lanceolate, toothed in a sinuated manner; stem leafy; peduncles thread-shaped." Annual. Stems declining, from six to eight inches long; upper part very slender. *Flowers* single, terminating; disk purple; ray of a violet colour on the outside, and a pure white within, opening when the sun shines, and shutting in cloudy weather and in the evening. *Seeds* of the disk roundish, heart-shaped, compressed, surrounded with a swelling rim of a pale straw colour: of the ray oblong, inversely pyramidal, three or four-cornered, mucicated with tubercles on the sides and angles. Gært. Tab. 168. fig. 4. A native of the Cape of Good Hope, cultivated by Mr. Miller in 1726. 8. *C. hybrida*, Linn. Sp. Pl. (*Caltha africana* femine majore, oblongo: Breyn. tab. 14. fig. 2. *Cardispermum* af. pubescens: Act. Paris. 1724. 39. tab. 2.) "Leaves oblong-lanceolate, toothed; stem leafy; peduncles thickened at the top." Annual. *Leaves* much longer than those of *C. pluvialis* and broader at the end. *Flowers* smaller, but of the same colour. Miller. *Seeds* of the disk also similar, but a little larger, elliptic heart-shaped,

and not tumid at the edge; of the ray three-cornered; the sides rather convex and smooth; the angles compressed and toothed in a ferrated manner. Gært. 9. *C. amplexicaulis*, Willd. Thunb. prod. 164. "Leaves embracing the stem, oblong-halbert-shaped, toothed; stem herbaceous, erect." 10. *C. pinnata*, Willd. Thunb. prod. 164. "Leaves winged." 11. *C. scabra*, Willd. Thunb. "Leaves elliptic-lanceolate, toothed, rugged; stem herbaceous, erect." 12. *C. parviflora*, Willd. Thunb. "Leaves sessile, lanceolate, toothed; stem herbaceous, rough with hairs." 13. *C. decurrens*, Willd. Thunb. "Leaves lanceolate, decurrent, very entire, smooth; stem herbaceous." 14. *C. nudicaulis*, Linn. Sp. Pl. (Bellis, Comm. hort. 2. 66. tab. 33. *Caltha* afr. femine plano cordato, Boerh. Lugd. 1. 113.) "Leaves lanceolate, toothed in a sinuate manner; stem nearly naked." Annual. Stem perfectly simple, erect, leafy near the bottom. *Leaves* spatula-shaped, entire, or rarely furnished with a tooth, rugged. *Seeds* orbiculate, Linn. 15. *C. tomentosa*, Linn. Sup. Thunb. "Leaves inversely egg-shaped, downy; scape with a single flower." The last nine are all natives of the Cape of Good Hope. 16. *C. pumila*, Willd. Thunb. "Leaves orbiculate, toothed; petioles ciliated; scape with one flower." Willd. Perennial. *Leaves* half an inch long. *Petioles* twice as long as the leaf. *Flower* resembling that of the common daisy, but four times smaller. *Seeds* oblong, incurved. A native of New Zealand. 17. *C. magellanica*, Willd. (*C. pumila* β. Forst. Comment. Goett. 9. p. 40. After nudicaulis, Lam. encyc. 1. 305. Illust. tab. 681. fig. 4.) "Leaves wedge-shaped, toothed near the end; scape with one flower." Perennial. Root thread-shaped, creeping. *Leaves* narrowed at the base into a petiole, not ciliated. Scape furnished with one or two thread shaped bractes. A native of the straits of Magellan. 18. *C. graminifolia*, Linn. Sp. Pl. (*C. africana* surrecta. Pluk. mant. 35. tab. 370. fig. 7. *Caltha africana* foliis croci, Boerh. Lugd. 1. p. 113. Dimorphotheca, Vail. act. 1720. p. 280. Bellis africana foliis angustis, Comm. hort. 2. p. 67. tab. 34.) "Leaves linear, nearly entire; stem almost naked." Perennial. Stem dividing near the root into several tufted heads with long grassy leaves coming out on every side without order. *Peduncles* one-flowered, axillary, about nine inches long. *Florets* of the disk purple; of the ray purple without, pure white within. It is in the greatest beauty in April and May, but continues to flower late in the autumn. A native of the Cape, whence it was brought to Holland in 1698. It has been long in the English gardens, but is not so common as it deserves. Miller. 19. *C. Tragus*, Willden. Ait. hort. Kew. 3. 271. Jacq. hort. Schanb. 2. p. 14. tab. 153. "Leaves linear, somewhat toothed, mucicated with small points beneath; seeds nearly orbiculate; stem somewhat shrubby." Perennial. *Leaves* alternate. Ray of the corolla large, purple without, white within. 20. *C. oppositifolia*, Willd. Ait. hort. Kew. "Leaves opposite, linear, entire, somewhat fleshy, smooth." Perennial. 21. *C. glabrata*, Willd. Thunb. "Leaves elliptic, entire, smooth; stem shrubby, erect." Perennial. 22. *C. fruticosa*, Linn. Sp. Pl. "Leaves inversely egg-shaped, somewhat toothed; stem shrubby, decumbent." Perennial. Stem seven or eight feet high, slender, and requiring support; branches numerous, hanging downwards. *Leaves* on short petioles of a shining green colour on their upper surface. *Flowers* terminating the branches on short naked peduncles. *Seeds* heart-shaped, flat. Sent to Mr. Miller by Dr. Van Royen about 1759. 23. *C. arborescens*, Willd. Jacq. ic. rar. 3. tab. 599. (*C. rigida*, Ait. Martyn. *C. aspera*, Thunb.) "Leaves oblong, toothed, rugged; seeds nearly orbiculate; stem shrubby, panicled." Perennial. *Flowers*

yellow, erect; in fruit nodding. *Rims* of the seeds semiorbiculate." 24. *C. muricata*, Willd. Thunb. "Leaves oblong, rugged with papillary tubercles; the lower ones toothed, upper ones entire; stem shrubby." Perennial. 25. *C. cuneata*, Willd. Thunb. "Leaves wedge-shaped, fleshy, toothed." Perennial. The last eight are all natives of the Cape of Good Hope.

Propagation and Culture.—The seeds of the *arvensis*, *sancata*, *officinalis*, *pluvialis*, *hybrida*, and *nudicaulis*, should be sown in the spring, and will afterwards sow themselves without farther trouble. The last three should not be transplanted. The *graminifolia* does not often produce good seeds in Europe, but is easily propagated by slips taken off from the head, in the same manner as is practised for thrift. They may be planted any time in summer, in pots filled with light fresh earth, and plunged in a moderate hot-bed, or placed in the common earth under a melon frame, and occasionally, but not plentifully watered. When they have taken root, they should be transplanted and kept during the summer in the open air, and in a shady situation. In winter they require protection from frost and heat, but do not thrive in artificial heat. The *fruticosa* is also easily propagated by cuttings in light poor earth, and must be treated in the same manner as the *graminifolia*. Miller.

CALENDULA, in *Ornithology*, a species of *MOTACILLA* that inhabits North America, the *Ruby crowned warren* of Latham, *roitelet rubis* of Buffon, and *calendula pensilvanica* of Brisson. The colour is greenish-ash; crown with a ruby (sometimes deep yellow) line; abdomen and wings beneath yellowish. Gmel. &c.

This is a small bird. The female has no ruby line on the crown, but has a scarlet lunule most commonly on the nape, which is not observable in the male.

CALENDULA, in *Zoology*, according to Gmelin, a sort of *HYDRA*, called by Hughes in his "Natural History of Barbadoes," the animal flower. Authors are divided in opinion as to the genus to which this animal-flower ought to be referred. Gmelin expresses a doubt of its being truly of the hydra kind, although he places it in that genus. Ellis considers it as an *actinia*; and later writers entertaining the same idea, it stands at present as *actinia calendula*. Notwithstanding this, we have, however, no hesitation in believing it to be neither of the genus *hydra*, nor *actinia*, but a species of *tubularia*. This we must presume from its analogy to the *tubularia magnifica*, and some other accurately defined species of that genus. The original figure of this animal is that which appears in the "Natural History of Barbadoes" by Hughes. Ellis and Solander have a figure of it in their work on zoophytes, but which is copied from the above mentioned publication, as is also the description that accompanies it. We must therefore have recourse to the account given of it by Hughes, as being the best to be obtained at present of this curious animal. This writer describes it as having the appearance of fine radiated flowers, of a pale yellow, or bright straw colour, slightly tinged with green; each surrounded by a circular border of thick-set petals about the size of, and much resembling, those of a single garden marigold; except that the whole of this seeming flower is narrower at the discus, or setting on of the leaves (petals) than any flower of that kind. Mr. Hughes observes, that these animals, on being disturbed, sink into holes; he also remarked four dark coloured threads, somewhat like the legs of a spider, rise out from the centre of what he calls the flower, with a quick spontaneous motion from one side to the other of the circular border of leaves (petals); and these in reality, he says, were so many arms or feelers, closing together in imitation of a forceps, as if they had

hemmed in their prey, which the yellow border soon surrounded, and closed to secure. He attempted to pluck one of these from the rock to which they were affixed, but never could effect his design, for as soon as his fingers came within two or three inches of it, the animal would immediately contract its border of tentacula, and shrink back into the hole of the rock; but if left undisturbed for about four minutes, it would come gradually into sight, expanding, though at first very cautiously, its petals or tentacula, till it would at length appear again as before, like a flower in full blossom. As often as his hand came within a certain distance of it, the animal would again recoil from his approach in the same manner. He also tried the same experiment by attempting to touch it with his cane, and a small slender rod, but the effect produced was the same.

Ellis calls this the sea marigold, from its near resemblance, when the tentacula are expanded, to the flower of the common marigold. It may be specifically defined in the words of Gmelin: stem somewhat turbinated: disk surrounded by petal-shaped tentacula, or rays.

CALENS, in *Entomology*, a Siberian species of *CHRYSTRIS* of a large size, described by Fabricius. The prevailing colour is glossy blue; abdomen golden; tail blue and armed with four teeth. *Obs.* The legs and tip of the antennæ are fuscous.

CALENS, a species of *CIMEX* found in India. The head, thorax, and wing-cases are black, with a fulvous scutellum. Gronovius. &c.

CALENTES, in *Logic*, a sort of syllogism in the fourth, commonly called *Galenical*, *FIGURE*, wherein the major proposition is universal and affirmative; and the second or minor, as well as the conclusion, universal and negative. This is intimated by the letters it is composed of, where the *A* signifies an universal affirmative, and the two *E*'s as many universal negatives. *E. gr.*

CA Every affliction in this world is only for a time,
LEN No affliction, which is only for a time, ought to disturb us.
TES No affliction ought to disturb us, which happens in this world.

The Aristotelians not allowing the fourth figure of syllogisms, turned this word into *CELANTES*, and make it only an indirect mood of the first figure.

CALENTIUS, *ELISIUS*, in *Biography*, an ingenious writer both in prose and verse, was born in Apulia, and became preceptor to prince Frederick, the son of Ferdinand I. king of Naples, whom he endeavoured to inspire with sentiments of justice and humanity, congenial to his own. He was an enemy to capital punishments, and proposed various substitutes for them in different cases. He was much addicted to agriculture, and practised it with skill. Although his circumstances were narrow, he lived on terms of intimate friendship with the most eminent scholars of his time, and was a member of the Neapolitan academy. He was the author of several works, both in prose and verse, which were printed in 1503, about the time of his death; the principal of these was his poem on the "Battle of the Frogs and Mice," imitated from Homer. He declined writing the history of the war carried on by Charles the Bold against the Swiss, alleging, that it was not safe to speak ill of princes, and that an honest man ought not to publish falsehoods.

CALENTUM, in *Ancient Geography*, a town of Spain, on the other side of the Ebrus. Pliny says, that bricks were made in this place of an earth resembling pumice-stone, which would not sink in water.

CALENTURE, from *calere*, to be hot, in *Medicine*, a species of disease, formerly said to be common to seamen during their voyages in tropical climates, and to be characterised by a peculiar delirium, in which the patient imagined that he saw green fields and groves in the sea, and was desirous of leaping over-board in order to walk in them. This affection is not mentioned by recent authors, who have written on the diseases of seamen in hot climates; and the accounts which have been transmitted to us, leave the cause of this hallucination in some obscurity. According to Dr. Stubbs, who has briefly related two cases, which occurred during a voyage to Jamaica, it was a transient delirium, independent of fever, and produced by sordes in the stomach and bowels, and was therefore quickly removed by an emetic. (Philosoph. Transact. N^o 26.) Other writers describe the calenture as a febrile disease, attended with a furious delirium, inasmuch, that six men could scarcely restrain the patient from leaping into the sea: and bleeding and other evacuations are said to be the proper remedies by these authors. (Shaw's Practice. Allen's Synopsis.) In consequence of these different accounts of the disorder, Sauvages has described two genera of the calenture; one of which he classes with the simple hallucinations, under the title of *Paraphrenesque Calentura*; and the other he considers as a species of *Phrenitis*, or inflammation of the brain. (Nosolog. Method. Class iii. Ord. 2. and Class viii. Ord. 3.) It is probable that the disease in all instances depended upon some degree of inflammation in the head, excited by the heat of a vertical sun; and the instinctive feelings, which, in many cases of febrile delirium, prompt the patient to plunge into cold water, to relieve his sufferings from inordinate heat, may possibly have been mistaken for a conception, that the sea was a plain or an orange grove.

CALEPINO, or **DA CALEPIO**, **AMBROSE**, in *Biography*, a celebrated grammarian, descended from the counts of Calepio, was born at Bergamo about the year 1435. He entered into the convent of Augustinians in his native place, and chiefly devoted himself to the study of languages. His "Vocabulary of the Latin Tongue" became so famous, that books of a similar nature were long familiarly termed "Calepines." After many additions and improvements by Passerat, Lacerda, Chifflet, and others, this work, first printed in 1703, has become a polyglott dictionary, of which the best editions are that of Chifflet at Lyons in 1681, 2 vols. fol. and a later one by Faccioliati of Padua. Calepino became blind before his death, which happened in 1511. Nouv. Dict. Hist.

CALEPIO, in *Geography*, a town of Italy, in the Bergamasco.

CALERES, in *Modern History*, the denomination of a kind of banditti in India, who inhabit the thick forests of Tondeman, between Tanjore and Madura. They are distinguished from other Indians by their ferocious aspect and manners, as well as by the dingy colour of their skin, which is covered with dust, and seldom washed. Their common arms are long pikes, cudgels, and sabres. They are said to massacre all who fall into their hands, and particularly Europeans.

CALERZANO, in *Geography*, a town of Corsica; six miles S. E. of Calvi.

CALES, in *Ancient Geography*, a small river of Bithynia, between the Elxus on the west, and the Lycus on the east, south-east of Heraclea. The emporium at its mouth, mentioned by Arrian, is called by Marcian of Heraclea, Calepis.

CALES, **CALVI**, a town of Italy, in Campania, upon the Appian way, S. E. of Theanum, and N. W. of Cezma.

It was celebrated for its wine, called "Calenum." In its ruins are discerned a theatre and amphitheatre.

CALES, in *Geography*. See **CADIZ**.

CALETTE, or **CALETES**, in *Ancient Geography*, a people placed by Cæsar, and also by Strabo, in Belgic Gaul; but Augustus comprises them in Celtic Gaul, or Gallo-Lyonnenis; their chief town was "Julobona." M. d'Anville suggests that they probably occupied the diocese of "Caux." The promontory "Caletorum," was situated in Lyonnenis Secunda, at the mouth of the Seine; now called "Cape Caux."

CALETURE, in *Geography*. See **CALTURA**.

CALETURE lies also on the coast of Coromandel, north-easterly from Pulicat or Pallakate.

CALF, one of the smaller Orkney islands, about one mile to the north of Eda. Also, another small island of the same groupe, about a mile north of Flata.

CALF, a rock near the coast of Ireland, about half a mile from the south-west end of Dingle isle in the county of Cork, at the entrance into Bantry bay. N. lat. 51° 31'. W. long. 10° 6'.

CALF of IM, a small island in the Irish sea, near the south-west coast of the Isle of Man. N. lat. 54° 1'. W. long. 4° 43'.

CALF Sound, lies on the coast of Sweden, four leagues south from Maelstrand, and as much north from Wingo island. It abounds with dangerous rocks.

CALF, in *Rural Economy*, the young of the cattle kind of animals. Calves are distinguished, according to the difference of sex, into male and female, or *bull* and *cow*, *why*, or *qui* calves. There are considerable differences in the management of these animals in different districts of the kingdom, both in the rearing and fattening; the advantages of which still remain to be decided by the test of experiment.

CALVES, *Rearing of*. It is by this practice that the farmer is to raise his cattle stock; it should, of course, be attended to with a great degree of care. Where he is anxious to have a good cow stock, the best cow calves should be carefully selected from such cows as are the most tractable, afford the best milk, are the most hardy, and best suited to the state of the farm; afterwards rearing them with the most careful attention to the nature and quantity of food, as well as other circumstances.

There can be little doubt but that the best and most natural mode of rearing the young of this, as well as most other kinds of animals, is, that of allowing them to suck their dams at least for some length of time after they are brought forth. The usual method in Yorkshire is, however, that of giving them milk to drink, there being few instances where they are allowed to suck. For the first two or three weeks, they mostly get milk warm from the cow; but for the next two or three weeks, half the new milk is withdrawn, and skimmed milk substituted in its stead: and at the end of that period of time, the new milk is wholly withdrawn; they are then fed on skimmed milk alone, or sometimes mixed with water, till they are able to support themselves by eating grass, or other food of that, or other sorts which are provided for them.

But in Cheshire, the practice is to allow the calves to suck for the first three weeks. They are then fed on warm green whey, or scalded whey and butter-milk mixed; with the green whey, water is frequently mixed, and either oatmeal, or wheat and bean-flour added. A quart of meal or flour is thought sufficient to mix with forty or fifty quarts of liquid. Oat-meal gruel and butter-milk, with an addition of skimmed milk, are also used for the same purpose. Some one of

these prepared kinds of food is given night and morning for a few weeks after the calves are put on that diet, but afterwards, only once a day, till they are three months old or more, and become perfectly strong.

The calves in Gloucestershire are not allowed to suck above two or three days; they are then fed on skimmed milk, which is previously heated over the fire. When they arrive at such an age as to be able to eat a little, they are allowed split beans or oats, and cut hay, water being mixed with the milk at the time of giving it.

And the method practised in Sussex differs materially from any of these. It is common, in that district, to allow the calves either to suck for ten or twelve weeks, or to wean them at the end of three or four, and to give them a liberal allowance of skimmed milk for six or eight weeks longer when necessary. The Suffolk farmers adopt the practice of letting the calves suck the cows a month, six weeks, or more, coarse pollard and oats being then given in mixture with skimmed milk and water: some nice green hay being constantly placed before them, till the period of their being turned out into the pastures. In this method, carrots would probably supply the place of the oats, and greatly lessen the expence.

The method pursued by the farmers in Scotland for rearing calves seems well adapted to the purpose: they are two. The first is, by giving them a pailful, containing about a gallon, of milk, warm from the teat of the cow, morning and evening, for eight or ten weeks. The second, which is certainly the most agreeable to nature, and therefore to be preferred to any other that can be adopted, is, to allow the calf to suck its dam, as is sometimes done in the county of Sussex, and some other districts, as in some parts of Lancashire.

The Norfolk husbandmen permit their early calves to suck twice in the day for about a fortnight, and afterwards to have the pail in the same manner for an equal length of time; then once a day for a month or more, according to circumstances; turnips, cut hay, &c. being placed in the mangers before them, at the time.

Where it is the custom to rear calves with skim-milk, it should always be boiled, and suffered to stand until it cools to the temperature of that first given by the cow, or in a trifling degree more warm, and in that state be given to the calf. Milk is frequently given to calves when warmed only; but that method will not succeed so well as boiling it. If the milk be given over-cold, it will cause the calf to skit or purge. When this is the case, put two or three spoonfuls of rennet in the milk, and it will soon stop the looseness. If, on the contrary, the calf is bound, bacon-broth is a very good and safe thing to put into the milk. One gallon, or rather more, of milk per day will keep a calf well till it be thirteen weeks old. A calf may then be supported without milk, by giving it hay, and a little wheat bran, once a day, with about a pint of oats. The oats will be found of great service, as soon as the calf is capable of eating them, in promoting its growth. The bran and oats should be given about mid-day: the milk in equal portions, at eight o'clock in the morning, and four in the afternoon. But whatever hours are chosen to set apart for feeding the calf, it is best to adhere to the particular times, as regularity is of more consequence than is generally supposed. If the calf goes but an hour or two beyond its usual time of feeding, it will find itself uneasy, and pine for food.

It is always to be considered, that calves, reared in this manner, are to be enticed to eat hay, or some other similar material, as early as possible; and the best way of doing this,

is, to give them the sweetest hay in your possession, and but little at a time. Turnips or potatoes are very good food, as soon as they can eat them; and they are best cut small, and mixed with the hay, oats, bran, and such articles, at the time of their being given.

It may be observed, that it is not absolutely necessary to give milk to calves after they are one month old; and to wean them gradually, two quarts of milk, with the addition of linseed boiled in water to make a gruel, and given together, will answer the purpose, until, by diminishing the milk gradually, the calf will soon do entirely without. Hay-tea will answer the purpose, with the like addition of two quarts of milk, but is not so nutritious as linseed. It is a good method of making this, to put such a proportion of hay as will be necessary into a tub, then to pour on a sufficient quantity of boiling water, covering up the vessel, and letting the water remain long enough to extract the virtues of the hay. When bacon or pork is boiled, it is also a good way to preserve the liquor or broth, and mix it with milk for the calves.

In summer, calves may sometimes be reared on whey only. But when reared in winter, they must be fed with hay; and clover-hay is probably the best of any sort for this use. Calves may also be raised with porridge of different kinds, without any mixture of milk at all.

It has been suggested to be sometimes a good convenient plan, to bring up calves under a sort of foster mother; an old cow, with a tolerable stock of milk, will suckle two calves, or more, either turned off with her, or at home, keeping them in good condition, until they are old enough to shift for themselves: they ought to suck the first of their mother's milk, for two or three days, although many are weaned without ever being suffered to suck at all. Calves, whether rearing or fattening, should always suck before milking, the cow being milked afterwards, as the first and thinnest of the milk is sufficiently rich for them. Old milk often scours very young calves; but the effect generally goes off without any ill consequence. Skimmed milk and second flour are sometimes made use of. The large, short-horned breed of calves mostly consume daily, at three meals, three quarters of a pound of flour each, boiled up in skimmed milk or other liquid.

The proper degree of warmth for the skimmed milk, on which calves are weaned, is a little above that fresh from the cow.

In the Rural Economy of Norfolk, it is remarked, by Mr. Marshall, that some farmers bring up all the year round, rearing every calf they have dropped. Others rear in winter only, fattening their summer calves for the pea-markets; or at a distance from them for the butcher. Norfolk farmers, in general, begin early in winter to rear their calves, some so early as Michaelmas; in common, if their cows come in before Christmas, not only as being fully aware of the advantage of rearing early, but in order that they may rear as many of their own calves as possible, drove calves being always hazardous, and sometimes scarce. No distinction is made as to sex; males and females are equally objects of rearing, and are both occasionally subject to castration, it being a prevailing custom to spay all heifers intended to be fatted at three years old, but such as are intended to be finished at two years old are, it is believed, pretty generally left "open," as are, of course, such as are intended for the dairy. There are two reasons for this practice; they are prevented from taking the bull too early, and thereby frustrating the main intention; and by this precaution may be more quiet, and are kept from roving at the time of fattening.

This

This may be one reason why spayed heifers are thought to fatten more kindly at three years old, and to be better finished than open heifers. The method of treatment depends, in some measure, on the time of rearing; the winter calves require more milk than the later-dropt ones.

"Here the general treatment of a calf dropt at Christmas may be said to be this; sucks twice a day the first fortnight, has the pail twice a day for the next month or six weeks, and once a day for a month or six weeks longer, with hay in a rack and turnips in a manger, and sometimes with oats and beans among the turnips, which last, after a calf has taken freely to them, serve as both meat and drink. In this consists the chief peculiarity of the Norfolk method of rearing calves, which may be said to be with milk and turnips; the last a species of food, which, in every other part of the kingdom is, it is believed, entirely neglected or unthought of. As soon as the weather gets warm enough, the calves are turned out in the day among the fattening bullocks, or on to a patch of turnips, or upon a piece of wheat, or a forward grass-piece, and housed again at night, until the days growing long and the nights warm, and the clover and darnel have risen to a full bite, when they are turned out altogether, and continue to have the first bite of every thing which is good and palatable to them throughout the summer. This may be called the general treatment of calves dropt at Christmas; but the management of no two farmers is exactly the same."

CALVES, weaning of. The most suitable season for this business is the early part of the spring, as such calves as are weaned at a late period seldom attain any great size. The best means of accomplishing this is by gradually taking them from the cow, and afterwards diminishing the quantity and quality of the milk, or other liquid with which they are fed, until they become capable of being supported on grass alone, or with some sort of cut food. The method of management in these cases is thus stated by the author of the "Synopsis of Husbandry;" "having a cow suited to the purpose which drops a calf, let it be suckled in the usual mode, till it hath completed the third week of its age; when, instead of turning it to the cow, it is to be suckled by thrusting its head into a pail of new milk, and the finger of the person who directs the business is to supply the place of a teat. At first the calf may be rather awkward at sucking the finger, but this will soon become familiar, and after a while a lock of hay may be substituted for the teat; and as the calf advances in age it will suck the milk out of the pail without any assistance. The milk should at first be given, as observed before, free of adulteration; but, at the end of the first month, a little milk pottage may be added to each serving. This method should be continued till the calf is twelve or fourteen weeks old, lowering the milk pottage by degrees, till at length it will be brought to simple water only. At the season when the calf is thus weaned from the teat, it ought to be turned abroad in the day-time into a small close or orchard near the yard, where there is a good bite of grass, which may be expected at the time of the year when the weaning calves are of this age; and as there will generally be more than one calf weaned in a season, they will each be company for the other, and become in a short time reconciled to their situation. It is to be observed, that this pasture should be at some distance from that whereon the dams are turned, and that there be neither ponds nor ditches, nor any annoyance which might endanger the lives of these youthful animals; and in order to habituate them still more to their pasture, the milk-pottage should be carried clean to them at each of their feeding hours. For the first month or six weeks the calves ought every night to be brought out of the

meadow and lodged in the pens; but, after this time, they may be left in the pasture as well in the night season as in the day, and at this time their food may be lowered by degrees, till, as was before observed, it be at length reduced to simple water only, for when the calves get to the age of twelve or fourteen weeks, they will no longer require the aid of this sustenance, but will be able to satisfy their appetites by grass. Care, however, must be taken throughout the summer, that they be frequently shifted from one pasture to another, in order that they may be kept up in good flesh, and enabled to grow away with the utmost celerity. At Michaelmas, or soon after, the calves should be taken into the yard; and if they were allowed the indulgence of a small close to themselves, it would be still better. And here their taste must be gratified with the best and sweetest hay that can be procured, with an outlet on a dry pasture, where in fine open weather they may be suffered to enjoy themselves; and it would redound greatly to their welfare, if, on the approach of winter, a shed was to be erected for them to repose in during the night, and for shelter in tempestuous days. So essential are warmth and good living to young animals of every denomination, that the care which has been taken of them in their early days will be manifest in every state of their future growth. Nor is there any stock which will pay better for this cautious management in their youth than those of the cow kind: for if they are stinted in their feed, or carelessly attended whilst in their growing state, they will never arrive to that size which they would otherwise have done, and consequently the loss will be perpetually felt by the farmer who attempts to raise milch kine of his own breed, without giving them a due attendance in the first year. When the calves have attained their first year, they are called *buds*, or *yearlings*; and though at this time they may be able to mix with the herd, yet he thinks it would be most prudent, if not attended with too great an inconvenience, to suffer them to remain in a pasture by themselves. But if this cannot be done, let them be turned out with the dry stock, and not permitted to run with the cows, as this might probably be the occasion of their taking bull; a measure which should at this time be cautiously guarded against, as such buds which propagate at this early age will receive a check in their growth on this account; and if, during the succeeding winter, they were to be managed as before directed, he is of opinion that their future growth would be found to pay ample interest for the fodder that is now given them; only this is to be observed, that as their strength is now considerably augmented, a less valuable fodder may suffice, and good pea-straw may well supply the place of hay. Such farmers who have low rushy meadows, where there is frequently a length of *tril* in the winter, may in this second year turn the calves into them, and here they will meet with plenty of nourishing food, whilst the weather is fair and open. At two years old the heifer may be suffered to take bull; but it would in his opinion be still better for the cow, and more to the interest of the farmer, if he were to wait a year longer ere the business be completed."

From the great scarcity of milk, various substitutes have been proposed for the early periods of weaning, some of which seem well calculated for the use they are designed. The method proposed by the duke of Northumberland is to take one gallon of skimmed milk, and to about a pint of it add half an ounce of common treacle, stirring it until it is well mixed; then to take one ounce of linseed-oil cake, finely pulverized, and with the hand let it fall gradually in very small quantities into the milk, stirring it in the mean time with a spoon or ladle, until it be thoroughly incorporated; then let the mixture be put into the other part of the

milk.

milk, and the whole be made nearly as warm as new milk when it is first taken from the cow, and in that state it is fit for use. The quantity of oil-cake powder may, from time to time, be increased, as occasion may require, and as the calf becomes inured to the flavour of it. But Mr. Crook's method is to make a jelly of one quart of linseed, boiled ten minutes in six quarts of water, which jelly is afterwards mixed with a small quantity of the best hay-tea; on this he rears many calves without milk.

Mr. Donaldson observes, that calves when dropt during the grafs-season should be put into some small home-clofe of sweet rich pasture, after they are eight or ten days old, not only for the sake of exercise, but also that they may the sooner take to the eating of grafs. When they happen to be dropt during winter, or before the return of the grafs-season, a little short soft hay, straw, or sliced turnips, should be laid in the trough or stall before them. By means of linseed made into a jelly by boiling in water, calves have been weaned without any milk at all, in the trials of Mr. Crook. The author of Practical Agriculture suggests that potatoe meal has been found to be useful in this intention, "as it mixes well with milk, water, or weak broth, and is highly nutritious."

Male calves that are intended to be kept should constantly be castrated or cut at an early period, as in the first week or fortnight, the danger being considerably less when done early.

CALVES, suckling of. In this practice the produce of the cow can in many situations be brought to great advantage; as in the vicinity of large towns. The method most commonly employed in fattening calves, is to allow them to suck; as by this method the object is probably not only sooner, but more effectually attained than by any other means. The period which is necessary for fattening calves must be different, according to circumstances, but it is generally from seven to nine weeks; however, in the dairy districts, where milk is considered a valuable article, scarcely half that time is allowed. There is another method, which is to give them the milk to drink; and when that is done, it is given them morning and evening warm from the cow, and the quantity increased according to their age and strength. In whatever way they may be managed, they should be kept in pens in a clofe well aired house, and well littered.

The author of the Synopsis of Husbandry observes, "that as it is necessary that the calves should lie always quiet, in order that they may indulge in sleep at those times when they are not employed in suckling; it seems proper that the cow-house should be situated in the most retired part of the yard, and that the pens should be kept as dark as possible. But notwithstanding this caution, the calves should by no means be suffered to lie too hot in the summer time, which would be apt to induce a sickness amongst them. To admit, therefore, an occasional draught of fresh air, let a window be cut in each pen, with shutters adapted to the same, and let these windows be opened whenever the closeness of the atmosphere indicates it to be necessary. In the summer season they should rarely, if ever, be closely shut, and when it is required, the stream of air may be increased by opening the cow-house door at the opposite end of the building. Each calf should have a collar round his neck, to direct him in his suckling, but should never be fastened up in the pen. It is necessary that the pens be constantly well littered with the cleanest wheat straw, a proportion of which should be thrown in to them every day; cleanliness being a most essential article in the fattening of every animal, and not more necessary to any than the calf, which, but for this precaution, would in a short time demonstrate the ill effects of lying on his accu-

mulated dung, which of all other animals is the most offensive, and of a quality highly septic. Still as the calves are weaned, they are to be taken into the pens, and suckled on their own dams, which at first will yield a far greater quantity of milk than is necessary for their offspring, so that another calf may be suckled thereon; or the cow may be milked, and the cream be reserved for butter, or applied to any other use that the owner may think proper. As the calf increases in size it will require a larger quantity of milk; but whilst they are young, one good cow will yield a noble supply for two calves; and when the produce is demanded for one calf, another new milch cow should be provided, and these two cows will abundantly supply the three calves with milk till the oldest is fit for the butcher; after which, if necessary, a fresh suckler may be bought in, and the business be carried on progressively by keeping the house constantly supplied with calves, so that the whole milk may be suckled; as the different branches of the fattened calf and the dairy cannot be so conveniently united."

"For many of the southern parts of the kingdom, Smithfield market is the most convenient place to apply for sucklers, so as to be on a certainty of procuring them, this being the general receptacle where the milk-men vend their calves; and these having been bred from the larger Staffordshire or Holderness cows, do generally turn out to good account for the suckler, such large boned calves, when fattened, arising to a weight much more considerable than the ordinary produce of the country dairy-men; and as to the superior quantity of milk required in fattening the larger breed of calves, this is amply recompensed by the greater increase of weight. The only hazard attending this Smithfield bargain is, the accident which may happen to the creature on the road, if the drift has been of any length; for, besides the cow-men above-mentioned, many sucklers are sent to this market from the vale of Aylesbury, and these sometimes meet with accidents, either from the lengthened journey, or want of milk. From the former, the quiet of the pens generally recovers them, and the ill consequences of inanition may be obviated by stinting the creature to a short allowance for a few meals, till the cause is removed. With these precautions, it will, he believes, very rarely be found that any fatal consequences succeed either of these evils. However it sometimes happens that, in spite of all our care, the suckler dies in consequence of imprudent management in the vender; but as these accidents are not frequent, they ought not to deter the farmer from replenishing his pen by the London markets, where his vicinity to the metropolis will allow of the practice.

"Young calves," he says, "when permitted to suck their fill, are often seized with a lax or scouring. To prevent which, the calves for the first fortnight or three weeks may be stinted in their allowance; at the same time due regard should be taken that they do not pine or decrease in flesh for want of milk. But after this age, they should be allowed to suck as long as they choose, and every means ought to be made use of to increase their appetite, and render them more eager after their food. Chalk may be given for this purpose, as well as for giving to the flesh a delicate whiteness. Salt sprinkled in the troughs will likewise act as a stimulus to the appetite; besides which, it is a common practice with some people to cram their calves with balls compounded of flour, pounded chalk, and milk, with the addition of a small quantity of common gin. Of these they give two, about the size of a walnut, once a day, or oftener, to each calf. These balls being very nutritious, in some degree, supply the place of milk, and at the same time the spirituous mixture operates on the creature as a soporific;

rific; and thus, by composing them to sleep, increases their disposition to fatten. But where milk can be had in sufficient abundance, it is never worth while to have recourse to these factitious aids. When the demands of the calf, however, are beyond the ability of the cow, these balls come seasonably to their relief. In order that the calves may be provided with sufficient store of milk, the pastures should still be changed, whenever the cows are found to be deficient in this particular; and in the winter time, such food as is of a succulent nature, as grains, turnips, &c. should be always at hand to supply the want of grass: and these, with a due allowance of the sweetest hay, should be their constant aliment during the time that the cows are confined to the yard.

"The prices of suckling calves vary according to the goodness of the young animal, and the time of year wherein the purchase is made. In general, sucklers fetch the largest price in summer, when veal sells the cheapest; and the reason of this arises from the smaller number to be met with at that time than in the spring. A good suckler in London can seldom be bought for less than 20s., and is often sold for 25s. or 30s. The business of suckling was formerly reckoned to turn out to good advantage, when each calf throughout its fattening brought a profit to the farmer of three shillings a week; but now (1799) so considerably have provisions of every kind been advanced in price within these few years, the profit on the article of suckling is much greater.

"When calves are slaughtered at six weeks or two months old, the veal is seldom of a good colour; neither has the flesh of these young calves a taste equal to that where the animal has been suffered to live a few weeks longer. To attain both the ends of colour and flavour it is necessary that the calves should be maintained with plenty of milk, and regulated under such management as before directed, till they arrive to the age of eight or ten weeks, according to the season of the year, the more or less kindly state of the calf, the particular demand of the markets, or other eventual circumstances. In the summer season, it may be proper to dispose of them at an earlier period than in the winter; not only on account of their growing away with greater celerity in warm weather, but likewise because of the increased demand for small veal, which is then most saleable. During the last three or four weeks, blood should frequently be drawn from the calf, which will be a likely means towards rendering the veal of a colour delicately white; a circumstance so much attended to by the butcher, that he will commonly depreciate such calves, which from the appearance of their eyes are likely to *die black*, as they term it, though in other respects not to be despised.

"Such calves as are suckled on their own dams will, generally speaking, fatten in a shorter time than those which are afterwards bought in to supply their places. The first obvious reason for this difference in their favour is their not having been removed from the places where they were first dropped, and having always continued to suck the milk of their parent animal, which must in all reason be supposed of a more nutritious quality to them than that of any other cow. Secondly, the cow having so lately calved, the aliment nourishes and fattens in a higher degree than when the creature becomes stale milked. Cow calves are observed to fatten more kindly than the male or bull calves; and these last are much more coarse grained, and their flesh less delicate in taste than the former. Calves of the largest size are fattened in Essex, where the business of suckling seems to be better understood, and more properly conducted than in any other county, and where the farmer keeps

the calves to a greater age than in any other part of the kingdom."

Mr. Marshall is clearly of opinion, that "to suckle calves in general after they are ten weeks old is bad management; for his account in this respect is uniform—those of nine or ten having paid as much a week as those of twelve or thirteen, and although a calf of six weeks old may suck nearly as much milk as a calf of twelve weeks old, yet the first month or five weeks the quantity is considerably less, and this advantage of their infancy is doubly as valuable to nine as it is to twelve weeks."

In some districts, barley-meal, linseed boiled into a kind of jelly, and such-like articles, are given to calves in the course of fattening; but the methods above described are greatly superior, although it must be allowed that they may sometimes be considerably more expensive.

It is of the greatest importance in this practice to have good breeds of cows, to keep them constantly well fed, and the suckling houses airy, spacious, and perfectly clean from all sorts of filth.

CALF-PEN, a place formed for the purpose of receiving calves for the practice of fattening them.

In most places it is the custom to have the calf pens annexed to the cow-houses. The only reason, Mr. Beaton observes, in his useful paper in the communications to the Board of Agriculture, "that he can assign why calf-pens should be within the cow-house is, that it saves a little trouble to the dairy-maid, by having a shorter distance to carry the milk. In general, however, it is a plan not to be recommended, as every person who has had any experience among cows must know how naturally and how forcibly a new calved cow expresses her attachment to her calf; with what care and anxiety, if permitted, she licks it all over, and uses every exertion to protect it from injury; how the tender calf clings to its affectionate mother, as if sensible that to her alone it can trust for protection; and yet the poor helpless creature (says he) is dragged away, and placed perhaps within its mother's view, or at least within her hearing, as if on purpose to augment the pain of her sufferings. Its doleful cries keep alive the pangs of the unhappy cow; she struggles to break the chain that binds her fast, and seems restless and uneasy whenever approached. In such a state of agitation it is impossible she can either feed well, or give that quantity and quality of milk she would otherwise furnish. Where there are many cows kept, and perhaps several of them lately calved, a single calf may keep them all in this restless state: to remedy which, the best way (says he) is to have the calves at such a distance, or at least so thick a wall betwixt them, that the cows cannot hear their cries. The cow will then soon forget her calf, and will both feed and milk the better for it; therefore they should be as near as conveniently may be, without being liable to the above objections.

"To lie dry and warm is of the greatest consequence in the rearing of calves, as is evident from what has been already advanced on the subject. Some think it necessary to accustom a calf to be bound with a halter from the hour of its being calved; others again turn them quite loose into the pen, and allow them to range and run about as much as they please. Which of these is the best method is here of little consequence. The principal thing to be observed in the construction of calf-pens is the laying of the floor, which should be made of laths or spars, about two inches broad, laid at the distance of an inch from each other upon joists, so as to make the floor above one, two, or three feet from the ground, as the situation will admit. This not only keeps them quite dry, by allowing all the moisture to

pass

pais immediately away, but has the advantage of admitting fresh air below the bedding, and thereby preventing that unwholesome disagreeable smell too often found among calves; for, it is to be understood, that this place below the floor should frequently be cleaned, as well as the floor itself, whenever it becomes wet or dirty; but it is not right to allow the litter to increase to a great thickness, otherwise the moisture will not so easily pass through. Calf-pens are, however, too often made without this sparred floor, and the fresh litter always laid on the old, till the calves are removed, which is a slovenly practice, and not by any means to be recommended.

"Stalls, or divisions, are but seldom made in calf-pens: at the same time it would certainly be much better to keep the calves separate from each other; by which means they will be more easily fed, and less liable to accidents. Partitions, about three feet high, of thin deal nailed on small posts, might be so contrived as to be moveable at pleasure, to increase or diminish the stall if necessary, according to the age and size of the calf. This may be done as represented in the plate on calf-pens, *fig. 1.* which is the ground-plan of a double calf-pen for ten calves; *a* is the door; *b* the passage betwixt the pens; *ccc*, &c. are the pens, shewing the situation of the partitions; *dddd* are four joists, in which are several holes, as shewn on the plan, for receiving iron pins, at the bottom of the partitions, to keep them in their place; *e* is a window or door, besides which there should be some other windows or air-holes as high up as possible. If it be thought unnecessary to make the partitions, there might be a small round trough, in a circular frame, fixed in the corner of each pen, as at *f*, for holding the milk, and a door in the next adjoining corner. A small slight sack for holding a little hay, placed at the upper part of the pen, might also be useful. The troughs should be round, that the calves may not hurt themselves upon them, which they might probably do on the angles if they were square. *Fig. 2.* is a section of these pens, in which *rr* shews the position of the racks. The advantages of this kind of calf-pens are, that the calves are all kept separate in a small compass, and cannot hurt each other, as the stronger ones sometimes do the weaker, when confined promiscuously; and their food may be much more easily and equally distributed when they are not suckled.

"If a great number of calves are feeding, as thirty or forty, or more, it might be so contrived in such pens, by pipes communicating with the troughs, that one person might give all the calves their milk at the same instant of time; and that any given quantity of milk, and no more, can go into each trough; but as this method would probably be but rarely required by the farmer, it is unnecessary, in a general point of view, to enter into an explanation of it."

In Gloucestershire, Mr. Marshall says, "the calf-pens are of an admirable construction; extremely simple, yet singularly well adapted to that intention. Young calves, fattening calves more especially, require to be kept narrowly confined: quietness is, in a degree, essential to their thriving. A loose pen, or a long halter, gives freedom to their natural fears, and a loose to their playfulness. Cleanliness, and a due degree of warmth, are likewise requisite in the right management of calves. A pen which holds seven, or occasionally eight calves, is of the following description:—The house, or roomstead, in which it is placed, measures twelve feet by eight: four feet of its width are occupied by the stage, and one foot by a trough placed in its front; leaving three feet as a gangway, into the middle of which the door opens. The floor of the stage is formed of laths,

about two inches square, lying lengthways of the stage, and one inch asunder. The front fence is made of staves, an inch and a half in diameter, nine inches from middle to middle, and three feet high: entered at the bottom into the front bearer of the floor (from which cross joists pass into the back wall), and steadied at the top by a rail; which, as well as the bottom piece, is entered at each end into the end wall. The holes in the upper rail are wide enough to permit the staves to be lifted up and taken out, to give admission to the calves; one of which is fastened to every second staff, by means of two rings of iron joined by a swivel; one ring playing upon the staff, the other receiving a broad leathern collar, buckled round the neck of the calf. The trough is for barley-meal, chalk, &c. and to rest the pails on. Two calves drink out of one pail, putting their heads through between the staves. The height of the floor of the stage, from the floor of the room, is about one foot. It is thought to be wrong to hang it higher, lest, by the wind drawing under it, the calves should be too cold in severe weather. This, however, might be easily prevented by litter, or long straw dung thrust beneath it." It is observable, that these stages are fit only for calves which are fed with the pail, not for calves which suck the cows.

CALF-stage, in *Rural Economy*, a term employed in some districts to signify the same as pen, probably from the floor being somewhat raised.

CALF skins, in the *leather manufacture*, are prepared and dressed by the tanners, skinners, and curriers, who sell them for the use of the shoe-makers, saddlers, bookbinders, and other artificers, who employ them in their several manufactures.

CALF-skin dressed in sumach, denotes the skin of this animal curried black on the hair side, and dyed of an orange colour on the flesh side by means of sumach, chiefly used in the making of belts. The English calf-skin is much valued abroad, and the commerce thereof very considerable in France and other countries; where divers attempts have been made to imitate it, but hitherto in vain. What is likely to baffle all endeavours for imitating the English calf in France is, the smallness and weakness of the calves about Paris; which, at fifteen days old, are not so big as the English ones when they come into the world.

CALF, Golden, in *Scripture History*. See **GOLDEN CALF**.

CALF, Sea, in *Zoology*. See **PHOCA VITULINA**, and **SEA-CALF**.

CALF also denotes the young of the **WHALE**.

CALF, among *Sportsmen*, is used for a male hart or hind of the first year.

CALFS-snout, in *Botany*. See **ANTIRRHINUM ORONTIUM**.

CALFAT, in *Ornithology*, a species of **EMBERIZA**, the red-eyed bunting of Latham, a bird that inhabits the isle of France. This is smaller than the common sparrow: colour hoary: beneath vinaceous: head, throat, and margin of the tail, black: bill, legs, and orbits rosy. *Gmel.* &c. **Obf.** This is **Le Calfat** of Buffon.

CALHETA, in *Geography*, a small town of Madeira, in the district of Funchal.

CALI. See **KALI**.

CALI, in *Geography*, a town of South America, in a department of the same name, in the province of Quito, and government of Popayan, built by Sebastian de Belalcazar. N. lat. 3° 15'. W. long. 73° 16'.

CALIACH-HEAD, a cape of Scotland, on the north-west coast of the island of Mull.

CALIAVARI, **LUCA**, in *Biography*, a painter, was born at Udine, in Italy, in 1665, and acquired his skill by studying

studying and copying the works of eminent masters. His chosen subjects were sea-ports and landscapes, especially views about Rome and Venice, which he designed and executed with truth, nature, and elegance. His volume of perspective views of Venice, etched with aqua-fortis, evince his taste and abilities. He died in 1715. Pilkington.

CALIBER, or **CALLIPER**, in a general sense, denotes the extent of any round thing in thickness, or diameter.

In which sense we say, a column is of the same *caliber* as another, when they are both of the same diameter.

CALIBER more particularly denotes the bore, or width of a piece of ordnance, or other fire-arms; or the diameter of the mouth thereof; or the ball it carries.

The caliber is the rule by which all the parts of a cannon, or mortar, as well as of its carriage, are proportioned.

CALIBER-compasses, a sort of compasses made with arched legs, to take the diameter of convex or concave bodies.

Caliber-compasses are chiefly used by gunners, for taking the diameters of the several parts of a piece of ordnance, or of bombs, bullets, &c. Their legs are therefore circular, and move on an arch of brass, whereon are marked the inches and half-inches; to shew how far the points of the compasses are opened asunder.

Some are also made for taking the diameter of the bore of a gun or mortar.

The gaugers also sometimes use calibers to embrace the two heads of any cask, in order to find its length.

The caliber, used by carpenters and joiners, is a piece of board notched triangular-wise in the middle, for the taking of measure.

CALIBER, **CALIBER-rule**, or **Gunner's CALLIPERS**, is an instrument, wherein a right line is so divided, as that the first part being equal to the diameter of an iron or leaden ball of one pound weight, the other parts are to the first as the diameters of balls of two, three, four, &c. pounds, are to the diameter of a ball of one pound. The caliber is used by engineers, from the weight of the ball given to determine its diameter, or *caliber*; or *vice versa*.

The gunner's callipers consist of two thin plates of brass joined by a rivet, so as to move quite round each other: its length from the centre of the joint is between six inches and a foot, and its breadth from one to two inches: that of the most convenient size is about nine inches long. Many scales, tables, and proportions, &c. may be introduced on this instrument; but none are essential to it, except those for taking the *caliber* of shot and cannon, and for measuring the magnitude of salient and entering angles. The most complete callipers is exhibited *Tab. Gunnery, fig. 2.* the furniture and use of which we shall now briefly describe. Let the four faces of this instrument be distinguished by the letters A, B, C, D; A and D consist of a circular head and leg; B and C consist only of a leg.

On the circular head adjoining to the leg of the face A are divisions denominated *shot diameters*, which shew the distance in inches and tenths of an inch of the points of the callipers when they are opened; so that if a ball not exceeding ten inches be introduced between them, the bevil edge E marks its diameter among these divisions.

On the circular bevil part E of the face B is a scale of divisions distinguished by *lb. weight of iron shot*. When the diameter of any shot is taken between the points of the callipers, the inner edge of the leg A shews its weight in avoirdupoise pounds, provided it be lb. $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, 3, 4, $5\frac{1}{2}$, 6, 8, 9, 12, 16, 18, 24, 26, 32, 36, or 42; the figures nearest the bevil edge answering to the short lines in the scale, and those behind them to the longer strokes. This scale is constructed on the following geometrical theorem.

VOL. V.

viz. that the weights of spheres are as the cubes of their diameters.

On the lower part of the circular head of the face A is a scale of divisions marked *bore of guns*; for the use of which, the legs of the callipers are slipped across each other, till the steel points touch the concave surface of the gun in its greatest breadth; then the bevil edge F of the face B will cut a division in the scale shewing the diameter of the bore in inches and tenths.

Within the scales of *shot* and *bore* diameters on the circular part of A, are divisions marked *pounders*: the inner figures $\frac{1}{2}$, $1\frac{1}{2}$, 3, $5\frac{1}{2}$, 8, 12, 18, 26, 36, correspond to the longest lines; and the figures 1, 2, 4, 6, 9, 16, 24, 32, 42, to the short strokes. When the bore of a gun is taken between the points of the callipers, the bevil edge F will either cut or be near one of these divisions, and shew the weight of iron shot proper for that gun.

On the upper half of the circular head of the face A are three concentric scales of degrees; the outer scale consisting of 180 degrees numbered from right to left, 10, 20, &c. the middle numbered the contrary way, and the outer scale beginning at the middle with 0, and numbered on each side to 90 degrees. These scales serve to take the quantity of an angle, either entering or salient. For an entering, or internal angle, apply the legs of the callipers so that its outward edges coincide with the legs of the given angle, the degree cut by the bevil edge F in the outer scale shews the measure of the angle sought: for a salient, or external angle, slip the legs of the callipers across each other, so that their outward edges may coincide with the legs forming the angle, and the degree marked on the middle scale by the bevil edge E will shew the measure of the angle required. The inner scale will serve to determine the elevation of cannon and mortars, or of any oblique plane. Let one end of a thread be fixed into the notch on the plate B, and any weight tied to the other end: apply the straight side of the plate A to the side of the body whose inclination is sought, hold it in this position, and move the plate B, till the thread falls upon the line near the centre marked *Perp.* Then will the bevil edge F cut the degrees on the inner scale, shewing the inclination of that body to the horizon.

On the face C near the point of the callipers is a little table shewing the proportion of troy and avoirdupoise weights, by which one kind of weight may be easily reduced into another.

Near the extreme of the face D of the callipers, are two tables shewing the proportion between the pounds weight of London and Paris, and also between the lengths of the foot measure of England and France.

Near the extreme on the face A is a table containing four rules of the circle and sphere; and geometrical figures with numbers annexed to them: the first is a circle including the proportion in round numbers of the diameter to its circumference; the second is a circle inscribed in a square, and a square within that circle, and another circle in the inner square: the numbers, 28, 22, above this figure, exhibit the proportion of the outward square to the area of the inscribed circle; and the numbers 14, 11, below it, shew the proportion between the area of the inscribed square and the area of its inscribed circle. The third is a cube inscribed in a sphere; and the number 89 $\frac{1}{2}$ shews that a cube of iron, inscribed in a sphere of 12 inches in diameter, weighs 89 $\frac{1}{2}$. The fourth is a sphere in a cube, and the number 243, expresses the weight in pounds of a sphere inscribed in a cube whose size is 12 inches: the fifth represents a cylinder and cone of one foot diameter and height: the number in the cylinder shews, that an iron cylinder of that diameter

and height weighs 364.5 lb. and the number 121.5. in the cone expresses the weight of a cone, the diameter of whose base is 12 inches, and of the same height: the sixth figure shews that an iron cube, whose side is 12 inches, weighs 4604 lb. and that a square pyramid of iron, whose base is a square foot and height 12 inches, weighs 154 $\frac{1}{2}$ lb. The numbers which have been hitherto fixed to the four last figures were not strictly true; and therefore they have been corrected in the figure here referred to; and by these the figures on any instrument of this kind should be corrected likewise.

On the leg B of the callipers, in a table shewing the weights of a cubic inch or foot of various bodies in pounds avoirdupois.

On the face D of the circular head of the callipers is a table contained between five concentric segments of rings: the inner one marked *Guns* shews the nature of the gun, or the weight of ball it carries; the two next rings contain the quantity of powder used for proof and service to brass guns, and the two outermost rings shew the quantity for proof and service in an iron cannon.

On the face A is a table exhibiting the method of computing the number of *shot or shells* in a triangular, square, or rectangular pile. Near this is placed a table containing the principal rules relative to the *fall of bodies*, expressed in an algebraic manner: nearer the centre we have another table of rules for raising water, calculated on the supposition, that one horse is equal in this kind of labour to five men, and that one man will raise a hogshead of water to eight feet of height in one minute, and work at that rate for some hours. N. B. Hogsheads are reckoned at sixty gallons.

Some of the leading principles in gunnery, relating to *shooting in cannon and mortars*, are expressed on the face B of the callipers. Besides the articles already enumerated, the scales usually marked on the *SECTOR* are laid down on this instrument: thus, the line of inches is placed on the edge of the callipers, or on the straight borders of the faces C, D: the logarithmic scales of numbers, sines, versed sines, and tangents, are placed along these faces near the straight edges: the line of lines is placed on the same faces in an angular position, and marked *Lin*. The lines of plans or superficies are also exhibited on the faces C and D, tending towards the centre, and marked *Plan*. Finally, the lines of solids are laid on the same faces tending towards the centre, and distinguished by *Sol*. See farther on the construction and use of this instrument, Robertson's *Treatise of Mathematical Instruments*, &c. Appendix.

CALIBOGIE River and Sound, in *Geography*, lie on the coast of S. Carolina in America, and form the outlet of May and New Rivers.

CALICA, in *Mythology*, an Indian goddess, which seems to have possessed the attributes of the Grecian Hecate. Mr. Blaquiere, with a view of ascertaining the fact, that human sacrifices were offered to this horrible deity, examined the Purana which bears her name. Birds, tortoises, alligators, fish, nine species of wild animals, buffaloes, bulls, he-goats, ichneumons, wild boars, rhinoceroses, antelopes, guanias, rein-deers, lions, tygers, *men*, and blood drawn from the offerer's own body, are looked upon as proper oblations to the goddess Chandida, &c. The following injunction afterwards occurs: when the sacrifice of lions, of tygers, or of the human species is requested, let the three first classes act thus: having formed the image of the lion, tyger, or human shape, with butter, pastry, or barley meal, let them sacrifice the same as if a living victim, the axe being first invoked by the text "*Nomo*;" that text is as follows: "*Cali! Cali! O horrid-toothed goddess: eat, cut, destroy*

all the malignant: cut with this axe; bind, bind, seize, seize; drink blood, tear, tear: secure, secure; salutations to Cali!" Among other exceptions, with regard to human victims, those that are unwilling are expressly prohibited. Asiatic Researches, vol. v. p. 371, &c.

CALI-CALIC, in *Ornithology*, the Madagascar Shrike, *Lanius Madagascariensis*, stands under this name in Buffon's Natural History of Birds.

CALICO, in *Geography*, a river of European Turkey, which runs into the gulf of Saloniki; 14 miles S.W. of Saloniki.

CALICOULAN, **COYLAN**, or **QUILON**, a Dutch factory on the western coast of Malabar, about 14 geographical miles to the N.N.W. or N.W. of Anjengo, or Anjenga, placed by major Rennell in N. lat. 8° 39'. E. long. 76° 40'.

CALICULA, in *Ancient Geography*, a town of Spain, placed by Ptolemy in the Tarragonensis, and assigned to the Turduli.—Also, another town of Spain, which Ptolemy places in the territory of the Turdetani.

CALICUT, in *Geography*, a country of Asia, and a very extensive state on the coast of Malabar. Its chief assumed the title of king of kings. The last of these princes, called Sarana Parimal, having embraced Mahometanism, retired to end his days at Mecca, and dividing his dominions between the princes of his own blood, reserved, as it is said, a space of 12 leagues for one of these princes, or a favourite page; who was to have the title of Samorin, and to whom the others were to render homage. The Samorin built a city on the spot whence Parimal took his departure, and called it "*Calicut*." He who afterwards governed Calicut, inhabited a palace of stone, and annexed some appearance of grandeur to his court. In former times, the inhabitants of this district had several strange customs, some of which are still retained. Accordingly it is said, that the Samorin's wife must be first enjoyed, for three nights if he pleases, by the high priest. The nobles permit the other priests to take the same liberty; but the lower people are debarred from this honour. A woman may marry a number of husbands; each of whom has her by turns for ten days or more, as they agree among themselves; and during that time he provides for her all necessaries. When she proves pregnant, she names the father of the child, who, after it is weaned, takes care of its education. The "*Naires*" of Calicut form a band of nobles, whose only profession is that of arms. These men, though of an olive colour, are comely and handsome; they are tall and hardy, very valiant, and dextrous in the use of their weapons. They lengthen their ears to such an extent, that they hang down on their shoulders, and sometimes lower. These Naires are allowed only one wife, but the women of rank may have as many husbands as they chuse, whom they regard as slaves subjected to their beauty. Women of inferior condition supply the defect of the privilege appropriated to ladies of rank, by indiscriminate commerce with strangers, from which their husbands cannot restrict them. The mothers prostitute their daughters even before they arrive at a proper age. The "*Naires*," or nobles of Calicut, seem to be of a different race from the burghesses; for the latter, both males and females, are of a smaller stature, and are worse shaped, and more ugly. Among the "*Naires*" there are some men, as well as women, whose legs are as thick as the body of an ordinary man. This deformity is not the effect of disease, but commences from their birth. The skin of these legs is hard and rough like a wart; and, nevertheless, the persons affected with it are nimble and active. This race of men with thick-legs, has not multiplied greatly; either among the "*Naires*," or the other Indians. However, they appear in other places, and especially in Ceylon, where they are said to be of the race of St.

St. Thomas. Du Buffon's Nat. Hist. vol. iii. p. 99, Eng. Ed. The people of this country have no pens, ink, or paper; but write with a bodkin on flags that grow by the sides of the rivers, which are so strong as to be durable for many years. The district called Calicut is about 63 miles long, and nearly as many broad. The air is salubrious, though it has many woods, rivers, and marshes; the soil is fertile, but it does not produce much grain; it is subject to inundations from the sudden descent of the mountain-rivers; and the sea also has made such ravages on the coast as to oblige the Samorin to transfer his residence from Calicut to Panany. Along the sea-coast, the land is low and sandy, and produces a number of cocoa-trees. The higher grounds produce pepper and cardamoms of a good quality. The country also supplies timber for building, white and yellow sanders, cassia lignea and fistula, nux vomica, and cocculus indicus. The forests abound with parrots and monkeys, and various sorts of game: they have plenty of fish, and their mountains yield iron. The Samorin is said to be able to raise an army of 100,000 men.

CALICUT, the capital of the country above described, is situate on the coast of Malabar. This city is remarkable for being the first Indian port visited by European shipping. Vasco de Gama, having doubled the Cape of Good Hope, and pursuing his navigation along the south-east of Africa, arrived at the city of Melinda; and conducted by the pilots of this civilized and commercial city, he sailed across the Indian Ocean, and landed at Calicut, on the 22d of May 1498. This was at that time the most flourishing place on the Malabar coast. The Samorin, or monarch of the country, astonished at this unexpected visit of an unknown people, whose aspect, arms, and manners, bore no resemblance to any of the nations accustomed to frequent his harbours, and who arrived in his dominions by a route hitherto deemed impracticable, received them at first, with that fond admiration which is often excited by novelty. But in a short time, as if he had been inspired with foresight of all the calamities now approaching India by this fatal communication opened with the inhabitants of Europe, he formed various schemes to cut off Gama and his followers. But from every danger to which he was exposed, either by the open attacks, or secret machinations of the Indians, the Portuguese admiral extricated himself with singular prudence and intrepidity, and at last sailed from Calicut with his ships loaded, not only with the commodities peculiar to that coast, but with many of the rich productions of the eastern part of India.

Calicut, though much fallen in its consequence, is still a large town, containing about five or six hundred houses, built of wood, or bricks baked in the sun, in the midst of which are beautiful gardens. Thus circumstanced, it is three leagues in circumference, including a large village or suburb, inhabited by fishermen. It is governed by a viceroy, but wants a regular police; and its commerce, which is still not inconsiderable, on account of a convenient river by which teak-wood is brought down from the neighbouring mountains, is much oppressed by burdensome duties, generally farmed by Mahometans. The coast is low, and affords no shelter, and the only access to it is in small flat-bottomed boats. But though it has no harbour, it affords to the ships that visit it good riding in the open sea, at the distance of three leagues from the shore. The English factory, which formerly subsisted in this place, is removed to Tellicherry. N. lat. $11^{\circ} 13'$. E. long. $76^{\circ} 4'$.

CALIDRIS, in Ornithology, a species of SCOLOPAX that inhabits Europe and America, and well known in this country by the name of red-shank. The bill is straight and red; legs scarlet; secondary quill feathers white. Kramer. This

is the totanus of Brisson, scolopax totanus of the Fauna Suecica, rotbien of Frisch, &c.

Obs. A variety of this species is found in China, the body of which is grey above, and beneath white; lower part of the neck, and side of the breast, spotted with blackish; rump and tail barred with black and white. Latham, &c.

CALIDRIS, a species of TRINGA, the bill and legs of which are blackish; body beneath olivaceous; rump variegated. Gmel. This is the dusky sandpiper of Latham; calidris of Brisson; rusticolafylvatica of Gessner and Aldrovandus; and maubeche of Buffon. Inhabits the maritime parts of France and Germany. Length nine inches and an half.

CALIDRIS, a species of MOTACILLA, called by Latham the hang-nest warbler; and American nightingale of Edwards. The plumage is greenish brown above; beneath, fulvous; ocular line, and another beneath it, black. Gmel. This is ficedula Jamaicensis major of Brisson; and grand siquier de la Jamaïque of Buffon.

This bird is of the size of a robin, and builds a hanging-nest; it inhabits Jamaica, and is supposed to be the watchy picket, Spanish nightingale, or American hang-nest of Sloane.

CALIDRIS nigra, the name under which Aldrovandus describes TRINGA gambetta, the red-legged horseman of Albin, and gambet of other English writers.

CALIDRIS grisea of Brisson is the Gmelinian TRINGA grisea; and CALIDRIS grisea minor of the same author: TRINGA arenaria of Gmelin. Brisson also describes tringa nævia of Gmelin under the name of calidris nævia. Calidris beltonii of Aldrovandus is scolopax calidris of Kramer, &c.

CALIDRIS, a species of CHARADRIUS, called in England the sanderling or curwillet. The bill and legs of this bird are black; lores and rump greyish; body beneath white, without spots. Georg. It inhabits the sandy coasts of England and North America. Length eight inches.

Obs. There is a variety of this species in which the front, and body beneath are cinereous white.

CALIDUCTS, from calor, heat, and duco, I lead; a kind of pipes, or canals, disposed along the walls of houses and apartments; used by the ancients for the conveyance of heat to several remote parts of the house, from one common furnace.

The ancient caliducts seem both for thrift and use preferable to the German stoves; and might even challenge the advantage over our own fashion, were it not that the very sight of a fire adds something of lustre to a room.

CALIDUS, in Entomology, a species of CIMEX of the middle size, found in Africa. The colour above is fuscous; beneath, testaceous, with black antennæ. Fabricius.

CALIES, in Geography, a small town of Germany, in the circle of Upper Saxony, and New Mark of Brandenburg, chiefly inhabited by weavers of woollen cloth; 16 miles E. of Reeze.

CALIFORNIA, a tract of country, formerly thought to be an island, but now ascertained to be a peninsula, on the western coast of North America, bounded on the north by the continent, with which it is connected, on the east by the province of New Mexico and the gulf of California, or the Vermilion Sea, which separates it towards the southern part from the continent, and on the south and west by the great Pacific Ocean. This peninsula terminates on the south at Cape Lucar or Lucas, in N. lat. $22^{\circ} 10'$, and W. long. 110° , and extends northward to limits that have not been precisely ascertained. Some have fixed its northern extremity at Cape St. Sebastian, in N. lat. $43^{\circ} 30'$; whilst others have extended it to 46° , and have made its length 600 leagues, and its breadth at different places, 10, 20, 30, and 40 leagues. North California, indeed, of which the

most northern settlement is San Francisco, in N. lat. $37^{\circ} 58'$, has no other bounds, according to the statement of La Pérouse, founded on the opinion of the governor of Monterey, than those of America itself.

To the enterprising spirit of Cortes, the Spaniards, were first indebted for the discovery of the extensive peninsula of California. Having fitted out several small squadrons for the purpose of prosecuting such voyages of discovery as he could make, from the ports of New Spain in the South Sea, which either perished in the attempt, or returned without any success of importance; this adventurous conqueror of Mexico determined to take the command of a new armament in person; and, after enduring incredible hardships, and encountering every kind of danger, he at length, viz. in 1536, discovered this peninsula, and surveyed the greater part of the gulf which separates it from New Mexico. During a long period, however, this country was so little frequented, that even its form was unknown, and in most charts it was represented as an island, and not as a peninsula. In 1540, Mendoza, viceroy of Mexico, dispatched Francisco Alarcon to search towards the west for the pretended strait of Anian; but he advanced no higher than the latitude of 36° , and made no discovery. This same project was renewed in 1542, by Rodrigues de Cabrilho: but this whole expedition served only to explore a cape in the latitude of $41^{\circ} 30'$, which was denominated Capo Mendocino, in honour of the Mexican viceroy. In 1578, sir Francis Drake found, that in the latitude of 48° , there existed lands and men; and after having reconnoitred the coast through an extent of 220 leagues, which terminates in 37° , he called the country which he had discovered "New Albion," and took possession of it in the name of Elizabeth, queen of England. In the lat. of $38^{\circ} 30'$, he discovered the harbour where he made some stay, and which has preserved his name. From an account of Drake's voyage, published in a treatise entitled "The World encompassed by Fletcher," London, 1653, 4to. it appears, that he gave to the country which he discovered the name of "New Albion," for two reasons; first, because from the nature of the rocks and shoals with which the coast is skirted, it presents the same aspect as that of England; and secondly, because it was reasonable and just, that this land, till then unknown, should bear the name of the country of the first navigator who landed there. In 1592, a Greek of the island of Cephalonia, Juan de Fuca, in the service of Spain, discovered towards the 48th parallel, a large strait by which he pretended to have reached the Atlantic Ocean. Fuca's strait, or inlet, has been found again in our days; but the communication of the two oceans is neither better proved, nor more probable, and might perhaps exist only in his account. See Fuca's Strait. In 1595, a galleon was sent to make discoveries on the shore of California; but the vessel was unfortunately lost in Port des los Reyes. In 1602, the Spanish admiral, Sebastian Viscaino, or Biscaino, was charged by count de Monterey, viceroy of New Spain, to explore, to the north of California, a harbour that might afford an asylum to the galleons on their return from Manilla: he discovered a commodious one, safe and well situated, in the latitude of $36^{\circ} 40'$, to which he gave the name of the viceroy Monterey, and which is since become the principal settlement of the Spaniards on the N.W. coast. It is asserted, that a small vessel belonging to his squadron, commanded by Martin de Aguilar, found between 40 and 44 degrees, the mouth of a great river which bears his name on the geographical maps. It is added, that, having succeeded in doubling cape Mendocino, which, till then, had only been perceived, he discovered on the 13th of January

1603, 30 leagues more to the northward than this cape, in the latitude of 43° , a second cape or point, to which he gave the name of Capo Blanco, and that the navigable inlet or large river which he discovered is near this cape, and that it is a strait which leads to a great city, named "Quivira;" but that he was prevented by the rapidity of the current from ascending the river. The navigators of later times have procured no information respecting either this inlet of Aguilar, or the great city of Quivira. La Pérouse, who, in 1786, got a distant view of Capo Blanco, and of the parts of the coast which are nearest to it to the northward and southward, saw nothing of Aguilar's inlet; but as he was then at a considerable distance from the land, and as he did not make a particular search for this inlet, no conclusion can be drawn from his account against its existence. Most of the geographical and hydrographical charts place Aguilar's inlet or river to the southward of Capo Blanco; but Thomas Lopez, in his general chart of America, published in 1772, lays it down 20 leagues to the northward of that cape, in the latitude of 44° , with this simple indication, "Rio que corre a l'ouest," river that runs to the west; and he makes no mention of the great city Quivira. In 1640, admiral Bartolomeo de Fuente, or De Fonte, is said to have discovered, towards the parallel of 53° , the archipelago of San Lazaro, the river of Los Reyes, some great lakes, &c. and an easy passage of communication between the Great Ocean and the North Atlantic Ocean. This discovery, inserted in an account, the authenticity of which has been contested, and in which truth is blended with falsehood, has been confirmed by modern navigators, as to what regards the archipelago of San Lazaro, and perhaps an interior sea; but the communication of the two oceans is not better established than that which had been opened by Juan de Fuca. About the middle of the last century, Joseph Nicolas de Lisle, and Phillippe Buache, published learned dissertations and ingenious systems for the purpose of reconciling the discoveries of De Fuente on the N.W. coast of America with what is known besides of that northern part of the new continent. Other geographers and learned persons have considered the account of De Fuente as counterfeit and apocryphal; and among the latter is Dr. Reinhold Forster, who, with his son George Forster, accompanied captain Cook in his second voyage, and to whom we are indebted for an excellent "History of the Voyages and Discoveries, made in the North." M. de la Pérouse also expresses his thorough disbelief of the narrative ascribed to admiral le Fuente, and of the reality of any discoveries in the contested channel of San Lazaro, or St. Lazarus. Mr. Milet Mureau, on the contrary, acknowledges himself one of the strongest partisans for the existence of a north-west passage. Indeed, when we consider, that since the question first arose concerning a north-west passage from Europe into the Pacific Ocean, many scientific and capable men have been constantly on the watch, and eager to pursue the inquiry, it is not at all probable that such voyages as are related by Mureau, if really made, should not have been fully verified; and that there should remain no other traces of them than a kind of vague tradition.

During almost a whole century, if we except the contested voyage of De Fuente, the west coast of North America was not visited by any of the nations by which it was conquered, or by any of those which have been since called thither by the allurements of commerce. But although Spain made no maritime expedition, she did not neglect to push by land her discoveries towards the north; and the excursions which she planned and ordered, at different periods, led to a discovery, to the eastward of California, of the rich

CALIFORNIA.

rich provinces of Sonora and Cinaloa, which see. In 1684, the marquis de la Laguna, viceroy of Mexico, dispatched two ships with a tender, to make discoveries of the lake of California, of which he brought back but an indifferent account; though he was among the first who ascertained its being joined to the continent of America, and contiguous to that of Asia. It is said, however, that we owe to father Cains, a German Jesuit, the absolute certainty that California is a peninsula, joining to the continent of New Mexico, and the more northern parts of South America. He landed on the former from the island of Sumatra, and passed to the latter without crossing any other water than the river Azal, into which the Rio Colorado falls, in about the 35th degree of north latitude. Dr. Robertson observes, that the uncertainty of geographers with respect to this point is remarkable, as Cortes seemed to have surveyed its coast with great accuracy. The archbishop of Toledo has published from the original, in the possession of the marquis del Valle, the descendant of Cortes, a map drawn in 1541, by the pilot Domingo Castilo, in which California is laid down as a peninsula, stretching out nearly in the same direction which is now given to it in the best maps, and the point where Rio Colorado enters the gulf is marked with precision. Towards the close of the 17th century, the Jesuits, who had great merit in exploring the neglected province of California, and in civilizing its rude inhabitants, imperceptibly acquired a dominion over it as complete as that which they possessed in their missions in Paraguay, and they laboured to introduce into it the same policy, and to govern the natives by the same maxims. In order to prevent the court of Spain from conceiving any jealousy of their designs and operations, they seem studiously to have depreciated the country, by representing the climate as so disagreeable and insalubrious, and the soil as so barren, that nothing but a zealous desire of converting the natives could have induced them to settle there. Several public-spirited citizens endeavoured to undeceive their sovereigns, and to give them a better view of California; but without effect. At length, on the expulsion of the Jesuits from the Spanish dominions, the court of Madrid, as prone at that juncture to suspect the purity of the order's intentions, as formerly to confide in them with implicit trust, appointed don Joseph Galvez, whose abilities afterwards raised him to the high rank of minister for the Indies, to visit that peninsula. His account of the country was favourable; he found the pearl-fishery on its coasts to be valuable, and discovered mines of gold of a very promising appearance. From its vicinity to Cinaloa and Sonora, it is probable, that if the population of these provinces should increase to the degree that may reasonably be expected, California may, by degrees, receive from them such a recruit of inhabitants, as to be no longer reckoned among the desolate and useless districts of the Spanish empire. To this intelligent minister, Spain is indebted for a new distribution of government in its American provinces, and for several important alterations in the state of their police and revenue, as well as a general reformation of the tribunals of justice in America. Since the limits of the viceroyalty of New Spain have been considerably circumscribed, four of its most remote provinces, viz. Sonora, Cinaloa, California, and New Navarre, have been formed into a separate government; and in time, the beneficial effects of this arrangement may be very considerable. Under the immediate inspection of a governor, to whom these rich provinces are specially committed, they must rise into importance and prosperity: and in common with many other districts of America, long depressed by the languor and feebleness natural to provinces which compose the extremities of an

over-grown empire, they may be animated with vigour and activity, when brought so near the seat of power as to feel its invigorating influence.

It was not till the year 1741, that Beering and Tchirikow, in the service of Russia, discovered the north-west coast of America; the former, towards the 58th parallel; the latter, towards the 56th. Since that period, the discoveries of the Russians have extended from the parallel of 56° to the most northern part of the west coast; and they have comprised, in the surveys which they have made of it, the peninsula of Alaska, and the long chain of the Aleutian islands, both belonging to the continent of America.

After a period of 167 years of lethargy, the spirit of discovery, and the taste for expeditions to the north, revived among the Spaniards. Accordingly, in 1769, vessels were dispatched from the port of San Blas, under the command of don Vincente Vila, in order to establish a presidio at the harbour of San Diego, in N. lat. 33° 40', off the isthmus of California; and another at that of Monterrey in N. lat. 36° 38' 25"; but this expedition afforded no discovery; however, after a whole year of researches and fatigue, the Spaniards succeeded in finding again the harbour of Monterrey, the latitude of which had been indicated to them by Viscaino in 1602. Discoveries in higher latitudes were suspended at this time; because an object of greater importance, and for the accomplishment of which, Don Joseph Galvez had been commissioned from Spain, occupied the whole attention, and all the efforts of government. In 1775, a second expedition, under the direction of Don Juan de Ayala, and of his pilot Don Francisco Antonio Marelle, effected the discovery of some capes, and of some bays and harbours between the 47th and 57th parallels. This voyage made known the harbour of Trinidad in N. lat. 41° 7'; Cape Mesari, in 45° 50'; Cape St. Augustin, in 55°; port Bucarelli, in 55° 17'; mount San Jacinto, and Cape del Engano, in 57° 2'; Guadalupe bay, in 57° 11', in its north part; the harbour of Los Remedios, in 57° 18'; and sir Francis Drake's harbour of Francisco, in 38° 18'. A third and a fourth voyage in 1778 and 1779, made no additional discovery; and the second merely afforded the assurance that the Russians had formed fixed settlements on several points of the high latitudes. But as far back as 1778, while the Spaniards were employed in a minute survey of their port Bucarelli (see BUCARELLI), the first of navigators, as he is deservedly denominated by M. Fleurieu, Captain Cook, carried his talents, experience, and information, towards the north-west coast of America; and Europe owes to his laborious researches the first certain knowledge that she has had of the west part of the new world. He made the land on the 7th of March 1778, in the latitude of 44°. Thwarted by the winds, he could only distinguish a few capes or points of land, called Cape Gregory, Cape Perpetua, and Cape Foulweather: the first of the three, or Cape Gregory, which he places in 43° 10', appears to be Aguilar's Capo Blanco, so called by him in 1603. He lost the land again till he reached it in 48°, where he perceived, at a distance, in 48° 15', a cape which he named Cape Flattery. At length, after long struggling with adverse winds, he ran in for the land, in the latitude of 49° 36', and anchored in a bay which he first called King George's Sound, and known among the inhabitants of the country by the name of "Nootka." This Nootka Spain claimed in 1790, as an integral part of her American dominions. Having examined a few points above the 56th parallel, he discovered, in 60°, Prince William's Sound, and Cook's river; and having rounded the peninsula of Alaska, he visited some of the Aleutian islands (see ALEUTIAN), and thence advancing to the highest latitudes which

which the ice permits navigators to reach, he blended his discoveries with those which the Russians had made since the year 1745. Cook's voyage made known to England the new and valuable articles which those lands offered to her commerce; it shewed the possibility of rivalling the Russians in the fur trade, and of sharing with them the great profits that may be obtained in barter with the empire of China, by the skins of animals, which are the treasures of the forests of north-west America; in short, "he opened a new career to the ever-increasing activity of a nation, whose commercial operations embrace the two hemispheres throughout the whole circumference of the globe." In 1786, La Pérouse directed his course towards the N.W. coast of America, and made the land on Beering's mount St. Elias, in the latitude of 60°; he ranged along the lands of the continent for an extent of 470 leagues from that parallel to the harbour of Monterrey, and particularly applied himself to the examination of those parts of the coast from which captain Cook had been repelled by contrary winds; he discovered a fine harbour in N. lat. 58° 37', which he called "Port des Français," (which see); and in the course of his surveys, which were both minute and accurate, he verified and confirmed some of the discoveries of 1775, which the Spaniards had scarcely indicated.

Of Monterrey, and the adjacent country, La Pérouse has given a particular account, of which we shall avail ourselves under that article. This is the place of residence of the governor of the two Californias, the northern and southern, or the New and Old. This government is subordinate to the vice-royalty of Mexico; and La Pérouse informs us, that it extends to more than 800 leagues in circumference, for the maintenance of which 282 soldiers of cavalry are found sufficient. These garrison five small forts, and furnish detachments of four or five men to each of the 25 missions, or parishes, into which the provinces of Old and New California are divided. These small guards suffice to keep in subjection about 50,000 wandering Indians, who often change their residence according to the fishing and hunting seasons, and who are spread over this vast extent of the American continent. Of these, about 10,000 have embraced Christianity. These Indians are generally little and feeble, and evince no signs of that love of independence and liberty, which characterises the northern nations, to whose arts and industry they are strangers. Their complexion very nearly resembles that of those negroes, whose hair is not woolly: that of this nation is long, and very strong, and they cut it four or five inches from the roots. Several of them have beards, while others, according to the missionaries, never had any; though this is a point not decided in the country itself. The governor who had travelled much in the interior part of the country, and had lived with the savages during 15 years, assured La Pérouse that those who had no beard, had extracted it with bivalve shells, used as pincers. The president of the missions, however, who had resided as long in California, maintained the contrary. These Indians are very expert in the use of the bow, but they rarely pull the bow till they creep within 15 paces of their prey. In hunting, they crawl on the ground, with stags' heads fixed on their own, and thus approach a herd of stags, till being within reach of them, they kill them with their arrows. Loretto is the only presidio or military fort of Old California, on the eastern coast of that peninsula. Its garrison consists of 54 cavalry men, and furnishes detachments to the 15 following missions, of which the functions are performed by the Dominican monks, who have succeeded the Jesuits and Franciscans. These last, however, remain in undisturbed possession of the ten missions of New Califor-

nia. The 15 missions of the department of Loretto are, San Vincente, S. Domingo, El Rosario, S. Fernandez, S. Francisco de Borgia, S. Gertrude, S. Ignacio, La Guadalupe, Santa Rosalia, La Concepcion, S. Josef, S. Francisco Xavier, Loretto, S. Josef de Cabo Lucar, and Todos los Santos. About 400 Indian converts, collected round these 15 parishes, are the only fruit of the long apostleship of the various religious orders, who have successively undertaken this painful duty. As yet there is only one Spanish village. Indeed the climate is unhealthy, and the province of Sonora, which forms the boundary of the Vermilion sea to the westward, and California to the northward, is much more attractive to the Spaniards, who find there a fertile soil, and abundance of mines; which are, in their estimation, more important objects than the pearl fishery of the peninsula, which requires a considerable number of slaves who can dive, and whom it is difficult to procure. Yet North California, notwithstanding its great distance from Mexico, appears to combine much greater advantages. For an account of its presidios, see NEW ALBION. The Franciscans established their first mission here in 1770: and they have now ten, comprehending 5143 converted Indians. The piety of the Spaniards has kept up the presidios at a great expence, apparently from no other motive than that of converting and civilizing the Indians of these countries. But from later discoveries, a new branch of commerce may procure to Spain more solid advantages than the richest mines of Mexico; and the salubrity of the air, the fertility of the soil, and the abundance of furs, for which they have a certain market in China, give to this part of America the most important advantages over Old California, whose unwholesomeness and sterility cannot be compensated by a few pearls collected from the bottom of the sea.

Before the Spaniards settled in this country, the Indians of California only cultivated a little maize, and almost entirely subsisted on fishing and hunting. No country abounds more with all sorts of fish and game. Hares, rabbits, and stags, are very common; otters and sea-wolves abound towards the north; and in winter they kill a great number of bears, foxes, wolves, and wild cats. The coppices and plains are full of small, crested partridges, which flock together in covies of 3 or 400: they are fat and well flavoured; and the trees afford lodgment to a vast variety of birds and fowl. As to the fertility of the soil in the country adjoining to the presidio of Monterrey, it exceeds conception. The harvests of maize, barley, wheat, and peas, can only be compared to those of Chili; and the average produce of corn is from 70 to 80 fold. Fruit trees are hitherto scarce; but the climate is well adapted to them, being nearly that of the southernmost provinces of France. The cold is never more severe, and the heats of summer are much more moderate, in consequence of the perpetual mists, which fecundate the earth with constant moisture. The forests contain the pine-apple fir, cypress, ever-green oak, and western plane-tree. La Pérouse pays a tribute of singular respect to the monks of this presidio; and contrasts their disposition and conduct, very much to their advantage, against those of the monks of Chili.

The huts of the Indian villages, in both Californias, are the most miserable that can be conceived. Their form is circular, and six feet in diameter by four feet high. Some stakes about the size of the arm being fixed in the ground, and brought together in an arch at top, compose their frame, and eight or ten trusses of straw, badly arranged upon these stakes, defend the inhabitants more or less from the rain and wind. The Indians adhere to this mode of constructing their habitations, notwithstanding the exhortations

CALIFORNIA.

of the missionaries, alledging that they love the open air, and that they can easily set fire to their houses when they are too much annoyed by fleas, to which vermin they are subject, and then rebuild them in an hour or two. Besides, these habitations are most suitable to those independent Indians who are perpetually changing their abode. The colour of these Indians, the house of the monks, their magazines built of brick and plaitered, the threshing floor on which they tread out their corn, the cattle, the horses, and in short, every thing presented the appearance of a plantation in St. Domingo, or any other colony. The men and women are assembled by the sound of a bell, and a monk leads them to work, to church, and to all their employments. The monks are the temporal, as well as spiritual superiors, and the whole produce of the earth is committed to their management. The day is divided into seven hours of work and two of prayer; but four or five on Sundays and feast-days, which are wholly devoted to rest and religious worship. Corporal punishments are inflicted on the Indians of both sexes, who neglect their pious exercises; and many crimes, which in Europe are referred to divine justice, are punished with chains or the stocks. As soon as a new convert is baptized, he is under the obligation of a perpetual vow; and if he desert the religious society, and return to his relations, he is summoned three times to come back; and if he refuse, a party of soldiers is sent by the authority of the governor, to force him away from his family, and conduct him to the missions, where he is condemned to receive a certain number of lashes. The Indians, like the missionaries, rise with the sun, and then go to prayer and to mass. During this time, barley-meal is boiled in a cauldron, and the mess, which the Indians call "atole," and which they much like, is seasoned neither with butter nor salt. This repast occupies about three-quarters of an hour, after which all go to their respective occupations, under the superintendence of one or two monks. The employment of the women, besides that of conducting their household affairs, is the management of their children, and the roasting and grinding of their grain; they also spin their wool, and manufacture some coarse stuffs. At noon the bells ring for dinner, and the Indians partake of a mess similar to that of their breakfast, called "pouffole," except that it is thicker, and contains, besides the corn and maize, peas and beans. From two o'clock they return to work till four or five, and close the day with prayers, and with another mess of atole. The distribution of these messes is faithfully made; and the least dishonesty is punished by the lash, which is ordered by Indian magistrates, called "Caciques." The punishment inflicted on the women is private; but that of the men is public, that it may serve as an example. Their rewards consist in small distributions of grain; and on feast-days, their mess is beef, which many eat raw.

Such is their honesty, that no example occurs of their robbing one another, though they have no other door than a truss of straw laid across the entrance when the whole family is absent. The men in these missions have sacrificed more to Christianity than the women; for to them polygamy was allowed, and it was even the custom to marry all the sisters of a family. The monks made themselves the guardians of female virtue: for, about an hour after supper, they lock up all those whose husbands are absent, as well as all girls above nine years old, and place them under the care of matrons during the day; but all these precautions are in some cases insufficient. The converted Indians retain all their ancient customs, that are not forbidden by their new religion; the same huts, the same games, and the same dresses. The richest wear a cloak of otter-skin, covering

the loins, and reaching below the middle; others wear only a piece of cloth to cover their nakedness, and a little cloak of rabbit-skin, covering the shoulders, and reaching to the loins, and tied with a pack-thread under the chin. The women's dress consists of a cloak of stag's skin badly tanned. Young girls under nine years old, have only a girdle round the loins, and the boys are wholly naked. The hair of both men and women is cut four or five inches from the roots. The Indians of the "Rancherias," or villages of independent Indians, having no iron utensils, perform this operation with fire-brands, and paint their bodies red, which they change into black when in mourning. They retain an affectionate remembrance of their deceased friends, and are easily melted into tears by the mention of them: nevertheless, children scarcely know their own father, because they desert his hut as soon as they are able to provide for themselves; but they are more durably attached to their mother, who brings them up with care and tenderness. The old men of the Rancherias, who are no longer able to hunt, live at the joint expence of the whole village, and are treated with general respect. Their arms are the bow and arrow, pointed curiously with a flint. These Indians neither eat their prisoners, nor their enemies killed in war: although when they have conquered, and put to death some chiefs, and very brave men in the field of battle, they eat some morsels of their bodies, thus doing homage to their valour, and apprehending that such food would increase their courage. They are accustomed, like the Canadians, to take off the scalp of the vanquished, and to tear out their eyes, which they have the art of preserving from corruption; and it is their practice to burn the dead, and to deposit their ashes in a morai. The mixed government exercised in the missions of California is, with regard to the Indians, a real theocracy; for they are taught to believe that their superiors hold an immediate and constant intercourse with God, and that they bring him down each day upon the altar. Under favour of this opinion, the fathers live in the midst of the villages in perfect security, nor do they shut their doors during the night. Murder is very uncommon even among the independent tribes, and is punished only by general contempt; but if a man falls under the united attack of several assailants, he is supposed to have deserved his fate, as he had drawn upon him so many enemies. M. la Pérouse observes, that the sense of taste is that which these people most delight in gratifying; and the word "Misich," which in their language signifies a good man, likewise denotes savoury food. Among other peculiarities of these people is their gaming; less remarkable for the ingenuity of their games than for the nature of the stakes. Among the Indians of the missions, the common stake is beads; but among the independent Indians, the favours of their women are the prizes. New California, we are told, cannot yet reckon a single settler, notwithstanding its fertility; except a few soldiers who are married to Indian women. La Pérouse observes, that the administration of the villages converted to Christianity would be more favourable to population, if property and a certain degree of liberty formed its basis. However, since the establishment of the ten different missions of North California, the holy fathers have baptized 7701 Indians of both sexes, and have buried only 2388. Almost all the Franciscan missionaries are Europeans, and they have a college and monastery at Mexico, whose guardian is, in America, the general of his order; and this house has its superior in Europe.

The sea-otter skins are as common in the northern parts of California, as in any other part of America; they are t
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be found as far to the southward as 28° N. lat. ; but the southern skins are inferior in quality to those in the seas that are frequented by the Russians. The eastern and southern coasts of Old California are much richer in the varieties of its shells than the New, and furnish oysters, whose pearls are equal in beauty and size to those of Ceylon, or the Persian gulf.

There is, perhaps, no country where the various languages of the inhabitants are so extremely multiplied as in North California. The numerous tribes that divide that country live in an insulated manner, although situate very near each other, and have each a separate language. Monterrey, and the mission of San Carlos, which is dependent upon it, comprehend the country of the Achahtians, and the Ecclemachs. The languages of these people, partly united in the same mission, would soon form a third, if the converted Indians discontinued their intercourse with those of the Rancherias. As the Achahtians have few abstract ideas, they have very few words to express them; nor do they appear to distinguish by different names all the species of animals, or of common vegetables. They distinguish the plural from the singular, and conjugate some tenses of verbs; but they have no declensions, and their substantives are much more numerous than their adjectives. They never use the labials P and B, nor the letter X. The most common initial consonants are T and K; but their terminations are very various. They use their fingers in counting as far as ten; few of them being able to do it by memory, or without the assistance of some external sign. The country of the Ecclemachs extends above twenty leagues to the eastward of Monterrey. Their language is totally different from all those of their neighbours, and has even a greater resemblance to the languages of Europe than to those of America. The dialect of this tribe, however, is more copious than that of the other nations of California, though it cannot be compared with the languages of civilized nations. Should it be inferred from hence, that the Ecclemachs are foreigners in this part of America, it must be at least admitted that they have inhabited it for a long time; since they differ neither in colour, in countenance, nor in their general form, and external appearance, from the other nations of that country. La Pérouse instituted a comparison between the Aborigines of California, and those of Chili, situate at the same distance from the line in the southern with that of the others in the northern hemisphere; and he observes that the Californians are taller, and the muscles more strongly marked; but they are not so courageous or intelligent. They have low foreheads, black and thick eye-brows, black and hollow eyes, a short nose depressed at the root, and their cheek-bones projecting. They have a mouth rather large, thick lips, strong and fine teeth, and a chin and ears of the common form. They are extremely indolent and incurious, and almost stupid. In walking they turn in their toes, and even their step, and by their infirm and tottering gait indicate their characteristic pusillanimity. The women have some qualities peculiar to themselves; and not observable in those of Chili. They are taller, and their limbs are more regularly formed; their figure is generally better defined, and their countenance less forbidding. The hair of the people of both these countries is nearly similar; but the Californians have it in greater abundance than the natives of Chili. Many of the men, however, are devoid of beard, and the women have very little hair on any part of the body; but this is said to be the effect of art, as both the men and women pluck off the hair with bivalved shells or a cleft stick.

These Americans paint their skin by way of ornament.

They also pierce their ears, and wear in them trinkets of various kinds and fashions. Their skin is tawny, and their nails of a lighter colour than those of the inhabitants of Chili. At Chili and California the appearance of the beard and the change of the voice announce the age of puberty in males about their 13th year. The girls attain to puberty about the age of eleven or twelve. These nations have nearly the same passions, the same sports, and the same mode of living; and they are equally violent in the expression of joy and anger, which the slightest occasion is sufficient to excite. Their food is commonly game or fish; and their times of eating are sometimes determined by their appetite; but in general each family assembles at the close of the day to their common repast. The Californians make no use of vegetables, except a few pine-nuts; and other summer fruits, which, however, constitute no essential part of their food. Idleness makes them abstemious, but an abundance tempts, and they become voracious gluttons. These nations are divided into hordes, each of which commonly forms a little hamlet; and their habitations are huts or cabins of different shapes, and constructed of different materials. Polygamy is allowed among them, and their marriages last no longer than is agreeable to both parties. To the exclusive possession of their women they attach little importance, often endeavouring to make a market of their favours, which they sell for a piece of old iron, or a few glass beads. Each family seems to possess a government peculiar to itself; and has its chief, its huts, its canoes, its implements for the chase and for fishing, and, indeed, all the various means of defence or subsistence. Some chiefs seem to have the command of several families. These chiefs excel the other inhabitants in stature, strength and courage; they are generally covered with large scars, as tokens of their valour, and distinguished by a kind of extraordinary decoration in their head-dress and habiliments. The dress of the women consists of a leathern shift, descending to the middle of the leg, and a mantle of skins, which covers them from the shoulders to the knees. The men wear a similar mantle, and have a shirt of leather, and buskins of seal's skin; but their feet are commonly naked. As great changes of temperature are experienced in California at different seasons of the year, the inhabitants are subject to diseases peculiar to the country. Sore throats, catarrhs, pleurisy, and peripneumonies, are the ordinary diseases of the winter season; for which they recur to decoctions made of plants, and applied to the parts affected. Ephemeral and intermittent fevers, and dyspepsia, are chiefly prevalent in spring and autumn; and as remedies they excite vomiting by forcing the finger down the throat, and procure copious sweats by a kind of stove baths. The diseases most general in summer are fevers of various kinds, putrid, petechial, inflammatory and bilious, together with the dysentery. To one or other of these the patient generally falls a victim, unless the efforts of nature are sufficient to produce a salutary evacuation, by stool, urine, or perspiration. Besides these diseases, the inhabitants of California are liable to nervous fever, rheumatism, prurient eruptions, ophthalmia, syphilis, and epilepsy. Syphilis seems never to have been introduced among the natives of California till after their communication with the Europeans, who settled in that part of the continent. The means of cure in which they most confide are the sand-bath, which they call "tamaseul," and a decoction of sudorific plants taken alternately. The women, though liable to similar maladies with those of the men, suffer little inconvenience during the time of gestation, and are almost always delivered with ease. As soon as the infant is born, the midwives tie the umbilical cord, plunge the child

child into cold water, and cleanse it from the viscid humour with which its body is covered. The moment the mother is delivered, she bathes in the sea or a neighbouring river, and is then seated on a hot stove, and covered with furs. When the sweats subside, and the stove cools, she plunges herself again in cold water, and sometimes repeats this process for several successive days. The time of suckling is unlimited; but it commonly extends to eighteen or twenty months; and the infants are swaddled by wrapping them up in furs, after having previously stretched out their arms and legs at full length, and fixed them in that situation by several bandages of leather. They then place the infant in a piece of bark, proportioned to its size, and of the form of a hollow tile, to which he is fastened by straps or bandages of leather.

As to the religion of the Californians it is not easy to determine concerning it; but it seems most probable that before their intercourse with the Europeans they had no temples, altars, oratories, nor any other place set apart for religious exercises. No outward profession of religion appeared in festivals, prayers, vows, or expiations. It is probable, however, that they had some confused notion of an invisible being; but to what extent their speculations carried them, it is impossible to say, as all our first relations concerning them have been transmitted to us by the jesuits and other missionaries. In a country so extensive, and comprehending so many degrees of latitude, the climate must be very various; and the soil and its productions must depend on collateral circumstances connected with their situation, as it is nearer to the sea and to rivers, or more remote from them. In California, there falls in the morning a great quantity of dew, which, settling on the rose-leaves, candies, and becomes hard like manna, having all the sweetness of refined sugar, without its whiteness. In the heart of the country, there are also plains of salt, quite firm, and clear as crystal, which, considering the vast quantities of fish on its coasts, might render it an invaluable acquisition to an industrious nation. The pearl-fishery on its coasts, and its interior mines of gold, might also supply materials for a profitable commerce. The chief town of California is St. Juan; and the number of its inhabitants has been estimated at 300,000; but every calculation of this kind must be very vague and uncertain. For a further account of this country, and of the western coast of North America, see *NEW ALBION*. See also *FRANCAIS*, *FRANCESCO*, *FUR-trade*, *MONTERREY*, *Nootka*, *NORFOLK Sound*, &c. *Marchand's Voyage by Fleureau*, vol. i. *La Pérouse's Voyage*, vol. i. and ii.

CALIFORNIA, *gulf of*, called also *purple*, *vermilion*, or *red sea*, seems to be an estuary of two large rivers, and separates California in part from Mexico. The coasts of the peninsula, towards this gulf, are covered with inhabited islands; such as those of St. Clement, Paxaros, St. Anne of Cedars, so called from the number of these trees of a large size which it produces, St. Joseph, and a multitude of others. But the islands best known are three lying off cape St. Lucas, towards the Mexican coast, which are called *Les Tres Marias*, or the "Three Marias." These are small, but supply good wood and water, salt-pits, and abundance of game; and therefore the English and French pirates have sometimes wintered there, when they have been bound on cruises in the South sea.

CALIGA, in *Roman Antiquity*, was the proper soldier's shoe, made in the feudal fashion, without upper leather to cover the superior part of the foot, though otherwise reaching to the middle of the leg, and fastened with thongs. The sole of the caliga was of wood, like the Sabot of the French peasants, and its bottom stuck full of nails; which clavi are supposed to have been very long

in the shoes of the scouts and sentinels; whence these were called by way of distinction, "*caligæ speculatoriæ*;" as if by mounting the wearer to a higher pitch, they gave a greater advantage to the sight: though others will have the "*caligæ speculatoriæ*" to have been made soft and woolly, to prevent their making a noise. *Plin. Nat. Hist. lib. ix. cap. 18. lib. xxxiv. cap. 14. Hard. Suet. in Calig. cap. 9. and cap. 52.*

From these caligæ it was that the emperor Caligula took his name, as having been born in the army, and afterwards bred up in the habit of a common soldier; hence called "*Caligatus*."

A sort of caligæ was also worn by monks and bishops, when they celebrated mass pontifically. *Du-Cange.*

St. Jerome (*Ad Eustochium, de Cultod. Virg. t. i. p. 140.*) uses the word "*caliga*" to express that covering for the feet which Christ forbade his disciples to wear, when he sent them to preach the gospel in his life-time, and which is opposed to "*sandals*," *Mark vi. 9.*; though *St. Jerome*, in the impetuosity of his zeal, supposes the apostles were to walk at times absolutely barefoot. These caligæ then seem to mean buskins, or rather short boots, designed to cover the feet so entirely, as to guard them, as well as the lower part of the leg, from injury by stones, thorns, &c.; whereas sandals consisted merely of soles at the bottom of the feet, fastened by leathern thongs, which left the foot very much uncovered, and exposed to injuries. *St. Jerome* annexes to these "*caligæ*" the epithet "*latæ*," broad, which does not seem to be appropriate; and, therefore, some have supposed a corruption in the present reading of *latæ* for *luteæ*, yellow; and this is the colour of the leather of which the Arabs make their boots.

CALIGATI, an appellation given by some ancient writers to the common soldiers in the Roman armies, by reason of the caliga which they wore.

The caliga was the badge, or symbol of a soldier; whence to take away the caliga and belt, imported a dismissal or cashiering.

CALIGINOSUS, in *Entomology*, a species of *CARABUS* that inhabits America, the colour of which is black; thorax square and smooth; antennæ pitchy. *Fabr. &c. Obs.* This insect is further distinguished by having two impressed dots on the head.

CALIGO, or *CALIGATIO*, in *Medicine*, an opacity, or cloudiness of the anterior surface of the crystalline, causing a dimness or suffusion of sight. The caligo is the same with what the Greeks call *αχλὺς*, achlys.

CALIGULA, *CAIUS CÆSAR*, in *Biography*, the fourth Roman emperor, was the son of Germanicus and Agrippina, born A.U.C. 765, A.D. 12; and derived his surname from "*caliga*," a kind of military boot, which he wore in conformity to those of the common soldiers, and with a view of engaging their affections. At an early period he was a complete master of dissimulation; he concealed his natural ferocity under an assumed modesty; nor did he manifest any signs of sorrow or resentment, when his mother was condemned, and his brothers were exiled and imprisoned. In his 20th year he was the favourite of the people from the respect they entertained for the memory of his father; and on this account he was hated by Tiberius. Of this he was well apprized; and, therefore, during his residence with him at Capræ, he had recourse to every art for vanquishing the prejudice which the emperor had conceived against him, and for conciliating his favour. With this view he studied the taste, the humours, the language, and even the tone of voice of Tiberius, changing, as occasions seemed to require, both his countenance and conduct, in order to fix his attach-

ment; nor was he wanting in his endeavours to secure the interest of all who had access to his grandfather. As a counterbalance to the power of Sejanus, who had sunk in the estimation of Tiberius, and whom he determined to disgrace, he resolved to advance his obsequious grandson; and having allowed him to assume the "toga virilis," he invested him with the dignity of pontiff, and intimated to the senate his design of appointing him his successor to the empire. Tiberius, however, well knew the natural ferociousness of his temper; but he hoped that his passion for music and dancing, and the debauchery to which he was addicted, would be the means of softening his savage disposition. His hopes indeed were delusive; and he therefore augured the injuries he would commit, and called him a public pest, that lived to plague him and mankind. To this purpose he described him as "a serpent that would be fatal to the Romans, and a Phaeton that would set fire to the universe." In a conversation about Sylla, when young Caius ridiculed his character, Tiberius, whose natural penetration led him into a thorough acquaintance with his character, observed to him; "You will have all Sylla's vices, and not one of his virtues." And, on another occasion, when he had his two grandsons before him, he embraced Gemellus, with tears in his eyes, and said to Caius, whose countenance manifested displeasure, "You will slay him, and another shall slay you." The first wife of Caius was Claudia, the daughter of Marcus Silanus, a senator of distinction; but his debauchery in his youth was such, that he was detected by his grandmother Antonia, in scandalous familiarities with his own sister Drusilla. Upon the death of Claudia, he intrigued with Ennia, the wife of Macro the praetorian prefect, who concurred in this infamous business, and, in consequence of it, assisted him by his influence in securing the succession. Although Tiberius, notwithstanding his declared intention, hesitated about the appointment of a successor, inasmuch that he is said by will to have joined with Caius his other grandson Tiberius Gemellus, as co-heir; Caius was acknowledged and proclaimed emperor immediately on the death of his grandfather by the Praetorian guards, and Macro was sent to the senate with Tiberius's will in order to have it annulled. In order to accomplish this purpose, he represented, on the part of Caius, that Tiberius was not found in his understanding when he made it, and that this plainly appeared by his appointing a child to govern them, who was not yet old enough to sit among them. The senators who hated Tiberius thought these reasons sufficient, and accordingly set aside the will. This event happened A. U. C. 790, A. D. 37. The sequel of this reign was marked with a variety of transactions, which indicated absolute insanity. At its commencement, indeed, it was the occasion of universal joy and congratulation; so that in three months after the accession of Caius to the empire, no less than 160,000 victims were sacrificed in thanksgiving to the gods; and nothing was seen for several months but feasting and rejoicing through the whole extent of the Roman empire. Caius began his reign by several popular acts, which seemed to encourage these high expectations. He professed great respect for the senate, released all that had been imprisoned by the orders of Tiberius, recalled all exiles, abolished for the time to come all accusations of high treason, and put a stop to all proceedings that had already begun. He pretended to burn all papers relating to charges of this kind, left by Tiberius; but in the issue it appeared, that, whilst he preserved the originals, he burnt only copies. He also displayed a pious and affectionate respect to the memory of all his deceased relations, and treated those who survived with every token of honour. He discharged all the legacies that had been be-

queathed by Tiberius and Livia; and exhibited his generosity, as it was called, in largesses to the people, and in public spectacles which were conducted with extraordinary splendour and magnificence. He even affected a regard for liberty, by restoring to the people the right of election to certain offices of which Tiberius had deprived them, and by allowing the works of several patriotic writers to be freely circulated; and with a pretended zeal for morals, he banished all the ministers of the infamous debaucheries of his predecessor. This conduct was in a high degree gratifying to the people; and a dangerous illness, with which the emperor was attacked at this period, caused general alarm and produced expressions of concern and wishes for his recovery. As soon as he was restored to his usual health, his conduct appeared to be quite changed, and to mark a character the most depraved and detestable. The first act by which he discovered his natural ferocity was the death of the young and inoffensive Gemellus; and this was soon succeeded by that of his father-in-law Silanus, and of his benefactors Macro and his wife. Many senators and persons of distinction were also sacrificed to his political jealousy; and others became victims either to the mere wantonness of sport, or his innate love of cruelty. Of his incestuous passion he gave proof by marrying his sister Drusilla, on occasion of whose death he abandoned himself to the phrenzy of grief. As an instance of his insanity, we may mention his claim of divine honours, together with his institution of priests and erection of temples for the worship of his own divinity; whilst he hurled defiance against Jupiter. Similar to this and more extravagant in degree was the honour he paid to his horse "Incitatus;" for which he erected a palace, assigned domestics, and a public table, and constructed a marble stable and ivory rack, giving him gilt barley and wine out of a golden cup, and swearing by his health and fortune; and, besides, he is said to have designed him for consul. He married and repudiated several wives, and at length his attachment was permanently fixed to Calpurnia, who, without youth and beauty, and although she had been the mother of three children by another husband, contrived to engage his affection by a corresponding dissoluteness of manners. Notwithstanding innumerable enormities, which rendered him the just object of detestation, and for which the only plea must be that of insanity, the Roman senate and people disgraced themselves by their base adulation and servile submission. Such was the degree of infatuation and depravity which this monster of folly and iniquity displayed on a variety of occasions, that he seemed to have lost all sense of shame; and to have manifested, without disguise, his hatred of all human kind. He even lamented that his reign was not distinguished by any of those public calamities, which had happened under his predecessors; and he openly uttered that most execrable wish "that the Roman people had but a single neck, which he might cut off at a blow."

His public transactions corresponded in the main tenor of them with his private conduct. In imitation of Xerxes, the eastern despot, he caused to be built, at an immense expence, a bridge of boats across the neck of the bay from Baïæ to Puteoli. When he had twice triumphantly passed it at the head of his troops, the whole structure was demolished. Resolving on an expedition into Gaul and Germany, he assembled a large army; but having passed the Rhine, and marched a few miles into Germany, he hastily returned, and under an apprehension of danger, which was altogether unfounded, he was conveyed over the heads of the crowd that covered the bridge, and thus reached the other side in safety. On another occasion he caused his troops to sound a false alarm, and falling to the forest from which the noise proceeded,

ceeded, he employed his men in cutting down trees for erecting trophies on account of his signal victory. After his return he oppressed the province of Gaul with enormous exactions and confiscations, in order to fill his exhausted treasury. In a pretended expedition against Britain, he marched his whole army to the coast opposite to the island, and having advanced in a magnificent galley to a small distance from the shore, he suddenly returned and ordered a signal of battle to be given; after which the soldiers, who were astonished at this farce, were directed to fill their helmets with cockle-shells; and the whole ended in a trifling donative to the victorious troops. This folly was succeeded by a very serious design of cruelty, which was that of massacring or at least of decimating all the legions of the German army, which had mutinied, in his infancy, against his father Germanicus; but the legionaries, suspecting his intention, took up their arms; and the savage fled hastily to Rome, and wreaked his vengeance on the passive senate. His natural ferocity was exasperated by the discovery of a plot, which had been formed against him, for which many persons suffered death, and his sisters were banished and despoiled of their property. At length he seems to have resolved upon the death of the whole senate and principal knights; but his designs were rendered abortive by the resentment of Cassius Chærea, tribune of a prætorian cohort, whom the emperor had made the subject of his indecent jests and raillery; accordingly he determined to dispatch the monster, and to make an effort for the restoration of a free government. Availing himself of the concurrence of some persons of superior rank, who had been insulted and injured by the emperor, a conspiracy was formed, of which Chærea was the principal agent. The games annually exhibited in January to the honour of Augustus were chosen for the season of execution. While the emperor was passing from the theatre to the palace, in a gallery leading to the baths, Chærea gave him a wound in the neck. The other conspirators then rushed on, and with redoubled blows dispatched the monster, in whose defence no person appeared. His mangled body remained on the spot till night, when his wife, or his friend, king Agrippa, caused it, half burnt, to be deposited in the earth. In order completely to finish the race of the tyrant, Chærea deputed an officer to put to death his wife Calpurnia, and his infant daughter, who was said to resemble her father in ferocity. An universal hatred of the tyrant manifested itself immediately after his death. His statues were demolished, his acts abrogated, and his memory as much as possible extinguished. After a reign of three years and ten months, A. D. 41, Caligula perished, and left behind him a character universally detested. It is said that his form, countenance, gesture, and manners, exhibited traces that were shocking and portentous. Destitute of natural talents and education, he merely applied with some degree of diligence to the study of elocution; but his chief attention was directed to the arts of music, dancing, gladiatorial exercises, and public spectacles. He was capricious and mutable to a degree bordering on madness; and was constant only in preserving some form of vice or extravagance. Seneca observes of him, "that he seems to have been brought forth by nature for the express purpose of shewing how much mischief could be effected by the greatest depravity, supported by the highest power." Sueton. Dio. Cassius. Crevier. Gen. Biog.

CALIGUS ARCTUS, in *Entomology*, the name by which Müller distinguishes the species of *MONOCULUS*, *PRISCINUS*. The Caligi of this writer consist of those *Monoculi* which have the eyes marginal, two setaceous antennæ, and from eight to ten legs.

CALILAYA, or **TAYABAS**, in *Geography*, a province of the island Luçon or Manilla in the East Indies, adjoining to Balayan and Camarines, and extending to Cape Bondo, and up the country to Mauban, on the opposite coast of the island. It is larger than Balayan and is more populous.

CALIMERE, *Point or Cape*. See **CALYMERF Point**.

CALIMNA. See **CALMINA**.

CALIMUS. See **CALLIMUS**.

CALIN, the name of a sort of mixed metal, seemingly composed of lead and tin. It is prepared by the Chinese, and they make several utensils of it, as tea-cannisters, coffee-pots, and the like. In some places also they cover their houses with it as we do with lead.

CALINACRON, in *Ancient Geography*, a promontory of Bithynia, at a small distance from the Thracian Bosphorus; called also *Mélæna*.

CALINDA, or **CALYDNA**, a maritime town of Asia Minor, in Caria; seated on a small navigable river at some distance from the sea. It gave name to mountains situate on the N. W. of the town.

CALINDÆA, a town of Macedonia, in Mygdonia. Also, a town of India, on this side of the Ganges. Ptolemy.

CALINEA, in *Botany*. (Aublet, Juss.) See **DOLIO-CARPUS**.

CALINGÆ, in *Ancient Geography*, a people of India, on the south-east coast, on this side of the Ganges, mentioned by Pliny, and pertaining to the Brachmans.

CALINGÆ *Gangaridæ*, a people of India, different from the former, on this side of the Ganges, whose capital was Parthalis. Pliny.

CALINGAPATAM, in *Geography*, a town of Hindoostan, in the circle of Cicacole, 12 miles E. N. E. of Cicacole. N. lat. 18° 18'. E. long. 84° 20'.

CALINGII, in *Ancient Geography*, a people of Arabia Felix, whose capital was Mariaba. Pliny.

CALINGON, *Segogora* or *Ponta de Palmeiras*, a promontory of India, on this side of the Ganges, S. W. of the most westerly mouth of the Ganges, on the confines of the country of the Calingæ. Pliny places it at 625 miles from the mouth of the Ganges.

CALINI, or **CALLYNUDDI**, in *Geography*, a river of Hindoostan, which joins the Ganges near Canoge.

CALINIPAXA, in *Ancient Geography*, a town of India, on this side of the Ganges, mentioned by Pliny, and probably the same with **CANOGE**, which see.

CALJONG-CAMPANY, in *Geography*, a town of the island of Borneo.

CALIORDI, in *Ancient Geography*, a people of the Tauric Chersonesus. Pliny.

CALIPH, or **KHALIF**, denotes a successor of Mahomet, vested with sovereign dignity and absolute authority, in the spiritual as well as temporal empire erected by that legislator. The word is originally Arabic, "khalifah;" which properly signifies a successor or vicar. The caliphs among the Mahometans bear a near affinity to the popes among the Christians who profess the catholic religion. After the death of Mahomet, who left no directions concerning a successor, or at least none but which were known to his wives, who were in the interest of Omar, very warm debates arose between the Mohajerin and the Ansars about the right of electing a khalif. The former claimed that right from their having attended Mahomet in his flight to Medina, and from having declared themselves in his favour before any of the other Arabs joined him; but the latter

founded their claims on their having supported him, when he was expelled his native city, and in their having enabled him to prevail against his enemies, when he and his followers were in a state of persecution. At length one of the Ansars proposed to compromise this difference by requesting that each of the contending parties might be allowed to chuse a khalif. The proposal, however, was not cordially approved by the Mohajerin; and Abubeker recommended two persons, Omar Ebn Al Khattab and Abu Obeidah, to their choice, and proposed that they should recognize the one of these two persons who obtained the suffrages of both parties. Omar, however, terminated the dispute by swearing fealty to Abubeker, and his example was followed by all the moslems that were present; upon which, Abubeker was saluted khalif by both the Mohajerin and the Ansars, and acknowledged as rightful successor of Mahomet. Abubeker, having been thus elected by the Mussulmans, would assume no other title but that of *Khalifah reffoul Allah*, that is, vicar of the prophet, or messenger of God. But Omar, who succeeded Abubeker, represented to the Mahometan chiefs, that if he took the quality of vicar, or successor of Abubeker, the vicar or successor of the prophet, the appellation of vicar would, in course of time, be repeated and multiplied without end; and, accordingly, at the motion of Mogairah, Omar assumed the title of *Emir al Moumenin*, that is, lord or prince of the believers; which appellation has been accepted and borne by all the legitimate caliphs or successors of Mahomet, from that time; though they still retained the title of caliph, without any other addition.

After the election of Abubeker, Ali Ebn Abu Taleb, who, by hereditary right, ought to have succeeded Mahomet, expressed his dissatisfaction at the choice; but finding that the people in general were prepossessed in his favour, he acquiesced and opposed his resignation of the government. The Shiites, however, maintain, that the supreme authority, both in spiritual and temporal concerns, rightfully belonged to the descendants of Ali, and they do not acknowledge the three first successors of Mahomet, viz. Abubeker, Omar, and Othman, as legitimate. The government of Abubeker commenced in the year of the hegira 11, A. D. 632; and terminated A. D. 634; when he was succeeded in the regal and pontifical dignity by Omar. This caliph, before his decease, appointed 6 persons to deliberate concerning the election of a successor; all of whom had been intimately acquainted with Mahomet, and were styled, by way of eminence, his "Companions." After his death they assembled for the choice of a new caliph; and Abdalrahman renounced his pretensions on condition of being allowed to nominate one of the 5 remaining companions as emperor of the faithful. To this proposal all agreed except Ali, who thought himself injured, because he was not the immediate successor of the prophet; and Othman was declared caliph, in the 24th year of the hegira, A. D. 644. Upon the death of Othman, Ali was unanimously elected to succeed him, in the 35th year of the hegira, A. D. 655. The seat of government during the 3 preceding caliphates had remained fixed at Medina from the death of Mahomet; but Ali removed it to Cufa. Ali was succeeded in the caliphate by his son Hasan in the 40th year of the hegira, A. D. 660; but after a reign of about six months, he abdicated the government, and was succeeded in the 41st year of the hegira, A. D. 661, by Moawiyah I. the first caliph of the house of Ommiyah; who transferred the seat of government to Damascus in Syria. The race of Ommiades terminated with Merwan II. in the 127th year of the he-

gira, A. D. 744; and was succeeded by the Abassides. The first caliph of this family was Abul Abbas al Saffah, who ascended the throne of the Moslems in the 132d year of the hegira, A. D. 749, and who removed the seat of government first to Cufa, then to Anbar, a city on the confines of Chaldaea and Arabia, and last of all to Hachemiyah, a city built by himself near the Euphrates, not far from Anbar, and so denominated in honour of Hachem, uncle of Mahomet, and one of his ancestors; and from this circumstance the Abassides obtained the appellation of Hachemites. Abul Abbas was succeeded by his brother Abu Jaafar al Mansur, who was proclaimed caliph in the imperial city of Anbar, then the capital of the Moslem empire, in the 138th year of the hegira, A. D. 754. He built the city of Bagdad, which afterwards became the customary residence of the Abasside caliphs, his successors. This race terminated with Al Mostafem Billah, who was put to death by the Tartars, in the year of the hegira 656, A. D. 1258, when they captured the city of Bagdad.

At the end of the first century of the hegira, about A. D. 718, the caliphs were the most potent and absolute monarchs of the globe. Their prerogative was not circumscribed, either in right or in fact, by the power of the nobles, the freedom of the commons, the privileges of the church, the votes of a senate, or the memory of a free constitution. The regal and sacerdotal characters were united in these successors of Mahomet; and the Koran was the rule of their actions. They were the supreme judges and interpreters of that book held to be divine. They reigned by the right of conquest over the nations of the east, to whom the name of liberty was unknown, and who were accustomed to applaud in their tyrants the acts of violence and severity that were exercised at their own expence. Under the last of the Ommiades, the Arabian empire extended 200 days' journey from east to west, from the confines of Tartary and India to the shores of the Atlantic Ocean. And if we retrench the sleeve of the robe, as the long and narrow province of Africa was styled by their writers, the solid and compact dominion from Fargana to Aden, from Tarsus to Surat, will spread on every side to the measure of 4 or 5 months of the march of a caravan. Under the reign of the Ommiades, the studies of the Moslems were confined to the interpretation of the Koran, and the eloquence and poetry of their native tongue. But the caliphs of the race of Abassides, after their civil and domestic wars, encouraged literature and science. See ALMAMON and ALMANSOR.

After the period of the destruction of the caliphate by the capture of Bagdad, there were persons who claimed the caliphate, under a pretence of belonging to the family of the Abassides, and to whom the sultans of Egypt paid great respect at Cairo, as the true successors of Mahomet; but this honour was merely titular, and the rights they claimed were only acknowledged in the province of religion; and though they bore the title of caliphs, they were nevertheless subjects, and dependents of the Sultans. In the year of the hegira 361, A. D. 971, a kind of caliphate was erected by the Fatimites in Africa and Egypt, and lasted till Saladin suppressed it by order of Nouraddin, sultan of Syria. There was also a caliphate in Africa and Spain, which commenced under the reign of Josef. Historians also speak of a caliphate in Yemen or Arabia Felix, established by some princes of the race of the Aioubites, or Jobites. The emperors of Morocco assume the title of "grand cherifs" and pretend to be the true caliphs, or successors of Mahomet, though under another name. Since
the

the destruction of the caliphate, the Mahometan princes have a particular officer appointed in their respective dominions, who sustains the sacred authority of caliph. In Turkey he is denominated Mufti, and in Persia Sadre.

One of the principal functions of the caliph, in quality of Imam or chief priest of the Mussulman religion, was that of beginning the public prayers every Friday in the chief mosque, and of delivering the *khotbah*, which was a kind of sermon. In later times they had deputies or assistants who performed the second service; but the first was always appropriated to the caliph in person. He was also obliged to conduct the pilgrims to Mecca, and to march at the head of the armies of his empire. The caliphs also granted letters-patent of investiture, as well as swords, standards, robes, &c. to the Mahometan princes, who, though they had thrown off the yoke of the caliphate, nevertheless held of it as vassals.

The caliphs usually went to the mosques mounted on mules; and the sultans Selgiucides, although masters of Bagdad, held their stirrups, and led their mules by the bridles for some distance on foot, till such time as they received intimations from the caliphs to mount on horse-back. At one of the windows of the caliph's palace, there always hung a piece of black velvet, 20 cubits long, which reached to the ground, and was called the "caliph's sleeve;" and the grandees of his court never failed to kiss it with great respect every day. The honours paid to the caliphs were excessive, and produced in them a degree of pride, of which they did not cease to exhibit tokens, even when their authority had declined and was reduced to its lowest state of degradation. In the period of their power, they affected very extraordinary magnificence and splendour. Abulfaragius relates, that the caliph Motazem had 700 women in his seraglio, and 300 eunuchs to guard them. But this splendour was much diminished, and, indeed, almost annihilated during the reign of the Bouides in Persia, who stripped them of every thing, depriving them of their visirs, and allowing them to retain no officer of higher rank than a secretary to take care of their affairs. At length, and particularly under the reign of Radi Billah, the 20th caliph of the Abassides, A.D. 934, the territories of the Mahometan empire were so dismembered and divided, that this caliph was reduced to the sole dignity of the caliphate, and the possession of the city of Bagdad. But Bassora, Vassith, and Ahmazz, were under the dominion of the Bouides. They occupied the whole of Persia; the Hamadanites reigned in Mosul and Mesopotamia; Akshid was master of Egypt and Syria; the Fatimites possessed Africa; the Omniades governed Spain; the Samanides had Khorasau; the Carmathii were in peaceable possession of Arabia Felix and Arabia Petra; and the caliphs paid them tribute for the security of the pilgrims of Mecca: and, moreover, the Dilemites were the sovereigns of Georgia and Tabristan. Such was the state of the caliphate in the 325th year of the hegira, A.D. 936. After the Bouides made themselves masters of Bagdad, they were reduced to the mere exercise of the functions of the mosque; and these princes advanced or dethroned them at their pleasure. At length, the period of their total overthrow by the Tartars, under the caliphate of Motazem, arrived, as we have already related; and their temporal power became extinct. Herbelot, Bib. Or. Gibbon's Hist. vols. ix. x. xi. Mod. Un. Hist. vols. i. ii. iii.

CALIPPOS, or CALIPUS, in *Ancient Geography*, *Sadao*, a river of Lusitania, which rose to the south of the mountains on the northern boundary of Cuncua, and running northwards, watered the town of Salaria, and then turning to the west, discharged itself into the sea.

CALIPPPIA, an island of the Ægean Sea. Antonin. Marit. Itin.

CALIPPIC period, in *Chronology*, a series of seventy-six years, perpetually recurring; which elapsed, the middle of the new and full moons, as its inventor Calippus, an Athenian, imagined, returns the same day of the solar year.

Meton, a hundred years before, had invented the period, or cycle, of nineteen years (see *Metonic CYCLE*); assuming the quantity of the solar year $365^d 6^h 18' 56'' 50''' 31'' 34'''$; and the lunar month $29^d 12^h 45' 47'' 26' 48' 30''$: but Calippus, considering that the Metonic quantity of the solar year was not exact, multiplied Meton's period by four, and thence arose a period of 76 years, called the Calippic.

At the end of this term it was necessary to retrench a day: so that his period was composed of four of those of Meton, three of which consisted of 6940 days each, and one of 6939 days. For this purpose, it was sufficient to change in the revolution of four periods one of the months from 30 to 29 days. The effect of this correction was to retard the anticipation of the new moons for more than 300 years, and at the same time to render the whole period more correspondent to the motion of the sun. The Calippic period, therefore, or the interval of four Metonic or lunar cycles, diminished by a day, contains 27759 days; and since the lunar cycle contains 235 lunations, and the Calippic period is quadruple of this, it contains 940 lunations, consisting of about 27758 days $18^h 8'$; and 76 revolutions of the sun compose a sum of about 27758 days $10^h 4'$. The Calippic period began in the third year of the 112th olympiad, or the 4384th of the Julian period, B. C. 330, the 7th year of the 16th Metonic cycle. It is demonstrated, however, that the Calippic period itself is not accurate; that it does not bring the new and full moons precisely to their places: $8^h 5' 52'' 60'''$, being the excess of 940 lunations above 76 solar years; but brings them too late, by a whole day, in 225 years.

This period was adopted by astronomers, and is frequently mentioned by Ptolemy. It corresponds to our lunar cycle, combined with our Julian years, 76 of which form the Calippic period; and the anticipation of the moon is the same in both. This anticipation, together with that of the equinoxes, gave rise to the reformation of the calendar, A. D. 1582. See *CALENDAR*. The ancients were not unapprized of the defect of the Calippic period: at least, it did not escape the penetrating sagacity of Hipparchus, who undertook to correct it. His observations led him to perceive, that the solar and lunar years were somewhat less than Calippus had supposed them to be; and pursuing his calculation, which he conceived to be sufficiently exact with regard to the moon, but more erroneous with respect to the sun, he found that the anticipation of the one and of the other was about a day in four periods. He therefore quadrupled the cycle of Calippus, and retrenched from it the day which he had found in excess during four revolutions. This new period had the advantage of corresponding more exactly with the motion of the moon, which was not retarded more than half an hour in 304 years. But it anticipated the motion of the sun about a day and a quarter, which was an error only equal to that of Calippus in a double interval. However, this invention shared the fate of many others, no less useful and alike neglected. The Grecians, accustomed to the cycles of Meton and of Calippus, disregarded that of Hipparchus, although it was more perfect.

CALISIA, in *Ancient Geography*, a town placed by Ptolemy in the eastern part of Germany, and supposed by Cluvier to be Kalisch in Poland.

CALISPERMUM, in *Botany*, (*καλός*, beautiful), and

περσικα, feed.) Bosc. Nouv. dict. Loureiro, Coch. Clafs and order, *petandria monogynia*.

Gen. Ch. *Calyx* with five equal divisions, permanent. *Corol.* Petals five, ovate, concave. *Stamens* five. *Pyl.* germ superior; style one, stigma thick. *Peric.* Berry nearly round, one-celled, many-seeded.

Eff. Ch. *Corolla* five-petalled. *Berry* one-celled, many-seeded.

Species. *Calispermum scandens*. A climbing shrub. *Leaves* alternate, ovate, lanceolate, scolloped, smooth. *Flowers* white, in nearly terminal racemes. A native of Cochinchina. We suspect, but not having Dr. Smith's work at hand, have not the means of ascertaining, that Loureiro's plant is the *billardiera scandens* of our excellent countryman figured by him in his plants of New Holland, and adopted by Willdenow. As that article has not been inserted in our work in its proper place, we shall supply the omission by giving it here.

Billardiera scandens, Willden. 440. Smith New Hol. 1. p. 1. Tab. 1. *Petals* five, alternating with the leaflets of the calyx. *Nectary* none. *Stigma* simple. *Berry* superior, many-seeded. *Peduncles* solitary, one-flowered. *Leaves* somewhat hairy. If the plants should turn out to be different, they ought certainly to be referred to the same genus, and then the trivial name which we have ventured to give to Loureiro's plant must be altered.

CALISSÆ, in *Ancient Geography*, a people of India on the other side of the Ganges. Pliny.

CALISTA, in *Fabulous History*, the daughter of Lycæon, king of Arcadia, and one of the nymphs of Diana. Being beloved by Jupiter, he assumed the form of the god-defs of chastity, and thus debauched her: but whilst she was bathing with her patroness, her disgrace was revealed, and the incensed deity converted her and the son with whom she was pregnant into bears; upon which Jupiter, as the fable reports, compassionating her sufferings, took them up into the heavens, and made them the constellations *Ursa Major*, and *Ursa Minor*.

CALISTE, in *Conchology*, a species of VENUS, the shell of which is beset with acute transverse striæ, becoming membranaceous in front; anterior slope short, and the posterior aperture inconspicuous. Gmel. Schroet. &c. Inhabits the Red Sea.

CALITÆ, in *Ancient Geography*, a people of Africa in interior Libya. Pliny.

CALITOOR, in *Geography*. See CALTURA.

CALIUR, in *Ancient Geography*, a town of India, placed by Ptolemy on this side of the Ganges.

CALIX. See CALYX and CHALICE.

CALIXTINS, in *Ecclesiastical History*, a name given to those among the Lutherans, who follow the sentiments of George Calixtus, a celebrated Lutheran divine, who was born near Sleswick in Holstein, in 1586; and having studied at most of the protestant schools in Germany, was made professor of theology at Helmstadt in 1614, where he died in 1656. He was distinguished by his zeal for forming an union between the Romish, Lutheran, and Reformed churches; or, at least, for joining them in the bonds of mutual forbearance and charity. Calixtus was the first person that reduced theology into a regular system, and gave it a truly scientific and philosophical form. As he had imbibed the spirit of the Aristotelian school, he arranged the substance of Christianity according to the method of the Stagirate; and divided the whole science of divinity into three parts, viz. the end, the subject, and the means. He was also the first who separated the objects of faith from the duties of morality, and exhibited the latter under the form of

an independent science. These innovations rendered him the object of much censure and opposition. In his attempt to reunite the several bodies of Christians, and to comprehend the different churches in one profession of religion, he was a principal promoter of that system, which was called *syncretism*. See SYNCRETISTS. The controversy which was thus occasioned, subsisted long after his death; and though he seemed, in his efforts for comprehension, to give advantage to the Romish church, no one attacked its tyranny and corruption with greater vigour. He was the author of many works, which it is now needless to enumerate. Mosheim, Eccl. Hist. vol. v.

The Calixtins are esteemed a kind of SEMI-PELAGIANS.

CALIXTINS also denote a sect in Bohemia, derived from the Hussites, in the fifteenth century, A.D. 1420, who asserted the use of the cup as essential to the eucharist. And hence their name; which is formed from the Latin *calix*, a cup.

The Calixtins are not ranked by Romanists in the list of heretics, since in the main they still adhered to the doctrine of Rome. The reformation they aimed at terminated in the four following articles.

1. That the word of God should be explained to the people in a plain and perspicuous manner, without the mixture of superstitious comments or inventions. 2. That the sacrament of the Lord's supper should be administered in both kinds. 3. That the clergy, instead of employing all their attention and zeal in the acquisition of riches and power, should turn their thoughts to objects more suitable to their profession, and be ambitious of living and acting as became the successors of the holy apostles. 4. That transgressions of a more heinous kind, or "mortal sins," should be punished in a manner suitable to their enormity. In the two great factions of Calixtins and Taborites, into which the multitude was divided, there were some subordinate sects, who differed in several other points. Mosheim, Eccl. Hist. vol. iii. See TABORITES.

CALIXTUS, GEORGE. See CALIXTINS.

CALI YUG, in the *Astronomy* of the Hindoos, a period of time, the commencement of which forms an epoch, in which the planets were supposed to have been in a line of mean conjunction, in the beginning of Aries. The Caly yug is supposed to have begun 3102 years before the commencement of the Christian æra, or 3101 years before the year of Christ's birth; or at the instant of midnight, between Thursday the 17th, and Friday the 18th of February, O. S. in the year of the Julian period 1612, when the planets were supposed to have had this aspect on the meridian of Lanka, about 75° 50' E. of Greenwich: and the epoch founded on its commencement appears to have been fixed on by Varaha, the reputed author of the *Surya Siddhanta*, and some other Hindu astronomers since his time; for though the planets were not then actually in a line of mean conjunction, yet, the differences between their respective positions, and that which was assumed, when divided among the years expired from that epoch to the time of Varaha, were considered as too small to cause any considerable difference between the mean annual motions, and those which it would be necessary to assume, so as to give the positions of the planets at that time, or even to cause any sensible error in their computed places deduced from thence for many years. For a farther account of this astronomical cycle, and its application to the Hindu chronology, &c. see Bentley on the Antiquity of the *Surya Siddhanta*, in the Asiatic Researches, vol. vi. p. 540, 8vo. See also *SURYA' SIDDHANTA*.

CALKA, in *Geography*. See KALKA.

CALKING, or **CAULKING**, in *Sea-Language*, &c. See **CAUKING**.

CALKING, in *Painting*. See **CALQUING**.

CALKINS, or **CALKERS**, a part prominent from a horse-shoe, intended to secure the beast from sliding.

The calkins are the end or extremity of horse-shoes, turned or bent downwards, and forged to a sort of point, to make the beast step more safe and steady on the ice.

The inconvenience of calkins is, that they hinder the horse from treading evenly on the ground, and thus occasion wrenches on the foot, or strains in the sinews; especially in stony ways, where the hardness of the bottom will not suffer the calkins to penetrate: besides, they are apt to make a horse cut.

Calkins are either single or double, *i. e.* at one end of the shoe, or at both; the latter are reputed less hurtful, as they allow the creature to tread more even; some are made large and square; the best are in form of the point of a hare's ear.

CALL, among *Fowlers*, means the noise or cry of a bird, especially to its young, or its mate in coupling time.

The call of a bird, says the hon. Daines Barrington, in his *Experiments*, &c. on the Singing of Birds (Phil. Transf. vol. lxxiii. p. 250), is that sound which it is able to make when about a month old: it is, he says, in most instances, a repetition of one and the same note, is retained by the bird as long as it lives, and is common, generally, both to the cock and hen.

One method of catching partridges, is by the natural call of a hen trained for the purpose, which drawing the cocks to her, gives opportunity for entangling them in a net.

Calls are also a sort of artificial pipes, made to catch several sorts of birds, by imitating their notes. Different birds require different sorts of artificial calls; but they are most of them composed of a pipe or reed, with a little leathern bag or purse, somewhat in form of a bellows, which, by the motion given thereto, yields a noise like that of the species of bird to be taken. The call for partridges is formed like a boat, bored through, and fitted with a pipe, or swan's quill, &c. to be blown with the mouth, to make the noise of the cock partridge, which is very different from the call of the hen. Calls for quails, &c. are made of a leathern purse in shape like a pear, stuffed with horse hair, and fitted at the end with the bone of a cat's, hare's, or coney's legs, formed like a flageolet: they are played by squeezing the purse in the palm of the hand, at the same time striking on the flageolet part with the thumb to counterfeit the call of the hen quail.

In some countries hares are very numerous, and from May until August are taken with a call, which entices them within a proper distance of the sportsman. This call is a squeaking sound, first slow and then quicker, and is supposed to resemble the call between the male and the female. In the country about Naples, where this practice obtains, both hares and partridges are so tame, that they will run under the carriage-wheels.

CALL, in *Hunting*, signifies a lesson blown upon the horn, to comfort the hounds.

CALL, in *Mineralogy*, an English name for the mineral called Tungsten, or Wolfram, by the Germans.

CALL, in *Sea language*, a sort of whistle or pipe, of silver or brass, used by the boatswain and his mates to summon the sailors to their duty, and direct them in their several employments. It is sounded to various strains, adapted to the different exercises, as hoisting, heaving, &c. and the piping of it serves the same purposes among sailors, as the beat of the drum among soldiers.

CALL of the house, in a parliamentary sense, has been sometimes practised, to discover whether there be any in the house not returned by the clerk of the crown; but more frequently to discover what members are absent without leave of the house, or just cause.

In the former case, the names of the members being called over, every person answers to his name, and departs out of the house, in the order wherein he is called. In the latter, each person stands up uncovered, at the mention of his name.

CALL of the plaintiff, in *Law*. See **NON-SUIT**.

CALLA, in *Botany*, (derived, according to some authors, from καλλος, *beauty*; but professor Martyn says, from καλλιστος, the wattles of a cock; the name occurs in Pliny.) Linn. gen. 1030. Schreb. 1388. Gært. 522. Juss. p. 24. Vent. vol. ii. p. 85. (Provençalia, Petit. gen. 45. Anguina, Trew.) Class and order, gynandria polyandria, Linn. monœcia monandria, Schreb. monœcia polyandria, Dr. Smith, as appears from his remarks on Arum in his Flora Britannica, and English Botany. Nat. ord. piperitz; Linn. *Arcideæ* Juss. and Ventenat.

Gen. ch. *Cal.* spathe one-leaved, acuminate, spreading, permanent; spadix simple, erect, covered with fructifications. *Cor.* none. *Stam.* either placed above or intermingled with the pistils; anthers sessile, simple, truncate. *Pist.* germ roundish obtuse; style simple, very short; stigma acute; with several permanent, compressed, truncate filaments intermixed with the germs. *Peric.* berry tetragonally-globular, one-celled (many celled, Gært.); seeds from six to twelve, erect, cylindrical, obtuse at both ends.

Ess. Ch. Spathe spreading, spadix covered with florets; corolla none. Berries many-leaved.

Sp. 1. *C. æthiopica*, Linn. Sp. Gærtner, Tab. 84. fig. 2. La Marck, Pl. 739. fig. 2. (Arum Æthiopicum; Comm. hort. 1. p. 95. Tab. 50. Arum Africanum; Tournef. 159. Rai. Sup. 576.) "Leaves arrow-heart-shaped; spathe cowed; stamens placed above the pistils." Perennial. Root thick, fleshy, with a brown skin, and strong, fleshy fibres. Leaves in clusters from the root, eight or nine inches long, of a shining green, ending in a sharp point, which turns backwards on petioles more than a foot long; furrowed, and sheathing at their base. Scape longer than the leaves, round, herbaceous, smooth, green. Spathe white, a little fleshy, twisted at the bottom, but spread open at the top, suddenly contracting, and ending in a point. Spadix cylindrical, yellowish, about half the length of the spathe. Stamens above, pistils below set so closely together that they are not easily distinguished. Seeds roundish, dark brown, smooth, having on the inner side a protuberant, compressed eye extending from the umbilical aperture to the top of the seed. Miller, La Marck, and Gærtner. A native of the Cape of Good Hope, sent to Commelin in 1687, and cultivated by Mr. Miller in 1731. It flowers from January to May. 2. *C. palustris*, Linn. Sp. Pl. Flor. dan. Tab. 422. (Dracunculus palustris. Baul. pin. 195. D. aquatilis. Dod. pempt. 331. Rai. Hist. 1210. Barrel, ic. 574. Anguina aquatica, Lob. ic. 600.) "Leaves heart-shaped; spathe flat; stamens and pistils intermingled with each other." Perennial. Root creeping, from six to eight inches long, fixing itself to the earth by capillary fibres from its knots, and throwing out leaves and scapes at different distances. Leaves petioled, acuminate, green, smooth, alternately embracing the stem. Stipules two, bluntish-egg-shaped at the base of the petioles. Scape round, thick, succulent, smooth, bright green. Spathe roundish-egg-shaped, rolled up at the end into a bluntish spine, yellowish-green below, white and smooth above. Spadix egg-shaped, obtuse. Stamens white.

Berries

Berries small, four or five-cornered, or round, wrinkled about the edge, smooth, soft, flat at the top, crowned with a short style. *Seeds* from six to nine, sometimes only from one to three, in a viscid mucilage. A native of marshes in Holland, Germany, and the whole north of Europe. Its roots are very acrid; but Linnæus informs us, that the Laplanders extract from them a fecula of which they make bread. 3. *C. orientalis*, Linn. Sp. Pl. (Arum Carfaami, Rauw. itin. 115. A. minus orientale, Mor. Hist. 3. 544. Rai. Sup. 580.) "Leaves egg-shaped." Perennial. *Petioles* long. *Scape* about six inches high; *flower* white. A native of the mountains about Aleppo. This species rests entirely on the authority of Rauwolf; and, though admitted by Linnæus into his Species Plantarum, does not appear in the last edition of his Systema Naturæ, and has since been rejected by most of the editors of the Systema Vegetabilium. 4. *C. occulta*, Martyn's Miller. Loureiro Cochinch. 532. "Leaves heart-egg-shaped; spathe spiral; spadix with anthers and filaments intermingled at the bottom; anthers only at the top." Perennial. About a foot high, with scarcely any stalk. *Leaves* many, smooth, diffused; with long channelled petioles, dilated at the base, embracing the inner ones. *Spathe* long, concealing the flowers even in their state of maturity. *Spadix* oblong. *Stigma* concave, trifid, sessile. *Berry* three-lobed, three-celled, yellow, containing many seeds. A native of Cochinchina in moist places.

Propagation and Culture. The *Æthiopica* propagates very fast by offsets, which should be taken off about the end of August, and each planted separately in a pot filled with kitchen-garden earth. They may be kept in the open air till winter, and then should be removed under cover. The plant will live in the open air in mild winters, without any cover, in a warm border and dry soil; and may always be preserved with a little shelter from hard frost. The palustris must be planted in an artificial bog, or the mud of a pond, or tub set in water. Miller.

CALLA-Sufung, in *Geography*, a town and capital of the island of Bouton, in the Indian sea, seated about a mile from the coast, on an eminence surrounded with cocoa-nut trees. It has a bad harbour with a rocky bottom. The inhabitants are Mahometans, and speak the Malay language.

CALLABASH-BAY. See *CALABASH*.

CALLAC, a town of France in the department of the North Coasts, and chief place of a canton in the district of Guingamp; $3\frac{1}{2}$ leagues N. of Rostrenau. The place contains 1,543, and the canton 10,532 inhabitants; the territory includes $327\frac{1}{2}$ kilometres, and 9 communes.

CALLACALLES, a river of Chili which falls into the South Sea at Baldivia.

CALLAF, or *CALAF*, in *Botany*. (Alpin.) See *SALIX ÆGYPTIACA*.

CALLAH, or *GELLAH*, in *Geography*, a town of Africa, in the country of Algiers, 50 miles S. of Bona.—Also, a town of Africa, in the country of Algiers; 35 miles W. of Suez.

CALLAH, EL, a town of Africa, in the western province of Algiers, Tlemfan or Tremecen, situate 5 leagues to the N. E. of Mascara, and 40 miles E. of Oran, on an eminence, as the Arabic name imports, and in the midst of other mountains, which form part of Mount Atlas. It is larger than Mascara, but a dirty ill-contrived town, without drains, pavement, or causeways. It is the greatest market of this country for carpets and burnooses. There are several villages of the same nature, and alike situate round about it, all of which are profitably employed in the same woollen manufactures. The Turks have here a small garrison and citadel;

and, from some few large stones and pieces of marble of ancient workmanship, we may infer that it was formerly a city of the Romans; perhaps the "Gitlui," or "Apfar," of Ptolemy.

CALLAICI, or *CALLÆCI*, in *Ancient Geography*, a people of Spain, who inhabited the north-western part of the country. Their name seems to have been formed from "Calle," which was that of one of their ports. There were several different people comprehended under this denomination; such as the Bracari, Cælerini, Gravii, Simici, Querquerni, Artabri, and others. Ptolemy divides them into the "Callaici Bracarii," and "Callaici Lucenses." The former extended themselves from the Durus to the Minius; and the latter from the Minius to Astures. Their principal rivers were the Uia, Minius, and Durus; and their chief towns were Brigantium, Adrobicum, Lucus Augusti, Iria Flavia, Tyde, Bracara Augusta, Calle, and Aquæ Flaviæ.

CALLAN, a mountain in the county of Clare, Ireland, near the Western Ocean, remarkable for a large stone or monument, supposed to have an inscription in the *Ogham* or *Ogum* characters. An account of it may be found in the 1st vol. of the Transactions of the Royal Irish Academy, and in the 7th volume of the Archæologia; and some remarks on it in Ledwich's Irish Antiquities.

CALLANORE, or *KULLANORE*, a town of Hindoostan, in the county of Lahore, seated on the Rauvee, about E. 30° N. from Lahore, or distant from it 35 common cosses. N. lat. $32^{\circ} 30'$. E. long. $74^{\circ} 40'$.

CALLAO, a sea-port town of Spanish South America, in Peru, seated on a river of the same name near the Pacific Ocean, and serving as a port to the city of Lima, from which it is distant about 5 miles. The harbour of Callao is the largest, most beautiful, most convenient, and most secure in the South Sea; and the Spanish government has, at different periods, expended large sums in improving and strengthening it. The largest vessels may lie with perfect safety in the road of this port, as the water is very deep, without rocks, and always tranquil. Two islands, named St. Lawrence and Callao, and the peninsula which nearly reaches them, defend vessels, from the south wind; and though the road is open to the north and north-north-west, these winds so seldom blow here, or with such inconsiderable force, that no danger is apprehended. The island of St. Lawrence breaks off the sea from the S. W. to the S. E. In this port every necessary commodity which vessels need, may be procured. The small river that comes down from Lima, and discharges itself into the sea under the walls of Callao, furnishes plenty of good water; and a mole, on which cranes are erected, makes it easy for ships to load and unload. The town, which the Spaniards have considered as almost impregnable, was, before the calamity, which it suffered by an earthquake, fortified by bastions and some batteries, which have never been thoroughly repaired; and it is defended by a garrison. There are two faubourgs inhabited by Indians. The trade of Callao is considerable, in consequence of its convenience as a port, and its vicinity to Lima, which see. This place, as well as the adjacent country, has frequently suffered much from earthquakes. The most dreadful earthquake, however, seems to have been that which commenced in 1746, and continued at intervals till 1747. On this occasion the port of Callao was totally submerged; nothing remained except a piece of the wall of the fort of Santa Cruz, as a memorial of this terrible devastation. Of 23 ships and vessels, great and small, which were then in the harbour, 19 were wholly sunk, and the other four were carried by the force of the waves to a great distance up the country. Of the number of inhabitants, amounting to about

4000, 200 only escaped; and 22 of these were preserved by means of the above-mentioned fragment of a wall. Since that time Callao has been rebuilt upon the same plan, but a little farther from the sea. S. lat. $12^{\circ} 1' 53''$. W. long. $76^{\circ} 58'$.

CALLAO, as it is called by its inhabitants, but more generally known to Europeans under the name of CAMPELLO, is an island which lies opposite to, and about 8 miles to the eastward of, the mouth of a considerable river on the coast of Cochín-china, on the banks of which is situated the town of Fúfúo, a place of some note, not far from the harbour of Turon. The bearing of the highest peak of Callao from this harbour is about S. E. at the distance of 30 miles. The extreme points of the island lie in N. lat. $15^{\circ} 52'$ and $15^{\circ} 57'$. The greatest length is from N. W. to S. E. about 5 miles, and the mean breadth 2 miles. The only inhabited part is on the S. W. coast, on a slip of ground rising gently to the east, and contained between the bottom of a semilunar bay, and the mountains on each side of it. These mountains, at a distance, appear like two distinct islands. The southern mountain is the highest, and is about 1500 feet. The lower grounds contain about 200 acres. This small but enchanting spot is beautifully diversified with neat houses, temples, clumps of trees, small hillocks swelling from the plain, and richly decorated with shrubbery and trees of various kinds; among which the elegant arceæ, rising like a Corinthian column, is eminently conspicuous. A rill of clear water oozing from the mountains, is carried along the upper ridges of the vale, whence it is occasionally conveyed through sluices, for the purpose of watering the rice grounds, and for which it seems to be amply sufficient. The houses, in general, were clean and decent: a few were built with stone, and covered with tiles. One, probably the mansion of the chief person of the island, was inclosed by a stone wall, and the access to it was through a gate-way between two stone pillars. The house was divided into a number of apartments, arranged with taste and convenience. This building stood at the head of the principal village, consisting of about 30 habitations built of wood, chiefly the bamboo. Behind the village, and on the side of the hill, was a cave, accessible only by one path through a range of rocks; and within the cave, near its mouth, was a small temple, commanding a view of the whole vale. Several other temples were dispersed over the plain, all of which were open in front, with a colonnade before them of round wooden pillars, painted red and varnished. The number of houses on the island scarcely exceeded 60. Behind every house, not immediately in the principal village, were inclosures of sugar-canes, tobacco, and other vegetables, growing in great luxuriance. The mountains were covered with verdure, and seemed well calculated for rearing goats, of which the island produced a few. Beside the principal bay, there were several sandy inlets, in any of which boats might easily land; but a communication between them by land is very difficult, if not impracticable, on account of the steep and rugged ridges which separate them from each other. Hence it appears that very slight works, and an establishment of a few men would be sufficient for the defence of the island; a great part of its coast being imprudently fortified by nature. The depth of water in the bay and road is sufficient for ships of any burden, and it affords perfect shelter from every wind except the S. W. to which quarter it was directly open. The French, it is said, aware of the insecurity of trading to Tungquin and Cochín-china without some independent settlement, had formerly in contemplation to purchase the small island of Callao, lying a few miles to the

southward of Turon. But the want of shelter in the S.W. monsoon would soon induce them, if they were once in possession of Callao, to seek for a farther settlement near it, upon the main-land of Cochín-china. Embassy to China, vol. 1.

CALLARIAS, by some called *asellus callarius*, in *Ichthyology*, a fish of the truttaceous kind; called by Aldrovandus *tinca marina*, and by Rondeletius and Gesner *physis*. It usually grows to about a foot in length, and is in shape something flatfish; it is covered with small scales, and is of a greyish colour, but somewhat purple on the head; its tail is roundish, not forked; it is a very well tasted fish, and is common in the Mediterranean, and brought to market at Rome, Venice, &c.

CALLAS, in *Ancient Geography*, a river of Greece, in the island of Euboea.

CALLAS, in *Geography*, a town of France, in the department of the Var, and chief place of a canton in the district of Draguignan, $1\frac{1}{2}$ league N.E. of it. The place contains 2,108, and the canton 8,186 inhabitants: the territory comprehends $272\frac{1}{2}$ kilometres, and 7 communes.

CALLATHI, and CALLANTHI, in *Ancient Geography*, a people of India, who have the custom, according to Herodotus, of eating their parents.

CALLATIS, CALATIS, or CALANTRA, a town seated on the western coast of the Euxine sea, south of the mouth of the Ilter, and 300 stadia distant from Tomi. See CALATIS.

CALLE, JOHN FRANCIS, in *Biography*, a French mathematician, was born on the 25th of October 1744, at Versailles, where he received a good education, and acquired an early taste for the mathematics. In 1768 he came to Paris, where he had an opportunity of being more thoroughly instructed. In 1774 he formed some distinguished pupils for the school of engineers, where the examinations were strict, and admission difficult to be obtained. In 1779 he gained the prize proposed by the Society of Arts at Geneva, for escapements. In 1783 he completed his edition of "Gardiner's Tables of Logarithms," which were exceedingly convenient, of great utility, and very correct; and which possessed advantages above all the others. In 1788 he was appointed professor of hydrography at Vannes, afterwards at Dunkirk; and in 1792 he returned to Paris, and was for a few years professor *des ingénieurs géographes* at the dépôt of war. This place having been suppressed, he continued to teach in Paris, where he was always considered as one of the best mathematical masters to whom pupils could apply.

In 1795 he published the new stereotype edition of the "Tables of Logarithms," considerably enlarged with logarithmic tables of the sines, according to the new decimal division of the circle. These are the first which ever appeared. Towards the end of 1797 he presented to the National Institute the plan of a new telegraph and a telegraphic language, accompanied with a dictionary of 12,000 French words adapted to it by a combination worthy of so able a mathematician.

These labours had injured his health; he had been a long time althmatic, and, notwithstanding his condition, he published, that year, an excellent memoir on finding the longitude at sea, under the modest title of "A Supplement to the Trigonometry and Navigation of Bezout." He died on the 14th of November 1798, leaving behind him a daughter, born at Vannes in 1793. According to a tradition in the family, he was descended from Descartes. *Lalande's Hist. Astron.* for 1793.

CALLE, in *Ancient Geography*, Porto, a town of Hispania Citerior, to the south, near the mouth of the river Durius, on the frontiers of Lusitania. This town, at first a small port, became afterwards considerable among the Cal-

laici, to whom it belonged. It is now called Puerto by the Portuguese, and Port-a-Port, or Porto by the French. From this name Calle, and that of Portus, the appellation of Portugal is said to be derived.

CALLE, La, in *Geography*, a town of Africa, in the province of Constantina, surrounded on three sides by the sea, and defended on the fourth side by a strong wall. This place is inhabited by 3 or 400 Corsicans and Provençals; and it is the chief factory of the French African company on this coast. The edifices belonging to the company are the only regular buildings; the rest of the inhabitants, composed of the scum of the populace of Marseilles, live in wretched huts. They are employed in packing and unpacking of goods, in the coral fishery, and in taking care of the cattle; they likewise perform military duty, and daily mount guard. Besides the advantage of the coral fishery, and of the whole trade of the circumjacent country, the French have also at Bona, Tuckush, Sgigata, and Cull, the monopoly of corn, wool, hides, and wax; for which they pay yearly to the government of Algiers, to the kaide of Bona, and to the chiefs of the neighbouring Arabs, 30,000 dollars, *i. e.* about 5000 guineas of our money.

CALLEGAES, a name anciently given by the Spaniards to the Abipons, on account of their singular practice of eradicating the hair over their foreheads, so as to produce the appearance of baldness: but their features resemble the European, and the nose is commonly of an aquiline form. They carefully eradicate the beard, and mark their foreheads and temples with particular scars, by way of ornament. The males are accustomed from childhood to the use of the bow. Hunger alone dictates the time to eat; and they consume vast quantities of animal food. They preserve cleanliness by frequent bathing in the lakes and rivers. They have no idea of a monarch, but are ruled by many caciques, which they call "capitas," from a Spanish term. They seldom marry till the husband and bride have exceeded their twentieth year; and the lady is purchased from her relations at the price of four horses, and woollen cloths of various colours, somewhat resembling Turkey carpets. They pretend to expedite the birth by a mixture of cabbage juice and wine; and on the birth of a cacique's eldest son they observe many ceremonies. They chiefly bury their dead under the shade of trees; and the horses of a chief or warrior are sacrificed on the occasion. The bones are afterwards disinterred, and carried to a considerable distance. For other particulars concerning them; see **ABIPONIANS**.

CALLEN, a post-town of the county of Kilkenny, province of Leinster, in Ireland. It was a borough before the union, and was often distinguished for the violence of the contests, having been of the kind called potwalloping, in which every housekeeper has a right to vote. It is of great antiquity, having been made a borough by William, earl Mareschal, a descendant of Strongbow, in 1217, but it does not appear to have been ever a town of much importance. The present number of houses is 582, of which 46 only pay the window tax; the population is about 3500, which is a considerable increase since 1731. It has no manufacture, except a distillery, and some lace made there, yet it has fine streams of water, and is in the neighbourhood of a bog, which supplies abundance of fuel. There are seven fairs, some of which are remarkable for the sale of horses, and others of turkeys, which are brought up here to be sent to Bristol. The liberties of the town include 3660 acres of rich ground, with a lime-stone bottom, of which 1400 acres only are productive. The crops of wheat grown here are very fine. A common of 1500 acres formerly belonged to the town's people, which has been reduced by encroach-

ments to about half the number, and the enclosure of the rest on a just plan would be of great use. Indeed a resident and improving landlord might render this town very flourishing. Though the adjoining country is fertile and populous, the whole district of Callen, with five adjoining parishes, are united under one rector, who resides near Callen, the old church of which is in good preservation. These six parishes contain 41 protestant families, most of which live in the town. There are the ruins of an abbey, and three castles, with some vestiges of walls, which are said to have been destroyed by Cromwell. There is also a moat, the perpendicular height of which is 40 feet, and the flat summit 138 feet by 72. A curious charter given to this town by William earl Mareschal, may be seen in Coxe's history of Ireland, the privileges conferred by which, though said to be of all kinds which it became burghesses to possess, and the granter to bestow, were less than those now enjoyed by the meanest subject of the United Kingdoms. Some other particulars might be collected from Tighe's Account of Kilkenny, and the old histories, if it were necessary. Callen is on the road from Dublin to Cork, being 65½ Irish miles, S.W. from the capital. N. lat. 52° 32'. W. long. 7° 34'.

CALLEN, the name of a river in the county of Armagh, in Ireland, near which the city of Armagh is situated, and which flows through a remarkably fertile country. It joins the Blackwater near Moy.

CALLENBERG, a town of Germany, in the circle of Upper Saxony, and lordship of Schonberg; 4 miles N. E. of Zwickau.—Also, a chain of mountains of Germany, commencing about 5 miles from Vienna, and traversing the duchy of Stiria.

CALLENDER, in *Geography*, a town of Scotland, in the county of Perth, seated on the river Teith; 11 miles N. W. of Stirling, and 30 W. S. W. of Perth.

CALLENDER, in *Manufactures*. See **CALENDER**.

CALLET, in *Ancient Geography*, a town of Spain, in Bætica, and in the jurisdiction of Algi, according to Pliny.

CALLEVA ATREBATUS, a town of Britain, in the country of the *Atrebatii*, placed, in Antonine's Itinerary, in his seventh route from Regnum to Londinium, between Venta Belgarum and Pontibus, 22 miles from the former, and at the same distance from the latter. Dr. Stukley places it at Farnham; and Mr. Horsley at Silchester.

CALLIÆ, a town of Peloponnesus, in Arcadia. Paulanias

CALLIAGH-CRUM, in *Geography*, a rock near Binyhead, in the county of Mayo, in Ireland. N. lat. 54° 21'. W. long. 9° 35'.

CALLIAN, a town of France, in the department of the Var; 10 miles N. E. of Draguignan.

CALLIAN, or *Gallian*, a river of Hindoostan, the mouth of which is on the side of the sound, formed by Bombay, Salfette, and the neighbouring shores of the continent, opposite to the fort of Tannah. The ruins of Callian, noticed by Fryer, are probably those of the Calliana of the Periplus. Mar. Eryth.

CALLIANEE, a town of Hindoostan, in the country of Dowlatabad. It is large and populous, consisting of one long street filled with shops; the houses are constructed of rose-wood, and covered with thatch; 65 miles W. of Beder, and 85 E. of Vishapur. N. lat. 17° 45'. E. long. 76° 54'.

CALLIAQUA, a town and harbour at the S. W. end of the island of St. Vincent, in the West Indies. The harbour is the best in the island, and draws thither most of the inhabitants and the greatest part of the trade.

CALLIBER, or **CALLIPER**. See **CALIBER**.

CALLI-

CALLIBLEPHARA, from *καλλος*, *beauty*, and *βλεφαρον*, *eye lid*, in the *Medicinal Writings of the Ancients*, a name given to certain compositions intended to make the eye-lids beautiful; and as the eye lids are subject to be deformed several ways, there were several different sorts of these medicines.

CALLIBOGIE SOUND, in *Geography*, lies to the N.E. from the nearest entrance into Savannah river, in the state of Georgia, in North America, behind Hilton-head island. The latitude there is $32^{\circ} 4' N$. W. long. $81^{\circ} 12'$.

CALLICA, in *Ancient Geography*, a town of Asia, in Bithynia, placed by Ptolemy at some distance from the Euxine Sea.

CALLICARIA, a promontory of India, on this side of the Ganges, according to Ptolemy.

CALLICARIS, a town of India on this side of the Ganges. Ptolemy.

CALLICARPA, in *Botany*. (so named from its beautiful fruit.) Linn. gen. 135. Schreb. 175. Willd. 209. La Marek, Ill. 183. Gært. 588. Juss. p. 107. Vent. v. ii. p. 318. Class and Order, *tetrandria monogynia*. Nat. Ord. *Dumose*, Linn. *Vitice*, Juss. *Pyrenaceae*, Vent.

Gen. Ch. *Cal.* perianth one-leaved, bell-shaped, four-cleft, or four-toothed. *Cor.* of one petal, tubular, short; border four-cleft, obtuse. *Stam.* filaments four, longer than the corolla; anthers egg-shaped. *Pist.* germ superior, roundish; style thread shaped; stigma thickish, obtuse. *Peric.* berry globular, smooth. *Seeds* four, oblong, rather compressed, callous.

Ess. Ch. *Calyx* four-cleft; *corolla* four cleft; *berry* four-seeded.

Sp 1. *C. americana*, Linn. Sp. Gært. Tab. 94. fig. 5. La Marek Illust. Pl. 69. f. 1. (*Johnsonia*, Miller; *Sphordyllococcus*, Mitch. eph. nat. cur. 8. 208. *Burchardia*, Duham. arb. 1. 111. Tab. 44. Pluk. alm. Tab. 136. fig. 3. *Catalp. Car.* 2. Tab. 47. Gron. virg. 138) "Leaves egg-shaped, acute, serrated, rather downy beneath; berries glomerated." Lam. A shrub from three to six feet high. Branches round, or a little compressed, pubescent, and somewhat cottony near the summit. Leaves opposite, petioled, green above, but downy on the nerves, and entirely covered with a short, whitish down beneath, from four to five inches long, and two inches broad. Flowers small, reddish, or purple, in small, axillary, branched, opposite corymbs scarcely longer than the petioles, with downy peduncles. Berry superior, the size of a small pea, globular, pulpy; at first red, afterwards deep purple; one-celled. Lam. and Gært. A native of Carolina, and professor Martyn says, also of Cochinchina, but quotes no authority. The seeds were sent to Miller by Catesby, in 1724; and the plants raised from them flourished in the open air till the severe frost of 1740, when most of them perished. They are easily raised from seeds on a moderate hot-bed; but as the young plants are tender, they should be placed under a frame before the first autumnal frosts, and should be kept sheltered during the winter, having fresh air whenever the weather is mild. The following spring they should be transplanted into fresh pots, or into the nursery bed in a warm situation; in three or four years they will have acquired strength enough to live in the open air through the winter; but in severe frosts the surface of the ground about their roots should be covered with old tan, and their tops protected by straw or fern. Miller. 2. *C. cana*, Willd. (*C. tomentosa*, La Marek, Encyc. i. 556.) "Leaves ovate-lanceolate, serrated, very white, with down underneath; berries small, distinct." A shrub very distinct from the preceding, but so much resembling it, that La Marek found it difficult to form a satisfactory specific character. Flowers smaller, but more numerous, and in looser corymbs. Stamens twice as long as the

corolla. A native of the East Indies, communicated to La Marek by Sonnerat. 3. *C. lanata*, Willd. La Marek, Illust. (*C. tomentosa*, Murray, Syst. Veget. p. 153. Gmel. p. 246. Gært. Tab. 94. f. 5. *C. foliis integerrimis lanata*, Mant. 331. *Tomex tomentosa*, Linn. Sp. Pl. p. 172. *Arbor malabarica*, Illa dicta. Burm. Zeyl. 26. ind. 36. *Corantia corymbosa*, La Marek, Encyc. vol. i. p. 54.) "Leaves egg-shaped, entire, downy, underneath; smaller branches, petioles and peduncles woolly." Lam. Branches obtusely four-angled. Leaves opposite, large, petioled, acuminate, green, and a little wrinkled above, resembling those of *viburnum lantana*, but more pointed. Flowers small, white with a tinge of red, in short axillary and terminating corymbs. Corolla scarcely a line long; calyx very woolly; obscurely four-toothed, spreading. Berries small, blackish, half bedded in the permanent calyx. A native of the East Indies, communicated to La Marek by Sonnerat. 4. *C. macrophylla*, Willd. Vahl. Symb. 3. p. 13. Tab. 53. "Leaves lanceolate elliptical, scolloped, attenuated, wrinkled above, white, with down underneath: branches downy." Perennial. A native of the East Indies. 5. *C. ferruginea*, Willd. Martyn. Swartz, prod. 31. "Leaves broad-lanceolate, serrated, rather rugged underneath: cymes terminating and axillary." Perennial. A native of Jamaica. 6. *C. reticulata*, Willd. Martyn, Swartz, 31. "Leaves elliptic-lanceolate, a little serrated, wrinkled, white, with down underneath." Perennial. A native of Jamaica. 7. *C. longifolia*, Willd. La Marek, Pl. 69. fig. 2. "Leaves long, lanceolate, a little toothed, green on both sides; corymbs, or rather panicles, small, axillary." Perennial. Leaves seven or eight inches long, an inch and a half broad, opposite, petioled, acuminate, thin, nearly smooth, except when young. Calyx short, but slightly four toothed; stamens twice the length of the corolla. Style as long as the stamens; stigma truncate. A native of Malacca, communicated by Sonnerat. 8. *C. integrifolia*, Willd. Jacq. am. 15. Tab. 173 fig. 7. "Leaves egg-shaped, acute, very entire, a little downy underneath; racemes dense, axillary and terminating; tube of the corolla four times longer than the calyx." Perennial. A native of woods about Carthage, in South America. 9. *C. villosa*, Willd. Vahl. Symb. 3. p. 14. "Leaves oblong-egg-shaped, very entire, reticulated beneath with downy veins; racemes axillary; pedicels many-flowered." Perennial. It differs from all the other species in its long peduncles, not dichotomously branched. 10. *C. japonica*, Willd. Thunb. jap. 60. "Leaves oblong, acuminate, serrated in the middle, smooth." Stem shrubby, erect, smooth; branches opposite, round, smooth, purple, divaricated. Leaves opposite, on short petioles, green above, pale underneath, nerved, two inches long. Flowers white, axillary, panicked, very small, panicle trichotomous, supra-decompound, somewhat fastigiate; bractes linear; peduncles half an inch long, with very short pedicels; filaments inserted into the germ, very short, anthers oblong; germ superior; style awl-shaped, shorter than the corolla; stigma simple, acute. A native of Japan. 11. *C. umbellata*, Martyn's Miller, Linn. Cochin. 70. "Leaves between top and egg-shaped, smooth, alternate; umbels sessile." A middle sized tree with ascending branches. Leaves quite entire, reflexed at the edge. Flowers small, in five-flowered umbels, almost at the end of the branches; calyx bluntly four-cleft; corolla bell-shaped, with a short tube; stamens and stigma sessile. Berry fleshy, roundish, small. A native of Cochinchina in woods. 12. *C. triloba*, Martyn's Miller, Loureiro, Coch. 70. "Stem climbing; leaves three-lobed; peduncles dichotomous." A long branching shrub, climbing by bifid tendrils. Leaves serrated, smooth, on long petioles. Flowers axillary, pale. Berry round-

roundish. A native of Cochin China and China. 13. *C. paniculata*, La Marck, Encyc. "Leaves oblong, lanceolate, very entire, downy underneath; flowers very numerous, in terminating panicles." Branches woody, slightly four-angled, two of the opposite sides larger than the others, clothed with a short down near the summit. Leaves opposite, petioled, smooth, and wrinkled above, downy, and white underneath, three or four inches long, six or seven lines broad. Flowers small; calyx short, downy; corolla a little larger than the calyx; stamens a little longer than the corolla; germ superior; style very short; bractes very small, straight, pointed, one at each division of the peduncles. A native of Africa, about the Cape of Good Hope. Communicated by Sonnerat. As La Marck is unacquainted with the fruit, he does not absolutely pronounce it a callicarpa, but observes, that if its fruit be not a four-seeded berry, it will probably prove a budleia. In the Illustrations of genera, published afterwards, he expresses a doubt whether it be not Scoparia arborea of the Supplementum Plantarum; but in that case, the leaves must be alternate, and not opposite, as he has described them.

CALLICHORUM, or **CALLICHORUS**, in *Ancient Geography*, a river of Asia Minor; placed by M. D'Anville in the eastern part of Bithynia, with a northern course into the Euxine Sea, to the east of Heraclea, among the Caucones.

CALLICHTHYS, in *Ichthyology*, a species of *SILURUS*, distinguished by having the second dorsal fin one-rayed, a double row of scales on the sides, beards four. Linn. Gronov. &c. *Plecostomus cirris 4 longis* of Seba. This fish inhabits small running streams in Europe, and it is affirmed, that when these are dried up, they crawl across meadows in search of water.

CALLICOCCA, in *Betany*, Schreb. 316. Brotero, Linn. Transf. v. vi. p. 137 (Cephaelis, Willd. 357. *Tapogomea* Lam. Illust. 412. Pl. 152.) Class and order, *pentandria monogynia*. Nat. Ord. *Rubiaceae*, Juss.

Gen. Ch. *Cal.* Involucre of one or more leaves, inclosing numerous sessile flowers on a chaffy receptacle; perianth five-toothed, superior. *Cor.* monopetalous; tube cylindrical, swelling upwards; border five-parted, spreading. *Stam.* filaments five or four, capillary; anthers oblong, erect. *Pist.* germ inferior; style capillary, bifid; stigmas obtuse. *Peric.* Berry angular or wrinkled, one-celled. Seeds two, flat on one side, convex on the other, angular.

Ess. Ch. *Flowers* in heads, involucred. *Corolla* tubular. Berry angular-below, or wrinkled, two-seeded. *Receptacle* chaffy, nearly allied to morinda.

Sp. 1. (Cephaelis *violacea*, Swartz prod. 45. fl. ind. occ. i. p. 439. *Tapogomea violacea*: Aubl. Guian. i. p. 157. Tab. 60.) "Heads globular, terminal; involucre five-leaved; leaves oblong, smooth." Willd. Leaves nerved. Flowers and fruit of a violet colour. A native of Guiana and the West Indies. 2. *C. tomentosa*, (Cephaelis, Vahl. eclog. i. p. 19. *Tapogomea* Aubl. Guian. i. p. 160. Tab. 60.) "Heads globular in terminal corymbs; involucre two-leaved; leaves oblong, pubescent." Willd. Leaflets of the involucre large, heart-shaped, acuminate, of a purplish violet colour. A native of woods in Guiana and the Island of Trinidad. 3. *C. punicea*, (Cephaelis glaberrima, Vahl. eclog. i. p. 19.) "Heads terminal, erect; involucre two-leaved; leaves lanceolate-elliptical, smooth and glossy on both sides." Branches roundish, perfectly smooth of a pale purple colour. Leaves opposite, petioled, narrowed at the base and the summit, acute, perfectly entire, nearly veinless above, slightly veined underneath. Stipules tubular, short, entire. Peduncle four inches long, stiff, terminal between two little branches, a little thicker than the

lateral branches, angular, purple. Head the size of a wall-nut. Involucre large, heart-egg-shaped, scarlet, scarcely veined. Outward chaffy leaflets larger than the others, oblong. Vahl. A native of Jamaica. 4. *C. elata*, (Cephaelis Swartz.) "Heads globular, terminal; peduncles elongated; involucre two-leaved; leaves smooth." Such is the specific character given by Swartz, and copied by Willdenow; but it certainly does not give a sufficiently distinct difference from the preceding. A native of the high mountains in Jamaica. 5. *C. axillaris*, Swartz. "Heads axillary, sessile." A native of St. Kitt's. 6. *C. purpurea* (*Tapogomea purpurea*, Aubl. Guian. t. 63. p. 3.) "Heads terminal, naked; leaves oblong, coloured, pubescent, underneath; stem creeping, downy." Willd. Leaves with a white line above, and a reddish pubescence underneath. A native of woods in Guiana. 7. *C. alba*, (*Tapogomea*, Aubl. Tab. 64. fig. 4.) "Heads terminal, naked; leaves egg-shaped, pubescent underneath; stem creeping, smooth." Willd. A native of woods in Guiana. 8. *C. glabra*, (*Tapogomea*, Aubl. Tab. 63.) "Heads terminal, naked; leaves oblong, smooth, stems erect; little branches pubescent." Willd. Heads of the flowers hirsute. Aubl. A native of Guiana. 9. *C. carapichea*, (Cephaelis *involucrata*, Willd. *Carapichea guianensis*, Aubl. Tab. 64. *Tapogomea*, Lam. Illust. Pl. 152. f. 3.) "Heads terminal, globular; involucre four-leaved, unequal: leaves oblong, acuminate." A shrub five or six feet high. Stem cylindrical, knotty, branched. Leaves opposite, petioled, entire, smooth. Stipules intrafoliaceous, lanceolate, acuminate, with two small glands at their base. Flowers small, white; peduncle curved; stamens exerted; two leaves of the involucre very long, lanceolate. Fruit an angular, two-celled, two-valved, capsule, with a single seed in each cell. Lam. A native of Guiana. The trivial name *involucrata*, given by Willdenow, is grossly improper in a genus in which most of the species are involucred. 10. *C. evea*, (Cephaelis *tetrandria*, Willd. *Evea guianensis* Aubl. Tab. 39. La Marck, Illust. 154. Pl. 59. Encyc. 2. 399.) "Heads axillary, globular, peduncled, involucre four-leaved; flowers tetrandrous." Willd. A shrub seven or eight feet high, branched from the bottom. Branches opposite, knotty, four-cornered. Leaves opposite, ovate-lanceolate, acuminate, entire, smooth, even, on short petioles. Stipules intrafoliaceous, short, pointed, caducous. Heads of flowers opposite, situated rather above the axils of the leaves. Leaves of the involucre oval, pointed; the two outward ones larger. Scaly leaflets six or seven, between the involucre and the flowers. Fruit unknown. A native of Guiana. As there is another tetrandrous species we have changed the trivial name. 11. *C. patabea*, (Cephaelis *seffiflora*, Willd. *Patabea coccinea*, Aubl. Tab. 43. La Marck, Illust. 173. Pl. 65. Poir. Encyc. 5. 52.) "Heads terminal, globular, sessile, naked; flowers tetrandrous." Willd. A shrub four or five feet high. Branches compound, opposite, knotty. Leaves opposite, entire, smooth, acuminate. Stipules intrafoliaceous, awl-shaped, rather large. Heads of the flowers terminal, situated in the axils of the upper pair of leaves; corolla red; filaments short. Fruit unknown. A native of Guiana. We have changed the trivial name of this as well as of the two preceding, and for a similar reason. 12. *C. ipecacuanha*, Brotero, Linn. Transf. vol. vi. Tab. 2. (*Ipecacuanha fulva*, Pif. Bras. p. 101. It. Marg. Bras. p. 17.) "Stem ascending, somewhat shrubby, farmentous; leaves ovate-lanceolate, a little pubescent underneath; stipules deeply laciniate; head terminal, peduncled; involucre four-leaved, leaflets a little heart-shaped; corolla five-cleft; chaffy bractes large." Root simple or a little branched, roundish, most frequently perpendicular;

perpendicular; sometimes, but rarely, slightly oblique; from two to four inches long, or more; slender upwards, the thickness and form of the stem; two or three lines thick below, irregularly bent, brown without; divided into numerous prominent, unequal, somewhat wrinkled rings; of an acrid, bitter taste, but scarcely any smell; when dry the bark is thick, hard, brittle, brown without, white within, of a gummy resinous nature, inclosing a small, woody, white, nearly insipid, mucilaginous fibre, from which it is easily separated into numerous rings, which are smooth at their edges. *Stem* somewhat shrubby, first procumbent, then erect, sometimes creeping at the base, round, about the thickness of a common quill; smooth and without leaves below, brown, and knotty with the scars of fallen leaves, the internodes upwards gradually decreasing in length; near the top pubescent, green, leafy; for a year or two simple; then throwing out a few leaflets, rather crooked, knotty runners, taking root irregularly at the knots, and producing one or two new stems about half a foot from each other. *Leaves* from four to eight near the summit of the stem, opposite, spreading, three or four inches long; one or two broad, perfectly entire; deep green above and besprinkled with roughish points, smooth, or rarely beset with a few scattered hairs; underneath pale green, and somewhat pubescent; with a rather elevated rib, and alternate, nearly parallel, lateral veins curved at the end; petioles short, channelled, a little hairy. *Stipules* two, extrafoliaceous, pressed close to the stem, deeply cut into awl-shaped divisions, slightly adhering to the petioles, about equal to them in length, and with them sheathing the stem, shrivelling. *Flowers* aggregate in a solitary head, peduncled, terminal, and a little drooping; peduncle round, pubescent, about half an inch long; florets sessile, from fifteen to twenty-four, separated by chaffy leaflets or bractes; bractes the length of the involucre and florets, pubescent, very entire, sessile, green, varying in form, sometimes longith-egg shaped, sometimes rather obtusely lanceolate, and sometimes, but rarely, in size and figure resembling the leaflets of the involucre. *Involucre* four-leafed; leaflets a little heart-shaped, acute, entire, almost sessile, slightly waved, hairy; the two outer ones largest, and all a little longer than the florets. *Calyx*, perianth, superior, permanent, membranous, white, very short, with five blunt teeth. *Corolla* monopetalous; tube cylindrical, long, a little swelling upwards, woolly about the throat; border shorter than the tube; with five egg-shaped, acute, recurved segments. *Stamens*, filaments five, capillary, short, inserted on the upper part of the tube; anthers oblong, linear, erect, projecting beyond the top of the tube. *Pistil*, germ egg-shaped, not angular; style thread-shaped, the length of the tube, surmounted at the base with a short, nectariferous rim; stigmas two, oblong, rather thick, blunt, the length of the anthers. *Pericarp*, berry one-celled, with two seeds, roundish, neither furrowed nor angular, crowned with the calyx, purplish red, soft, and finally becoming wrinkled and black. Those which fall before they are ripe, when they grow dry, have a single furrow on each side, occasioned by the separation of the seeds, as they lie with their flat sides towards each other. *Seeds* two, elliptical, smooth, a little twisted; flat on one side, with a longitudinal, somewhat elevated line running down the middle; convex on the other, with a furrow near the apex. A native of moist woods in Pernambuco, and other provinces of Brazil, flowering from November to March, and ripening its berries in May. Described by Felix Avellar Brotero, professor of botany at Coimbra, with the assistance of observations made in Brazil on living plants, by Bernard Gomes, a resident medical botanist. It is

called *ipecacuanha* by the natives in some parts of Brazil; *poia do matto* by those of the southern provinces; and *cipo* by others, which is the name often given it by the Portuguese settlers.

Though the root of this plant has been known in Europe about 150 years, and has been in general use as a valuable medicine nearly as long; and though figures of it were early published by Piso and Margraave, modern botanists have known little of its botanical characters, and were long unable to determine the genus to which it ought to be referred. Linnæus, in a paper published in the third volume of "*Amenitates Academicæ*," gave it as a trivial name to a species of *Euphorbia*, a native of Virginia and Carolina, the root of which is there used as an emetic; but this was soon discovered not to be the real *ipecacuanha*. In his second Mantissa, he gave the same trivial name to a species of *Viola*, a native of Brazil, the root of which he supposed to be the white *ipecacuanha* of the shops. Decandolle, in a paper published in the "*Bulletin des Sciences par la Société Philomatique*," and re-published entire in the "*Nouveau Dictionnaire d'Histoire Naturelle*," says, there are three species of *Viola* which produce the white *ipecacuanha*: the *calceolaria* of the species *Plantarum*, a native of Guiana and the Antilles; the *ipecacuanha* of the Mantissa, and the *parviflora* of the *Supplementum Plantarum*, both natives of Brazil. The roots of these, and especially the last, are sometimes mingled in commerce with the true or brown *ipecacuanha*; but they are a fraudulent adulteration, and do not possess its active properties. They may be distinguished by their colour; but most certainly by the size of the woody part, which in these is always considerably thicker than the bark; whereas, in the true *ipecacuanha*, it is much less; and, as described by Brotero, is only a fibre (filum). The roots of some species of *Asclepias*, *Cynanchum*, *Dorstenia*, and *Ruellia*, have likewise received the name of *ipecacuanha*, on account of their possessing some of the same qualities; but in this there is no deception, as they have been honestly called false or spurious *ipecacuanhas*.

Some time before the year 1781, Mutis, then travelling in South America, sent to the younger Linnaeus a description formed from a specimen in full flower, which the governor of the province of Giron had received from Canaveral on the river Magdalena, and which an empiric of the country, to whom it was shewn by Mutis, positively asserted to be the genuine *ipecacuanha*, having frequently gathered it in the neighbourhood of Simitea, where it grows wild in great abundance, and whence it is regularly shipped at Mompoxia, as an article of commerce for Europe. From this description, Linnæus judged it to be a species of *Ptychotria*, a genus formed by his father for two or three plants that are natives of the East and West Indies, and published it as such in the "*Supplementum Plantarum*," at the same time expressing a doubt whether it were really the *ipecacuanha* of Piso and Margraave; but also adding, that, from its resemblance to their figures, he was rather inclined to believe it the same.

In the year 1793, Dr. Woodville was favoured by Sir Joseph Banks with a specimen preserved in spirits, which had been sent from Brazil. A drawing taken from it was engraved and published in his *Medical Botany*. It was without a flower, but as its root was entire, there was no doubt of its being the real plant. Its genus, however, still remained in a state of uncertainty; for Dr. Woodville was of opinion that he could not "implicitly follow the authority on which Mutis received the information." The lovers of natural history are, therefore, highly obliged to professor Brotero for his satisfactory monograph on the subject, read at a meeting

meeting of the Linnæan Society in February 1801; and which, as no description of the plant has hitherto appeared in English, we have translated with little abridgment from the original Latin. Mr. Brotero does not seem to have been acquainted with the communication of Mutis to the younger Linnæus; or, if we suppose that he must have formerly seen it in the *Supplementum Plantarum*, a work in the hands of every botanist, he had certainly forgotten it when he composed his dissertation. On comparing the two descriptions, there appear one or two important, and a few slighter differences; but there is so great a general resemblance, as to make it evident that they are very nearly allied to each other, and to render it probable that they belong to the same natural genus, and possess the same qualities in perhaps an equal degree.

In the description given by Mutis, there is no mention of an involucre; and the bractes which separate the florets are said to be so small as to be scarcely discernible. The first affects the genus as it has hitherto been characterized by all authors; and as we, in conformity with them, have given it above. The other is only a specific difference; but we suppose it will be acknowledged to be a strongly marked one. The stipules in Mutis's plant are awl-shaped, and horizontal; in that of Brotero, they are deeply lacinated, and pressed close to the stem. In the former, the flowers are stated to be axillary, and to have only from two to five flowers, which are not described as forming a head; but a simple inspection of Brotero's figure will make it manifest that they may be called either terminal or axillary with nearly equal propriety; and their number may be a variable circumstance depending on soil and situation; or, if constant, may be introduced with advantage into the specific character. In all other respects, they are so much alike that the description of one will serve for the other. The credit of the Brazilian empiric, which seems to have suffered in the estimation of a regular European physician, by that degrading appellation, is therefore established. The stipules of Sir Jos. Banks's plant, as figured by Dr. Woodville, agree in shape with those described by Mutis, and are strikingly different from those figured by Brotero; the root also of the former is more knotted and irregular in its surface. It may then, we apprehend, be fairly concluded, that there are at least two distinct species; and nothing forbids their being placed under the same genus, as nature certainly dictates, but the want of an involucre in that described by Mutis. The presence or absence of an involucre is, however, a circumstance which ought not to enter into the essential part of a generic character. The genus *Cornus* might be cited as a familiar case in point; but *callicocca* itself, as it actually now stands in authors, is a sufficient instance. For though Schreber, La Marck, and Willdenow, all agree in ascribing to it an involucre, as an essential character, Schreber inconsistently adds, in a note, that it is in some cases without one, and of Willdenow's 12 species, four are expressly said, to have naked heads or to be destitute of an involucre. Whether La Marck includes in his *tapogomea* any species of a similar description we cannot determine, as the alphabetical part of the *Encyclopædie* is not so far advanced; and though he has figured it in his *Illustrations*, and given what he thought its essential character in the synoptic table, at the head of the class, the enumeration of the species remains unpublished. The three species figured by him have a very conspicuous involucre. Two of them we have not ventured to quote; of the *carapichea*, Willdenow's *involucrata*, there can be no doubt. Upon the whole, it seems to be evident, that the involucre ought to be excluded from the generic character. The essential differ-

ence between it and *morinda* will then entirely rest on its flat, chaffy, or, as it might perhaps better be called, bracteated receptacle; which, at least as far as precedent goes, will be deemed a sufficient distinction. *Psychotria* differs from both in not having the flowers in heads on a common receptacle. Mutis in his description of his *psychotria emetica* does not mention a common chaffy receptacle; but the sessile flowers on a common peduncle, with a bracte to each flower, clearly imply it, and shew that the species is properly a *callicocca*. We shall therefore add. 14. *C. multifl.* (*psychotria emetica*, Linn. jun. Sup. Pl. p. 144.) "Heads naked, peduncled, few-flowered; leaves lanceolate, smooth; stipules entire, awl-shaped; corolla five-cleft: chaffy bractes very small." A native of Brazil. All the known species are perennial.

We have followed Schreber and Willdenow with little hesitation in uniting the *tapogomea*, *patabea*, and *evea* of Aublet, though La Marck has kept them separate. A difference merely in number cannot warrant the construction of a new genus. Of the *carapichea* we have much doubt, on account of the important difference in the fruit. La Marck made it a distinct genus in the alphabetical part of the *Encyclopædie*, but has figured it as a species of his *tapogomea* in the *Illustrations*, which must be considered as his latest decision on the subject. Nor can the genus of *patabea* and *evea* be absolutely fixed, till we become acquainted with their fruit.

CALLICOE, in *Manufactures*, a species of cotton cloth, originally imported from the East Indies, from the kingdom of Calicut, on the coast of Malabar, whence the name *Callicoe* is derived.

The term is now generally applied to cotton cloths of English manufacture, and comprehends many varieties of fineness and texture. English calicoes were first manufactured at Blackburn in Lancashire, about 30 years ago, and have since become one of the leading articles of national industry, affording employment in the various details of spinning, weaving, bleaching, dying, &c. to a considerable portion of the population of that county. See **COTTON MANUFACTURES**.

CALLICOE PRINTING. See **PRINTING**.

CALLICOLONA, in *Ancient Geography*, a hill of Asia Minor, in the Troade, and in the vicinity of Simois, according to Homer. It is mentioned by Strabo.

CALLICRATES, of *Tyre*, in *Biography*, an historian who flourished under Aurelian, and wrote his life; but he is said to have dwelt too much in trifling incidents. Vopiscus styles him the most learned of all the Greek historians of his time.

CALLICRATES, an Athenian architect and sculptor, who lived about 472 years before Christ. He is said to have engraved some of Homer's verses on a grain of millet, and to have made an ivory chariot which might be concealed under the wing of a fly, and an ant of ivory in which all the members were distinct. Ælian, however, justly censures him for employing his talents in performances so trivial and useless, and yet so difficult.

CALLICRATIDAS, a Lacedæmonian general, who succeeded Lyfander in the command of the Athenian fleet. He was eminently distinguished not only for his valour and military skill, but for his simplicity, integrity, and magnanimity. When he arrived at Ephesus to take the command, Lyfander adopted every base and treacherous method in his power to embarrass him; and with this view sent back to Cyrus, the ally of Sparta, the money which he had given to him for the naval service, and, at parting, he said to his successor with a sneer: "Let us now see, Callicratidas, how you

you can defray the charges of your army." This hostile measure involved him in difficulties, more especially as he could not recur to those means of relief which Lyfander did not scruple to adopt. At length, when all his resources were exhausted, he repaired to the court of Cyrus in order to solicit pecuniary assistance. But, treated with neglect, and disappointed in his expectations, he returned to Ephesus; determining, however, not to procure relief, urgent as his necessities were, by doing any thing that would entail disgrace on his country or on himself. Cyrus, on subsequent deliberation, sent after him a supply of money for the payment of his troops, together with presents for himself. The former he retained, but returned the latter with this memorable message: "That there needed no private friendship between Cyrus and him, because as long as the king observed the conditions of his treaty with the Lacedæmonians, he should think himself bound by it." He then attacked and defeated Conon the Athenian general, and besieged him in Mitylene. Hearing afterwards that the enemy's grand fleet was at Arginusæ, opposite to Lesbos, where he was stationed, he resolved to engage it. Whilst he was sacrificing in the morning, the soothsayer informed him, that, if he fought, the fight would in the issue be prosperous, but that the admiral would lose his life; to this declaration he replied, without any apparent concern; "Let us fight then; Sparta will not lose much in losing me; but she would forfeit her honour, if I retired in the sight of the enemy." An obstinate engagement ensued, in which Callicratidas was sunk with his ship; B. C. 405; and, notwithstanding the soothsayer's prediction, the Lacedæmonians were defeated with great loss. *Anc. Un. Hist.* vol. 7. p. 454.

CALLICULA Mons, in *Ancient Geography*, a mountain of Italy in Campania.

CALLIDROMUS, a mountain in the Locride at the foot of which was the passage of Thermopylæ.

CALLIDRYS. See **CALIDRIS**.

CALLIDRYS, in *Ornithology*, a name given by Bellonius and some other authors, to our common red-shank; **SCOLOPAX CALIDRIS**.

CALLIDRYS nigra, of Bellonius, supposed by some to be the same bird as *Tringa canutus* of modern ornithologists, or what we call the knot, but this is doubtful.

CALLIFE, in *Ancient Geography*, a town of Italy in Samnium, in the country of the Hirpini. *Livy*.

CALLIGA, a town of India, on this side of the Ganges. *Ptolemy*.

CALLIGICUM, a promontory of India, in the peninsula on this side of the Ganges, which terminated the Argaric Gulf to the north-west.

CALLIGONUM, in *Botany*, (from *καλλος* and *γόνυ*, implying a beautiful jointed structure.) *Linn. Gen.* 680. *P'Heritier* in *Linn. Transf.* vol. i. p. 177. *Willd.* 961. (*Pallasia*. *Schreb.* 834.) Class and order, *dioecandria tetragynia*. *Nat. ord.* *Malvaceæ*. *Linn. Polygonæ*, *Juss.*

Gen. Ch. Cal. perianth one-leafed, two shaped at the base, with a five parted border; segments nearly equal, roundish, spreading, finally a little reflexed, permanent; the two outer ones a little smaller than the others. *Corol.* none, unless the calyx be considered as such. *Stam.* filaments about sixteen, diverging, capillary; pubescent, and a little thickened near the bottom; slightly united at their base in the form of a nectary; anthers roundish, two-celled, peltate. *Pist.* germ superior, egg-shaped, four-sided, acuminate; styles four, sometimes only three, thread-shaped, spreading, a little united at the base, scarcely longer than the filaments; stigmas capitate. *Peric.* none, except the

crust of the nut. *Seed*, nut with a juiceless inseparable crust or shell, oblong, four-sided, four-winged, one-celled, without valves; wings either membranaceous, longitudinally two-parted, toothed, and curled; or rough with branched bristles, kernel of the same form.

Eff. Ch. *Calyx* five-parted, *corolla* none, filaments about sixteen, a little united at the base, germ superior, four-sided, styles three or four, nut four-winged, one-celled. *P'Herit.*

Sp. 1. C. polygonoides, *Linn. Sp. Pl.* (*polygonoides*, *Tourn. Corol.* 47. *Tab.* 478. *Itin. Orient.* vol. ii. p. 536. with a figure.) "Fruit latticed; bristles branched, rigid." *P'Herit.* A shrub three or four feet high. Stem as thick as the human arm, zigzag, hard, brittle, covered with a reddish bark, divided and subdivided into many similar branches, which at length put out numerous jointed twigs of a sea-green colour, an inch or fifteen lines long, and half a line thick, which *Tournefort* calls leaves, and says are so like those of *Ephedra*, that it is not possible to distinguish them without seeing the flowers. *Flowers* at the joints of the upper ramifications, on slender, short peduncles, pale green in the middle, white at the edges, permanent; filaments white; anthers purple. *Fruit* half an inch long, four lines thick, conical, deeply furrowed lengthwise; angles terminated by wings cut into fine fringes. *La Marck* calls it a capsule. Found by *Tournefort* near the river *Araxes* in *Armenia*. 2. *C. comosum*, *Willd.* *P'Heritier* in *Linn. Transf.* "Fruit latticed; bristles, branched, soft." *P'Herit.* Perhaps only a variety of the preceding. They exactly resemble each other, except in the bristles of the fruit, which in this are softer, and implicated or bushy; whereas in the preceding they are more rigid and perfectly distinct. Found by *Lippi* in *Egypt*, and by *Louiche Desfontaines* in *Barbary*. 3. *C. pallasia*, *Willd.* *P'Heritier.* *Linn. Transf.* vol. i. and *Stirp.* vol. ii. p. 37. *La Marck Illust. Pl.* 410. (*Pterococcus aphyllus*. *Pallas, Voyag.* ii. p. 738. *Tab.* 8. French translation, p. 473, and 549. *Pl.* xvi. *Pallasia caspica*, *Linn. Supp.* 252. *Savigny* in *Encyc. Pallasia Pterococcus*. *Pallas Fl. Ross.* ii. p. 70 *Tab.* 77, 78.) "Wings membranaceous, curled, toothed," *P'Herit.* A shrub three or four feet high. Root thick, woody, an inch and half in diameter, striking deep into the sand, with a tuberosc head. Stems numerous, about the thickness of a finger, erect, branched, spreading, dichotomous, brittle, with a grey, striated bark. Branches, alternate, round, zigzag, jointed, a little knotty, without leaves; putting out every spring, at each joint, from six to ten close set, herbaceous, rush-like shoots, sometimes simple, sometimes branched, of a fine green, and nearly glaucous colour, a few of which survive the winter, and are hardened into branches; the rest perish, and leave a knotty scar. *Stipula* membranaceous, obscurely triid, shrivelling, surrounding the joint as in the *polygonums*. Leaves alternate, sessile, solitary, at each joint of the herbaceous shoots; round, awl-shaped, fleshy, resembling the shoots, half an inch long. *Pallas* says there are no leaves, but *P'Heritier* asserts that they were actually present in plants cultivated by himself, which flowered and ripened their fruit. *Flowers* numerous in clusters, from three to five together; lateral or axillary within the stipules, on the young or woody branches, as well as on the herbaceous shoots; white, with a greenish tinge in the middle. *Stamens* ten, the length of the calyx, and withering with it as the fruit increases, without falling off; filaments bristle-shaped, thickest at the base, downy; anthers nearly globular, two-celled. *Germ* conical, four-sided, rarely three sided, the bifid angles prolonged so as to form the wings of the fruit. *Wings* somewhat oval, of a cinnamon colour, striated and split near the edges, spread-

ing on each side, so as to conceal the nut. When the root is cut across there exudes from it copiously a clear gum, which has the properties of gum tragacanth. Infused in water it swells and is changed into a sweetish mucilage, which does not soon grow dry; and if exposed to heat, ferments in a few days and acquires a vinous flavour. Found by Pallas in the sandy deserts between the Volga and the Iaik. It was at first thought by him to be a new genus; but afterwards recollecting the genus *calligonum* of Linnæus, he fell into the opposite error, and supposed it to be the same species with the Armenian plant found by Tournefort. The younger Linnæus also took it for a new genus, and in honour of Pallas called it *pallasia*. They both attribute to it not a one-leaved calyx, but a five-petalled corolla. It is called *rynpski* by the inhabitants of the country between the Volga, the Iaik, and the Caspian Sea; and torlak by the Kalmuck and Kirkisian Tartars, who make tobacco pipes of its long internodes. L'Heritier and Pallas. These three species are so similar to each other in their general habit and structure, that their specific difference can be taken only from the fruit. 4. *C. asperum*, Martyn's Miller. Lour. Cochin. "Leaves egg-shaped, rough; racemes subdivided; fruit double." Stem shrubby, climbing, but without tendrils, long, branched. Leaves entire, alternate. Flowers white, in terminating racemes. Calyx five-leaved, green, tipped with red; leaves roundish, concave, spreading. Corolla commonly none, but sometimes there are four, round, concave, spreading petals. Stigma filile, blunt, deeply two-parted. Stamens numerous on the receptacle. Fruit, a berry, sometimes single, sometimes double, one-celled, with many seeds. A native of Cochinchina in woods. We have placed it here rather than omit it, but from its fruit and general habit, it does not appear to be a *calligonum*; nor ought a variable circumstance to form part of the specific character.

CALLIGRAPHUS, anciently denoted a copyist, or scrivener, who transcribed fair, and at length, what the notaries had taken down in notes or minutes. The word is compounded of *καλλος*, beauty, and *γραφω*, I write. The minutes of acts, &c. were always taken in a kind of cypher, or short-hand; such as the notes of Tyro in Gruter: by which means the notaries, as the Latins called them, or the *σημειογραφοι* and *τοιχυγραφοι*, as the Greeks called them, were enabled to keep pace with a speaker, or person who dictated. These notes, being understood by few, were copied over fair, and at length, by persons who had a good hand, for sale, &c. and these were called *calligraphi*; a name frequently met with in the ancient writers. In the *Palæographia* of Montfaucon (lib. i. c. 8.), we have a catalogue of all the known *calligraphi*.

CALLIGRAPHY, the art of fair writing.

Callicrates is said to have written an elegant distich on a fescamum seed. Junius speaks of a person, as very extraordinary, who wrote the apostles creed, and beginning of St. John's Gospel, in the compass of a farthing. What would he have said of our famous Peter Bale, who in 1575 wrote the Lord's prayer, creed, ten commandments. and two short prayers in Latin, with his own name, motto, day of the month, year of the Lord, and reign of the queen, in the compass of a single penny, incased in a ring and bordure of gold; and covered with a crystal, all so accurately wrought, as to be very legible?

CALLI, in *Ancient Geography*, a promontory of Africa, in Marmarica; and also a village situate towards the north-east of this promontory. Ptolemy.

CALLIMACHUS, in *Biography*, a celebrated architect, painter, and sculptor of Corinth, flourished about the year

B. C. 540. To him is ascribed the invention of the Corinthian order. See **ABACUS**. He also made a golden lamp for the temple of Minerva at Athens, which he furnished with a wick of asbestos, that it might burn without waiting. Callimachus acquired the name of *καλλιδοτεχνος*, from being unable to please himself by his works.

CALLIMACHUS, a celebrated poet, grammarian, and critic, was a native of Cyrene in Libya, flourished in the reigns of Ptolemy Philadelphus and Ptolemy Euergetes, being one of the keepers of the Alexandrian library, and died about the year 244 B. C. He was the son of Battus and Mefatme, whence Ovid denominates him "Battiades." Strabo (lib. xvii.) informs us, that he claimed descent from king Battus, who was the founder of Cyrene. He was a disciple of Hermocrates the grammarian, and excelled no less as a critic than a poet. Before he was recommended to the favour of Ptolemy Philadelphus, he taught school at Alexandria, and had the honour of educating Apollonius, the author of the *Argonautics*. His poetical compositions were chiefly short pieces, as hymns, elegies, and epigrams; and when it was objected to him by his enemies that his Muse could not undertake any considerable work, he made use in reply of the saying which has become proverbial "A great book is a great evil." His powers, however, were manifested by two works of greater extent, entitled "Hecate," and "Aitia." The characteristics of those poems of Callimachus, which have reached our times, are elegance and polish, and choice of expressions; and these correspond to the character given of him as a poet by Ovid (*Amor. eleg. 15. lib. 1.*):

"Battiades toto semper cantabitur orbe;

Quamvis ingenio non valet, arte valet."

"The strains of Battus' son shall ne'er depart;

If not in genius, he excels in art."

Quintilian, in his "Institutiones Oratoriæ" (l. x. c. i.), applauds Callimachus as the prince of elegiac poets, among the Greeks. Mad. Dacier, in the preface to her edition of his poems, says, that, among the writings of ancient Greece, there is nothing more elegant and polite than these compositions of our author. To the same purpose her father, Tanaquil Faber, in his "Abregé des Vies des Poetes Grecs," declares, that Callimachus's manner of writing is neat and strong, and that Catullus and Propertius frequently imitate him, and sometimes translate him. Accordingly the "Coma Berenices" of the former is a translation from Callimachus. Of the various editions of this writer we may mention Mad. Dacier's, 4to. Paris, 1674; Bentley's, 8vo. London, 1741; Grævius's, 8vo. Utrecht, 1697; Ernesti's, 8vo. L. Bat. 1761; Loefer's, 8vo. Lips. 1774. We have a translation of the works of Callimachus into English verse, with notes, &c. by Dr. Tytler, 4to. Lond. 1793. Gen. Dict.

CALLIMUS, in *Physiology*, a stony substance found in the cavity of the ætites, or eagle stone.

The word is also written *calimus*, and in some copies of Pliny *calainus*; which latter reading Salmasius receives.

The *calimus* fills the hollow of the ætites, much as the yolk does the white of an egg.

The geodes, instead of a *callimus*, or solid stone, have a loose, sandy, chalky, or earthy substance, and the *enhydria* a liquid substance.

CALLINGER, in *Geography*, a town of Hindoostan, in the circar of Bundelcund; 72 miles W.S.W. of Allahabad.

CALLINGTON, is an ancient small borough town of Cornwall, England. Its situation is low, the surrounding country black and barren, and its houses are mostly small indifferent buildings.

buildings. Here is a cloth manufactory, which furnishes employ to some of the poor inhabitants. It has a weekly market on Wednesday, and two annual fairs. Callington being only a member of the parish of South-hill (where the church is situated) has a chapel of ease within the precincts of the town. The earliest mention of this place on record occurs in the time of Henry III. who in the 52d year of his reign granted the privilege of a market to Reginald de Ferrara, who was then lord of the manor. The town was constituted a borough in the 27th year of Elizabeth, when it obtained the privilege of sending two members to parliament, which right has continued to the present time. The borough is governed by a portreeve, but it does not possess any charter of incorporation. The elective franchise of the inhabitants are not clearly ascertained; but the present custom limits the right of election to the burgage-tenures paying scot and lot, and the number of voters is about fifty.

On the highest part of Hengeston-downs near Callington St. Kiri's-hill, which consists entirely of granite. Near the top, a shaft has been sunk for digging tin, and it is found that the lode of ore is impregnated with wolfram united with quartz. Callington contains 145 houses, and 819 inhabitants. It is 216 miles W. from London.

CALLINICON, or **CALLINICUM**, in *Ancient Geography*, called also *Leontopolis*, a town of Asia, situate on the left of the Euphrates, near Nicophorium. Procopius informs us, that Cosroes, king of Persia, took and razed this place.

CALLINICUS, in *Biography*, a native of Heliopolis in Syria, who deserted from the service of the caliph to that of the emperor, and who imparted the secret of compounding and directing the Greek fire, to which the deliverance of Constantinople in the two sieges, A. D. 716—718, has been ascribed. See *Greek Fire*.

CALLINICUS, surnamed *Sutorius*, was a native of Petra in Arabia; but spent the greatest part of his life at Athens. He wrote the history of Alexandria in 10 books, quoted by Jerome, and published several other pieces on various subjects. He flourished in the reign of Antoninus. Suidas, vol. ii. p. 232.

CALLINUS of Ephesus, a very ancient Greek poet, said to be the inventor of elegiac verse; some specimens of which are to be found in the collection of Stobæus. He flourished about 776 years B. C.

CALLINUSA, in *Ancient Geography*, a promontory of the Isle of Cyprus, according to Ptolemy, marked on the chart of M. d'Anville on the northern coast towards the west. In some charts it is called "Capo Eleni," and in others "Alexandretta."

CALLIONYMUS, in *Ichthyology*, a genus of fishes, in the order *Pisces jugulares*, the character of which is as follows: upper lip doubled, or folded in two plaits; eyes approximate; branchiostegous, or gill membrane, with six rays; aperture for breathing in the neck; gill covers shut up; body naked; ventral fin very remote.

The species of this genus are *lyra*, *dracunculus*, *indicus*, *baikalensis*, *ocellatus*, *lagitta*, and *japonicus*.

CALLIOPE, in *Entomology*, a South American species of *Parilio*, described by Linnaeus, and delineated in Clerk's *Icon.* t. 41. and also by Seba and Cramer. The wings of this insect are yellow, with three streaks on the anterior pair, and three bands on the posterior ones of black.

CALLIOPE, in *Ancient Geography*, a town of Asia in Syria, which was one of the principal fortresses of the Parthians against the Medes, according to Ptolemy.

CALLIOPE, in the *Pagan Mythology*, the chief of the nine

Muses, called by Horace *Regina*. The distinguishing office of this Muse was to record the worthy actions of the living; and accordingly she is represented with tablets in her left hand.

Such may be seen on the marble apothecosis of Homer, and upon the sarcophagi of the capital land of the Mattei palace, which represent the Muses. To Calliope, represented by some writers as the mother of the Corybantes and Syrens, but more commonly as the mother of Orpheus, is ascribed the invention of heroic poetry; and her name, according to Diodorus (Bib. Hist. l. iv. & vii.), was derived from her fine voice, *ἀπὸ τῆς καλῆς ὁμιλίας*. From this etymology it has been inferred that Calliope is the symbol of rhetoric and eloquence; but Eustathius (Il. A. v. 1.) asserts that she was the emblem of heroic poetry, the most noble and most ancient species of poetry. As to her fine voice, she possessed this talent in common with her other sisters. Upon the medals of the Pomponian family, she is designed by a head crowned with laurel, with a roll or volume from which strings are suspended, in the field of the medal.

CALLIPÆDIA, the art of getting or breeding fine and beautiful children. The word is formed from *καλός*, *fair*, and *παῖς*, *puer*, either boy or girl. We find divers rules and practices relating to this art, in ancient and modern writers.

The Jews are said to have been so solicitous about the beauty of their children, that care was taken to have some very beautiful child (such as was Jochanan, the disciple of Judah, author of the *Misebna*) placed at the door of the public baths, that the women at going out, being struck with his appearance, and retaining the idea, might all have children as fine as he. The Chinese take great care of their breeding women, to prevent uncouth objects of any kind from striking their imagination: and musicians are employed at night to entertain them with agreeable songs and odes, setting forth the duties and comforts of a conjugal and domestic life, that the infant may receive before its birth good impressions, and come forth not only well-formed in body, but suitably disposed in mind.

Callipædia, nevertheless, seems to have been first erected into a just art by Claude Quillet de Chinon, a French abbot, who, under the fictitious name of Calvidus Lætus, has published a fine Latin poem, in four books, under the title of *Callipædia, seu de pulchra prole balanda rationes*; wherein are contained all the precepts of the art. Paris, 1656, 8vo. & Lond. 1708, 8vo. It was translated into English verse by Mr. Rowe.

CALLIPHAE, in *Mythology*, one of the Ionides.

CALLIPIA, in *Ancient Geography*, a fountain of Ephesus so called by Pliny, and denominated "Alitea" by Pausanias.

CALLIPIDÆ, a people of Scythia near the Palus-Mæotis. According to Herodotus they were a colony of Greeks, established in Scythia. Pomponius Mela assigns them the space that lay between the Axices and Hypanis or Bogus.

CALLIPOLIS, denoting *beautiful city*, a name given to several towns, on account of the peculiar advantages of their situation or structure. Thus Callipolis was the name of a city on the Chersonesus of Thrace, near the Hellespont, and opposite to Lampacus. See *Gallipoli*.—Also, a town of Sicily, on the eastern coast, north of Catania and of the river Acis.—Also, a town of Ceria.—Also, a town of Magna Græcia, at the extremity of a peninsula in the country of the Salentina, in the gulf of Tarento.—Also, a town of Peloponnesus.—Also, a town of Greece in Ætolia, separated from Naupacta by a high mountain, called "Corax."—Also, a town of Asia, towards Galatia and Armenia.

—Also,

—Also, a town of Spain, near the Mediterranean sea, between mount Sallus and Tarracona.

CALLIRHOE, formed of *καλος*, *beautiful*, and *ῥῆν*, *to flow*, a fountain of Greece at the gate of Calydon, in Ætolia.—Also a fountain of Attica, called “Enneacrunos,” from its 9 springs or channels.—Also, a lake of Asia in Mesopotamia, near which was seated the city of Antioch.—Also, a mineral fountain of Palestine, before the town of that name, and the fortress Machærus, according to Pliny.—Also, a town of Arabia, included in the territory of Moab, situate near the Asphaltite lake, and famous for its warm baths. According to Josephus, Herod the Great, in his last illness, was conveyed hither. Ptolemy places it on the east of Jordan and of the Dead-Sea.

CALLIRRHOE, in *Entomology*, a Fabrician species of *PAPILIO*. (*Dan. Cand.*) peculiar to Asia. The wings are entire, with the tip of the anterior pair, and six spots on the posterior ones, black.

CALLISIA, in *Botany*, Linn. 63. Schreb. 87. Lam. Illust. 84. Juss. 45. Class and order, *triandria monogynia*. Nat. ord. *Enfata*, Linn. *Junci*, Juss.

Gen. Ch. *Cal.* perianth three-leafed: leaves linear-lanceolate, keeled, erect, permanent. *Corol.* petals three, lanceolate, acuminate, erect, spreading at the top, the length of the calyx. *Stam.* filaments three, capillary, longer than the corolla, dilated at the top into a roundish lamina: anthers double, globular, fixed to the inside of the lamina. *Pist.* germ superior, oblong, compressed: style capillary, the length of the stamens: stigmas three, spreading, pencil-form. *Peric.* capsule, egg-shaped, compressed, acute, two-celled, two-valved; valves contrary. *Seeds* two, roundish. Nearly allied to *commelina*, and differing from it chiefly in the want of the three barren filaments, tipped with cross-shaped glands, called nectaries by Linnæus.

Ess. Ch. *Calyx* three-leafed. Petals three. Anthers double. Capsule two-celled.

Sp. 1. *C. repens*, Linn. Sp. Pl. Læf. it. 305. Lam. Illust. Pl. 35. fig. 1. (*Hapalanthus*, *απκαλος ανθος*, tender flower, Jacq. Amer. 11. tab. 11. second edition: 12 tab. 14.) “Flowers axillary, nearly sessile; stem smooth.” Lam. Illust. *Root* annual. *Stem* herbaceous, tender, creeping from the joints, rather erect at top, a little branching at the base. *Leaves* alternate, egg-shaped, acuminate, somewhat heart-shaped at the base, sheathed, thickish, shining, growing near together as they approach the top of the stem. *Flowers* small, generally three together from each sheath of the upper leaves, tender, greenish. 2. *C. umbellulata*, Lam. Pl. 35. fig. 2. “Little umbels lateral and terminal; stem downy near the top; peduncles downy.” *Stem* branched. *Leaves* egg-shaped, acuminate, petioled; but those near the top of the stem sessile and lanceolate, sheathed. *Umbels* simple, from two to five-flowered, but the flowers are occasionally single; flowers on rather long peduncles, diandrous. Description formed from La Marck’s figure. Both the species are natives of South America and the West Indies. The first was introduced into England in 1776 by Dr. Fothergil.

CALLISTA, in *Botany*, a genus formed by Loureiro for a parasitical plant which grows on the trunks of old trees, and which might have been referred to *Epidendrum*. He gives it the following character. Class and order, *gynandria monandria*. *Cal.* none, but instead of it several ovate-lanceolate scales. *Cor.* petals five, spreading: three sessile ovate-oblong: two opposite, unguiculated, larger, swelling at their base. *Nectary* tubular, within the petals and attached to their base, large, two-lipped: upper lip, oblong, fleshy, with two horns at its base; lower lip, entire, downy, funnel-shaped. *Stamen* one, attached to the upper extremity of the

nectary; anther operculated, two-lobed. *Pist.* germ inferior, twisted, thread-shaped: style and stigma none, unless we consider as such a furrow which passes from the stamen to the germ. *Fruit* generally abortive. *Root* a linear bulb. *Stem* thick, furrowed. *Leaves* alternate, lanceolate, entire, striated, thick, hard, sheathing. *Flowers* white, in long, lateral, drooping, simple racemes. *Bosc. Nouv. Dict.*

CALLISTA, in *Ancient Geography*, a name formerly given to an island of the Grecian Archipelago, afterwards called *Thera*, and now *Santorin*, which see.

CALLISTHENES, in *Biography*, a Greek philosopher and historian, was a native of Olynthus, and a disciple and kinsman of Aristotle. By the influence of this philosopher he was appointed to attend Alexander in his expedition to the east; but his free spirit and republican sentiments, together with a considerable degree of self-importance, and of austerity of temper, rendered him very unfit for the attentions and obsequiousness of a courtier. Aristotle had taken pains to soften the severity of his disposition; his efforts, however, were ineffectual; and therefore, foreseeing the pernicious consequences that would unavoidably result from the liberty he assumed of speaking his mind on all occasions, he frequently repeated to him the following verse of Homer, (*Il. xviii. v. 95.*)

“Ὁ κύμορος δὴ μοι, τέκος ἔσται, οἱ ἀγορεύεις.”

“My son, thy freedom will abridge thy days.”

This prediction was verified by the event. Having frequently offended Alexander by his unseasonable reflections and remonstrances, he rendered him altogether implacable by opposing his frantic assumption of divine honours. Callisthenes not only abstained from joining with Anaxarchus and the servile throng who flattered his pretensions and bent before him the supple knee, but remonstrated on the subject in a speech full of strong argument and liberal sentiments. “If,” said he, “in the land of barbarians, their modes of thinking are to be adopted, I beseech you, Alexander, to recollect Greece, for the sake of which the conquest of Asia and this whole expedition have been undertaken! Consider, whether on your return, you will compel the free Grecians to adore you, or, exempting them from the dishonour, will load with it your Macedonians alone; or shall the Greeks and Macedonians pay you only human honours, while the barbarians worship you according to their barbarous customs?” See the whole speech in *Arrian’s Exped. Alex. lib. iv. p. 165, &c. ed. Gronovii*. This spirited remonstrance was unpardonable. A pretext was soon found in the conspiracy of Hermolaus for implicating Callisthenes in a charge of treason, though probably he had furnished no other occasion for it besides that of unguarded language against tyranny. He was immediately arrested with the other persons that were accused, though his fate was for some time suspended. Historians are not agreed as to the mode in which his life terminated; but most of them concur in informing us that he was carried about with the army as an object of terror. Aristobulus says that under this ignominious treatment he died of a disease: Ptolemy relates that he was tortured and crucified: and Justin represents him as being disfigured and confined in an iron cage with a dog for his companion, till Lyfimachus freed him from his suffering by giving him poison. However this be, his death, in consequence of the charge brought against him, is certain, B. C. 328; and it fixes on the memory of Alexander an indelible stain. The “History of the Actions of Alexander,” written by Callisthenes, is cited by many of the ancients, and seems to have been the production rather of an orator, than of a judicious historian. Polybius charges him with a total ignorance of tactics in his description of the

the battle between Darius and Alexander. He composed many other historical works, which are not now extant. The most considerable was, a "History of Greece," comprehending 30 years from the peace of Antalcidas. He also wrote a "History of the Trojan War." A "Periplus," "Persics," "Macedonics," "Thracics," and "Metamorphoses," are also ascribed to a writer of his name. His "Apophthegms" are also mentioned; among which was a saying formerly famous in the schools—"that human life is governed by fortune, not by wisdom." Arrian, ubi supra. Plutarch in Alex. apud oper. t. i. p. 695, &c. Quintus Curtius. Justin. Voss. Hist. Græc. Fabr. Bib. Græc. Gen. Biog.

CALLISTIA, Καλλιστία, in *Antiquity*, a Lesbian festival, wherein the women presented themselves in Juno's temple, and the prize was assigned to the fairest.

The word is formed from κάλλος, *beauty*, q. d. beauty's rewards. The like contest of beauty was held at the festival of Ceres Eleusinia, among the Parrhasians, first set on foot by Cypselus, whose wife Herodice was honoured with the first prize. Another obtained among the Elians, where the contest was among the men, the most beautiful of whom was presented with a suit of armour, which he consecrated to Minerva, to whose temple he walked in procession, adorned with ribbons, and crowned with a myrtle garland. Pott. Arch. Græc. lib. ii. cap. 20.

CALLISTRATIA, in *Ancient Geography*, a town of Asia in Galatia, according to Ptolemy; but it rather belonged to Paphlagonia. It was situated on the coast of the Euxine sea, S. E. of the promontory of Cerambis, and S. of that of Zephyrium.

CALLISTRATUS, in *Biography*, an Athenian orator who flourished about the year B. C. 340. After having acquired great reputation and authority in the government of his country, he shared the fate of others of a similar description, and was banished. He is probably the same person that is mentioned by Demosthenes (Orat. adv. Polyclem,) who was banished to Methone in Melopotamia, and whom the Athenians had twice condemned to death. The success of his pleading in a public cause of importance, which Demosthenes attended in his youth, and the glory acquired by it, induced this young disciple of Plato to abandon the study of philosophy, and to devote himself entirely to that of oratory. Callistratus is said to have manifested great abhorrence when, under a sentence of exile, some person expressed a wish, that the Athenians might soon be obliged to restore the exiles. Similar to this was the conduct of Rutilius, who retorted against one who proposed to comfort him by representing to him, that a war would soon break out, which would occasion all the exiles to return; "What have I done to thee, that thou shouldst wish me a return worse than my banishment? I chuse rather that my country should blush at my banishment, than mourn at my return." Plut. in Demosthen. apud opera, t. i. p. 847. Seneca de Benef. l. vi. c. 37. Gen. Dict.

CALLISTUS, JOHANNES ANDRONICUS, a learned Greek philosopher, was a native of Thessalonica, and settled at Constantinople, where he was a professor of the Peripatetic philosophy, and acquired a high reputation for learning. Upon the capture of this city in 1453, he fled with many others into Italy, and fixing his first residence at Rome, taught the Greek language and read lectures upon Aristotle's philosophy. From hence, for want of due encouragement, he removed to Florence, where he had a vast concourse of disciples. After spending several years in Italy, he closed his life in France. Callistus was one of those learned Greeks to whom we are indebted for the introduction of learning

into the west. Some Greek MSS. bearing his name are still extant; and particularly one in the royal library at Paris, entitled, "A Monody upon the Miseries of Constantinople." Some philosophical and moral pieces in MS. are also ascribed to him. Biog. Dict.

CALLITRICHE in *Botany* (from κάλλος and τριχίς, fine hair, but there does not appear any peculiar propriety in the appellation). Linn. Sp. Pl. Class and order, *monandria digynia*. Nat. ord. *Holoracea*, Linn. *Naiades*, Juss. *Incertæ sedis*, Vent.

Gen. Ch. *Cal.* none. *Cor.* petals two, incurved, acuminate, channelled, opposite. *Stam.* filament one, long, recurved; anther simple. *Pist.* germ roundish; styles two, capillary, recurved; stigmas acute. *Peric.* capsule roundish, quadrangular, compressed, four-seeded. Lam. Juss. *Peric.* none; unless the proper tunic of the seeds be so called. *Seeds* four, naked, semi-elliptical, lenticularly compressed, furnished on the outer side with a broadish membranaceous margin, disposed in a kind of compressed cross so as to appear in pairs, of a pale bay colour. Gært. Dr. Smith.

Ess. Ch. *Calyx* none. *Petals* two. *Stigmas* acute. *Seeds* four, compressed, with a winged margin on one side.

Obs. The corolla of *Linnæus* and the English authors is considered by La Marek, Jussieu, &c. as a two-leaved calyx.

Species, *C. aquatica*, Hudf. 439. Smith Flor. Brit. v. i. p. 8. Eng. Bot. Pl. 722. Lam. Il. pl. 5. (*C. verna* and *autumnalis*, Linn. *Stellaria*, Raf. Syn. 289. *Alfine*, Germ. 614. *Lenticula*, Loes. Pruff. 140. tab. 38.) Water-starwort, or star-headed water-chickweed. Annual. *Roots* fibrous, simple. *Stems* slender, branched, leafy, smooth; floating by means of its thickset broad upper leaves, till the impregnation is accomplished; then each flower sinks, by the elongation of the top of the stem, where new ones are produced, and finally the whole herb subsides to the bottom, takes root there, ripens, and sows its seeds. The young plants soon rise to the surface, and appear to be nourished from the water by simple slender roots from each joint of the stem, which do not reach the ground till the plant subsides. The earlier leaves are opposite, spatula-shaped, entire, three-nerved; but those produced in autumn, after the herb sinks, are linear, single-nerved, and emarginate, which occasioned the distinction of this species into two. *Flowers* axillary, solitary, sessile, small, whitish. Dr. Smith. If the class *Polygamia* were preserved, as established by Linnæus, this plant would indisputably belong to it, some of its flowers being hermaphrodite, others with only stamens, and others with only pistils. Linnæus states the flowers of his *autumnalis* to be all hermaphrodite, but, according to Dr. Smith, the plant does not flower in that state. Dillenius seems to have been the first that doubted whether there were more than one species. See his edition of Ray's Synopsis. Very common in England, and the greater part of Europe, in ditches and standing waters.

CALLITRICHE, in *Zoology*, the name under which the green ape of the English writers (*Simia sabaa* of Schreber *Sacuzhi*) is described by Buffon.

CALLITRICHUM, in *Botany* (J. Bauh. Morif. Ray. See *MELISSA pyrenica*).

CALLITRICHUS, in *Zoology*, synonymous with *CALLITRICHE*, a sort of monkey of a yellowish green colour with black flattish face, called by Pennant the green monkey. This is the animal named *simia sabaa* by Schreber. See *Simia sabaa*.

CALLITRIX, in *Zoology*, *Simia callitrix* magnitudine *magnorum cynocephalorum*, Alpin. Aeg. See *SIMIA SILENUS*.

CALLIXENE, in *Botany*. (La Mæck, Juss.) See **ENARGEA**.

CALLIXTUS, or **CALLISTUS**, I., pope, in *Biography*, succeeded Zephyrinus in the year 219. Some have said that he built a church to the memory of the Virgin Mary, which is now known by the name of Santa Maria in Transtevere, or St. Mary beyond the Tiber: but it is more certain that he inclosed a large piece of ground in the Appian way as a burying place for the Christians. The story of his martyrdom, with its attendant circumstances of cruelty, is not very probable, as Alexander Severus was tolerant and favourable to the Christians. He died in 223. Bower's Hist. of the Popes, vol. i.

CALLIXTUS II., pope, was Guy of Burgundy, the son of William the Great, count of Burgundy, and nearly related to the emperor Henry. Before his election to the papacy he was archbishop of Vienne; and on the death of Gelasius at Clugni, in 1119, he was unanimously chosen to succeed him by all the cardinals, except those who were of the emperor's party, who adhered to the anti-pope Maurice Burdin, or Gregory VIII. This was a happy choice both for the church and state. Soon after his election, Callixtus held a council at Rheims, in which the emperor, who refused to renounce the right of investiture, was solemnly excommunicated. From Rheims the pope repaired to Gisors in Normandy, in order, by means of an interview with Henry, king of England, to mediate a reconciliation between him and Louis king of France; but his conciliatory efforts were ineffectual.

From Normandy he passed over into Italy, and having obtained some forces from the Norman princes in Apulia, he besieged his rival Burdin, who had retired to Sutri, took him prisoner, and thus terminated the schism. Earnestly desirous of peace with the emperor, he sent legates into Germany, and a peace was concluded at a general diet held at Worms, in 1122. The emperor was allowed the right of receiving an oath of allegiance from bishops and abbots elect, and of conferring on them the regalia, for which they were to do him homage; whilst he consented to surrender the ceremony of investiture by the ring and crosier, which was regarded as an emblem of the conveyance of spiritual authority. The articles of agreement, settled by the pope and emperor, were approved by the general council held at Lateran in the following year, and remain still in force. After a pontificate of nearly six years, this pope died in 1124, and left a great character for moderation and liberality, and a strict observance of the canons. Thirty-six letters of this pope are preserved; and other works in MS. on the miracles of saints, &c. are attributed to him. Bower, vol. vi. Mosheim, Eccl. Hist. vol. iii.

CALLIXTUS III., pope, was advanced to the pontifical chair in 1455, at the age of 76 years. His name was Alphonso Borgia; he was descended of an ancient family, and born at Xativa, in Spain. Before his election he was secretary to Alphonso king of Arragon, and employed in terminating the schism occasioned by the anti-pope Clement VIII.; and for this service he was preferred by pope Martin to the see of Valencia. Immediately after his elevation to the papacy, he exerted himself in restraining the progress of the Turks under sultan Mahomet II., who had taken Constantinople, and threatened all Christendom. For this purpose he fitted out a small fleet, which retook some of the islands of the Archipelago; and by means of a crusade, which he caused to be preached throughout Europe, he raised a considerable army, which was committed to the conduct of the famous Hunniades. Notwithstanding a victory obtained at Belgrade in 1456, which obliged Mahomet

to raise the siege of that city, and the remembrance of which the pope immortalized by ordering the festival of the "Transfiguration of Christ" to be religiously observed throughout all the western world, the Turkish army proceeded in its conquests. The pope's attention was soon occupied by other concerns. Having ambitious designs in favour of his nephew, whom he had created duke of Spoleto, he quarrelled with his former patron the king of Arragon, and refused to grant to his natural son Ferdinand the investiture of the kingdom of Naples. On the decease of Alphonso, he declared openly against Ferdinand, and would have kindled a civil war in the kingdom, if his death, which happened in 1458, had not prevented it. Callixtus is represented by contemporary writers as a man of abilities, of great address and experience, and one of the best canonists of his time: but like other popes, he was betrayed into improper conduct by nepotism. His only literary remains are some epistles and bulls. Bower, vol. vii. Mosheim, vol. iii.

CALLO, in *Geography*, a plain in the jurisdiction of Quito, South America, so called from a palace of the Yncas, which bears this appellation, and the ruins of which are still seen at the extremity of the plain running northward from Latacunga. See **QUITO**.

CALLO port, lies on the coast of Chili, in the south Pacific Ocean, four leagues N. from Solango island. S. lat. 1° 10'. W. long. 80° 9'.

CALLONIANA, in *Ancient Geography*, a town of Sicily, according to the Itinerary of Antonine, thought to be the same with the Caulonia of Steph. Byz.

CALLONITIS, in *Geography*, a country of Asia, in Assyria, on the confines of Media, near mount Zagrus.

CALLOO, a fortress of the Netherlands, on the Scheldt, where the Dutch were defeated by the Spaniards in 1638; five miles W. of Antwerp. N. lat. 51° 15'. E. long. 4° 10'.

CALLOSA, in *Entomology, a species of **APIS** of a shining black-blue colour, with a white lip, and callous dot of the same on each side of the thorax, before the wings. This is an insect of small size, and inhabits Italy. Fabricius.*

CALLOSITY, in *Surgery*. See **CALLUS**.

CALLOSUM corpus, in *Anatomy*, denotes a whitish, hard substance, joining the two hemispheres of the brain, and appearing when the two hemispheres are drawn back. See **BRAIN**.

CALLOT, JAMES, in *Biography*, a celebrated draughtsman and engraver, was descended from a noble family, and born at Nancy in Lorraine, in 1593. His passion for the arts was so strong, and discovered itself at so early a period of his life, that at the age of 12 years, he secretly left his father's house, and determined to seek improvement in Italy. But being destitute of money, he joined a company of Bohemians (or of strolling gypsies), with whom he travelled as far as Florence. Here he was taken notice of by an officer of the grand duke, and placed for instruction under Remigio Santa Gallina, who was both a painter and engraver. When he left Gallina, he pursued his journey to Rome; but meeting with some merchants from Nancy, who knew him, they took him back to his family. Soon after he made a second elopement, and from Turin he was brought home by his brother. At length, his father finding that his inclination for the arts was invincible, acquiesced in his indulgence of it, and sent him to Rome; where he assiduously applied to drawing, under Giulio Parigi. Being desirous of acquiring a facility in handling the graver, he put himself under the instruction of Philip Thomassin, and having made considerable improvement, he afterwards went to Flo-

rence, where he was employed, and particularly encouraged by the great duke Cosmo II. At this city he first began to etch, and he executed several small subjects with great success. Upon the death of the duke, for whom he performed many curious works, he returned to Nancy, married, and became a great favourite with the duke of Lorraine, who granted him a pension. In this interval of his life, he designed and engraved the siege of Breda; and at Paris he engraved for Louis XIII. the sieges of Rochelle and of the island of Rhé and several others. On occasion of the troubles of Lorraine, which terminated with the siege and capture of Nancy, he determined to return with his wife to Florence; but death prevented the execution of his purpose, March 28, 1635. After the reduction of Nancy in 1631, he was desired by Louis XIII. to draw and engrave the siege of that place; but this business he declined, alleging that he did not think it consistent with the respect which he entertained for his prince, and the love which he bore to his country, to represent any thing that should appear to their disgrace. When a courtesan insisted on his gratifying the king's wishes, and enforced the requisition with a menace, that he should be compelled to obey, he boldly replied, "I will sooner disable my right hand, than be contrained to do any thing contrary to my honour." The king was pleased with this magnanimous reply, and offered him a pension of 3000 livres if he would attach himself to his service. Callot gratefully refused the offer, preferring the love of his country to the amassing of a fortune.

This artist engraved in several styles; the first of which was an imitation of his master Santa Gallia. He afterwards worked altogether with the graver; but without success. His next style was the mixture of the point and the graver, with coarse broad hatchings in the shadows. But his best manner is that, which appears to have been executed with the greatest freedom, by which he has expressed, as we may say, with a single stroke, variety of character, and correctness of design. He is said to have been the first who used hard varnish in etching, which has been found much superior to that which was before adopted. The fertility of invention, and the vast variety, found in the works of this excellent artist, are astonishing. It could hardly have been supposed possible to combine so great a number of figures together as he has done, and to vary the attitudes, without forced contrast, so that all of them, whether single figures or groups, may be easily distinguished from each other, even in the masses of shadow; more especially when it is considered that they are often exceedingly minute. On a cursory view of some of his most admired pieces, the whole appears confused and without harmony; but a careful examination discovers the richness, the beauty, the taste, and the judgment which are bestowed on the disposition of the figures, the management of the groups, and the variety and propriety of the attitude. The works of this master are very numerous and various. In representation of all the varieties of human life, from beggars and peasants to knights and nobles, he excelled; characterizing all with the nicest touches of nature. Of his subjects many are of the most painful and shocking kind, such as public executions, the miseries of war, and the like; many are grotesque and fanciful, and exhibit a strong imagination.

The number of Callot's works is said to amount to 1500 prints. His etchings are most esteemed, and collections of them are deemed very valuable. Strutt enumerates the following prints; viz. "The Murder of the Innocents," of which that engraved at Florence is the most rare; a fine impression of it being found with difficulty:—"The Marriage

of Cana in Galilee," from Paul Veronese;—"The Passion of Christ," the first impressions of which are very scarce;—"St. John in the Island of Palma;"—"The Temptation of St. Anthony;"—"The Punishments," exhibiting the execution of several criminals; and—"The Miseries of War;"—"The great Fair of Florence;"—"The little Fair," otherwise called "The Players at Benti," one of the scarcest of Callot's prints;—"The Tilting, or the New Street at Nancy;"—"The Garden of Nancy;"—"View of the Pont Neuf;"—"View of the Louvre;" and "Four Landscapes." Callot was very regular in his mode of living, and exact in his religious observances. Felibien. Strutt.

CALLOUS, in *Surgery*, denotes indurated or hardened. See **CALLUS**.

CALLOUS eggs, *ova callosa*, the longer and better sort, supposed to contain male chicks; having a denser white, and richer flavour than the rest. See **EGG**.

CALLULO, in *Geography*, a town of Asiatic Turkey in the province of Diarbekir; 60 miles N.W. of Rabba.

CALLUNBORG, or **KALLUNBORG**, a town of Denmark; 60 miles W. of Copenhagen.

CALLUS, in *Surgery*, is a preternatural hardness or induration of any fleshy part of the body; and not unfrequently, this term is applied to the substance by which fractured bones are spontaneously united to each other. In this latter sense, we say "the *callus* has not formed;" *i. e.* the bony union is incomplete: "The *callus* is exuberant;" *i. e.* the ossific matter is very abundant.

A callosity, or preternatural hardness of the skin takes place either from external friction (as in the formation of **CORNS**), or from an internal cause, which probably consists in a morbid action of the exhalent arteries. In the hard and thickened state of the skin which constitutes the disease named a **CORN** (which see), there is found to be an accumulation of dry cuticular substance, in numerous layers, somewhat resembling an onion. The lamina of horny cuticle which forms on the hands and feet of hard-working people, is entirely devoid of sensation, and may therefore be scraped or cut with impunity.

Mr. Leewenhoek examining the callus formed on the hands and feet, observed that it was a substance composed of several layers of particles so loosely connected, that it was a wonder they could hang together; on putting a piece of this into fair water, after it had stood a considerable time to steep, he found that the particles of which it was composed, would easily separate from one another with a little touch of a quill, and these separated particles put into a drop of water, and examined before the microscope, were found to be all of the same regular shape, which was like that of a weaver's shuttle, being broad in the middle, and pointed at each end, with a line in the middle like those upon the uppermost, or outside skins of fruits, or of our bodies, but generally irregular. These pieces were thick in proportion to their size; and when they are put into water and separated again, they naturally form a great number of other particles, all of which are of the same regular figure with the original piece. Phil. Transf. N^o 373 p. 160.

By this we see the reason of the increase of thickness of the skin of the hands of those who labour hard, and of the feet of such people as walk much, when it is wholly owing to the addition of a vast number of these shuttle-like particles, which form combinations together; but these so loosely, that it is no wonder they are so easily separated on moistening.

The way to avoid such callosities of the skin is to wash and

and scrape the cuticle very frequently; and there can be no doubt that even corns might be generally prevented, if persons would always use easy shoes from their infancy. Women, we find, are chiefly troubled with such painful callosities of their feet, from wearing tight shoes, and allowing their toes to press one upon another.

Surgeons apply the term *callous*, adjectively, to the edges of old ulcers, when they are become thickened and insensible. This kind of induration is unfavourable to a cure, and should be removed by the knife or caustic, if it cannot be softened by emollient poultices, &c. See *ULCER*.

CALLUS, when spoken of bone, is in reality nothing more than the new ossific substance formed by a process of nature very similar to the growth of any other part of the body; but the ancients had an idea of boney callus being formed by the effusion and gradual consolidation of a glutinous matter, like the white of an egg; and they supposed that all fractured bones were soldered, as it were, by the intervention of this jelly, as two boards are glued together by a carpenter. See *OSSIFICATION*.

It is not always in the power of surgeons to restrain or command the growth of callus; for sometimes a broken bone, for want of due action in its vessels, will remain several months disunited; and, at other times, the callus becomes so exuberant as to cause an unsightly enlargement of the bone, around the broken extremities. One of the most effectual modes of restraining the growth of callus, is to keep a considerable degree of pressure over the part by means of a bandage; which, by diminishing the diameters of the blood-vessels, will lessen their action. See *FRACTURE*.

To facilitate the growth of callus on the union of broken bones, the patient should take strengthening remedies, and be put on a generous diet; and if this does not produce the intended effect, the broken extremities of the bones may be rubbed together, or friction may be kept up externally, so as to cause a moderate degree of inflammation. Several surgeons, on finding that a fractured bone would not unite, have made an incision down to the bone, and sawn off a portion of it, or rasped it with a rough file, in order to excite the vessels to action; in some of these cases the ossific process has been revived, and a union has taken place, but generally this experiment has failed, as the growth of bone is more slow and difficult to produce than the regeneration of soft parts, on account of their difference in structure.

CALLYCHTHIS. See *CALICTHYS*.

CALLYDIUM, in *Ancient Geography*, a strong castle of Asia Minor, seated on one of the summits of Mount Olympus in Phrygia.

CALLYONIMUS, in *Botany*. (Gef. Hor.) See *CONVALLARIA majalis*.

CALLYSIND, in *Geography*, a river of Hindoostan, which runs into the Chumbul, in the circar of Kotta.

CALM, in *Sea Language*, that state of the air and water when there is no wind stirring. A calm is more terrible to a sea-faring man than a storm, if he has a strong ship and sea-room enough, for under the line excessive heat sometimes produces such dead calms, that ships are obliged to stay two or three months without being able to stir one way or other. Two opposite winds will sometimes make a calm. This is frequently observed in the gulf of Mexico, at no great distance from the shore, where some gulf or land wind will so poise the general easterly wind, as to produce a perfect calm.

Calms are never so great in the ocean as in the Mediterranean, by reason the flux and reflux of the former keep the water in a continual agitation, even where there is no wind; whereas there being no tides in the latter, the calm

is sometimes so dead, that the face of the water is as clear as a looking-glass; but such calms are almost constant preages of an approaching storm. On the coasts about Smyrna, a long calm is reputed a prognostic of an earthquake.

When a ship is close under the lee of another, the windward vessel is said to *becalm* the leeward.—A ship is also said to be *be-calmed* when near the land, which keeps the wind from it.

It is not uncommon for the vessels to be calmed or be-calmed, as the sailors express it, in the road of the constant Levantine winds, in places where they ride near the land. Thus between the two capes of Cartooche toward the main, and cape Antonio in Cuba, the sea is narrow, and there is often a calm produced by some gulf of a land wind, that poises the Levantine wind, and renders the whole perfectly still for two or three days.

In this case the current that runs here is of use to the vessels, if it sets right; when it sets easterly, a ship will have a passage in three or four days to the Havannah; but if otherwise, it is often a fortnight or three weeks sail; the ship being embayed in the gulf of Mexico.

When the weather is perfectly calm, no wind at all stirring, the sailors try which way the current sets by means of a boat which they send out, and which will ride at anchor, though there is no bottom to be found, as regularly and well as if fastened by the strongest anchor to the bottom. The method is this: they row the boat to a little distance from the ship, and then throw over their plummet, which is about forty pounds weight; they let this sink to about two hundred fathom; and then, though it never reaches the bottom, the boat will turn head against the current, and ride as firmly as can be.

CALM Latitudes, are situated in the Atlantic ocean, between the tropic of Cancer, and the latitude of 29° N., or they denote the space that lies between the trade and variable winds, because it is frequently subject to calms of long duration.

CALM Point, in *Geography*, lies on the N.W. coast of North America, within Britel bay, on the north side.

CALMAR, a sea-port town of Sweden, in the province of Smaland or Smoland, near the Baltic Sea, separated from the isle of Oeland by a strait, about seven miles broad in the narrowest part, and strongly fortified by walls, ditches, a castle, and redoubts. It is about a mile in circumference, and contains 450 houses. The streets cross each other at right angles. The inhabitants carry on a small trade, exporting chiefly planks, alum, and hemp, and possess, besides small craft, about 70 vessels, from 100 to 300 tons burthen. Near the town is the castle, standing on an eminence, and the only remains of its ancient magnificence. The building has been constructed at different intervals, and exhibits a motley mixture of Gothic and Grecian architecture. Over one of the doors is an inscription, John III. 1568. But part of the mansion must be much older, as the apartment in which the deputies of the three kingdoms, Sweden, Denmark, and Norway, used to assemble for the election of their common sovereign still subsists: it is 94 feet long and 30 broad. This palace, once the residence of the celebrated Margaret, and remarkable in the history of this country, is converted into a distillery. Calmar is celebrated for the union, which took place in it, in 1397, and which stipulated, that the same monarch should rule over Denmark, Sweden, and Norway, and be chosen by the deputies from the states of the three kingdoms assembled at Calmar. During the whole period in which these regulations subsisted, Sweden was a tributary kingdom to the sovereigns of Den-

mark; the union was upheld by the vigor and abilities of Margaret; but under her weak and unwelcome successors, it entailed on Sweden all the horrors of foreign invasion and intestine discord. From this state of alternate oppression and anarchy, it was rescued by the valour and prudence of Gustavus Vasa, on whom the gratitude of the Swedes conferred the dominion of the country which he had delivered: they renounced, in his favour, the right of electing their kings, and declared the crown hereditary in his male issue, A.D. 1516. See SWEDEN. N. lat. $56^{\circ} 40' 30''$. E. long. $16^{\circ} 21' 45''$.

CALMET, DON AUGUSTIN, in *Biography*, a celebrated commentator on the Bible, was born near Commerci, in Lorraine, in 1672, and became a Benedictine of the congregation of St. Vanne, in 1688. Having passed through the usual course of philosophy and theology, he was employed in teaching them to the younger part of the community, till in 1704 he settled as sub-prior in the abbey of Munster, in Alsace, where he presided over an academy of 8 or 10 monks devoted to the study of the Scriptures. There he composed his commentaries on the Scriptures, published in French from 1707 to 1716. In 1718 he was appointed to the abbacy of St. Leopold in Nancy; and in 1728 he was elected abbot of Senones. The title of a bishop *in partibus* was offered him, but he declined accepting it. After a course of literary labour, in which he displayed great erudition and industry, though not always equal taste and judgment, he died, highly esteemed, in 1757. His principal works are, "A Literal Commentary on all the Books of the Old and New Testament," 23 vols. 4to. reprinted in 26 vols. 4to. and 9 vols. folio; and abridged by Rondet, in 14 vols. 4to. "The Dissertations and Prefaces of these Commentaries, printed separately, with 19 new Dissertations," 3 vols. 4to.; "The History of the Old and New Testament," 2 vols. 4to.; reprinted in 4 vols. 4to., and 7 vols. 12mo.; "Historical, critical, and chronological History of the Bible, with Figures," 4 vols. folio; in which the matter of the commentaries is reduced to alphabetical order, in the form, and under the title of a dictionary, published in 1730, in 4 vols. folio. Although the author's commentaries did not escape censure, and were treated by father Simon with a considerable degree of asperity and contempt, yet, being distinguished by moderation and exemption from polemical disputes, they were perused by Protestants as well as Roman Catholics; the work became very popular; and within a few years after its publication, there were several editions of it in French, Latin, Dutch, Italian, Spanish, English, and other languages; and it is still considered as a standard work. It has been much and deservedly valued on account of many excellent elucidations which it contains of difficult passages in the Holy Scriptures, beautiful delineations of Oriental manners, and lively, entertaining histories extracted from authors little known even among the learned. A new and valuable edition of it with considerable retrenchments and additions, and a new set of plates, under the direction of Mr. C. Taylor, appeared in London in 1797, &c. The additions form a separate volume under the title of "Fragments," with a great variety of appropriate and well executed engravings. Other works of Calmet are "Ecclesiastical and civil History of Lorraine," 3 vols. folio; reprinted in 5 vols.; "Catalogue of Writers of Lorraine, folio; "Universal History, sacred and profane," 15 vols. 4to.; "Dissertations on the Apparitions of Angels, Demons, and Spirits, and on the Vampires and Ghosts of Hungary," a small collection of reveries; and "Literal, Historical, and Moral Commentary on the Rule of St. Benedict," 2 vols. 4to. containing much curious in-

formation on ancient customs. Calmet deserves notice also as a writer on Hebrew music in his commentary on the psalms; as a small volume, intitled "Trésor d'Antiquitez," compiled from his sacred writings, not only concerning the music of the Hebrews, but ancient music in general, with representations of musical instruments, was published at Amsterdam, in 1722.

Ancient music, in general, is almost become an unprofitable and hopeless study; but that of the Hebrews, the most ancient of all, is now included within the confines of conjecture; and Don Calmet's conjectures are perhaps, as probable as those of any one of the numerous authors who have written on the psalms, and exercised their sagacity and ingenuity in expounding and defining what some have long since thought involved in impenetrable darkness. However, Kircher, Merfennus, and Don Calmet, have thought otherwise; but whether they have taught their readers to see in the dark, as some animals are supposed to do, we are unable to say.

CALMENDA, in *Geography*, a town of Portugal, not far from Braga.

CALMINA. See CALAMO.

CALMINERA. CAPE, lies on the coast of Coromandel, in N. lat. $10^{\circ} 15'$. E. long. $79^{\circ} 40'$. a few leagues S. of Negapatnam.

CALMINT, a town of France, in the department of the Upper Garonne; 7 leagues S.S.E. from Toulouse.—Also, a town of France, in the department of the Aveyron, $2\frac{1}{2}$ leagues S. of Rhodéz.

CALMUCS. See KALMUCS.

CALN, EAST and WEST, two townships of Chester county, Pennsylvania, in North America.

CALNE, a market and borough town of Wiltshire, in England, is situated on the banks of the Marlen river. This ancient borough was endowed with peculiar privileges, previous to the Roman conquest, and according to the domesday-book it never yielded or paid taxes, "so that it is not known how many hides are therein." The kings of the West Saxons had a palace here; and from the names of Castle street and Castle-field, it is generally imagined that a castle reared its massive walls in the neighbourhood of the town. Here was also an hospital of black canons, dedicated to St. John, and valued, at the dissolution, at 2l. 2s. 8d. per annum. Calne is an ancient borough by prescription, and sends two members to parliament, who are elected by fifteen voters; the first return was made in the reign of Edward I. The corporation consists of two guild stewards, who are chosen annually, and an unlimited number of burgesses. Previous to February 25, 1723, the privilege of election was vested in all the inhabitants having right of common; but it was then determined, that the power of choosing members resided with the ancient burgesses only; and that the right of returning members was in the guild stewards. The manor, prebend, and parsonage of Calne, are held by leases for several lives, from the dean, chapter, and treasurer of Sarum. In the reign of Edward the martyr, a great synod or convocation was held here, at the instigation of Dunstan, archbishop of Canterbury, to determine the controversy between the monks and secular priests, which had commenced in the synods at Winchester, and Catleage, in Cambridgeshire. From the importance of the question, the principal nobility, as well as the bishops and seculars, attended. During the debate, while bishop Beornhelm was pleading for the priests, the timbers of the assembly room gave way, and the structure fell to the ground; most of the seculars were buried beneath the ruins; but

but the seat of Dunstan, president of the synod, and chief advocate for the monks, alone stood firm. This circumstance, in that age of superstition, was construed into an interposition of Heaven in their favour; but subsequent writers have assigned a more natural reason, and have not hesitated to assert, that Dunstan had caused the beams to be sawn asunder, taking care that his own seat should remain fixed. This account seems, from the sanguinary disposition of Dunstan, to be most probable. Calne has, of late years, greatly increased in size and population; it contains 781 houses, and 3767 inhabitants, most of whom are employed in the manufacture of broad-cloth, serges, and other articles of the cloathing business. Here are three meeting-houses for Presbyterians, Anabaptists, and Quakers. The church is a large structure, dedicated to St. Mark, with a handsome square tower at the north-east end. The town is plentifully supplied with water from two streams, one issuing from the foot of the hills near the village of Calston, the other from Cherill; these rivulets unite, and run through the centre of the town, giving motion to many fulling and grist-mills. A free-school was founded here by John Bentley, esq. of Richmond in Surrey; who, by his will, dated September 29, 1660, gave certain lands, called Frickett's Fields, adjoining to Lincoln's Inn, then worth about 500*l.* for its erection and maintenance for ever. By the donations of sir Francis Bridgman, knt. certain exhibitions are established at Queen's College, Oxford, for the benefit of boys born in the county of Wilts, and educated in this free-school. "The master to keep a regular grammar school, and teach seven boys the Latin and Greek tongues, and otherwise qualify them for the University."

About three miles east of Calne, on the side of the London road, is a monument, which attracts not only the notice of all travellers on this road, but also the observation of people over the north part of Wilts, and many parts of the adjoining counties. This is the figure of a large WHITE HORSE, that was formed by paring off the turf from the side of the chalk-hill; the horse is represented in a trotting position, and executed with a pretty correct outline; it was cut at the expence of Dr. Allsup, of Calne, about twenty-five years ago, and measures from the head to the tail about 157 feet.

About two miles west of the town is Bowood, the seat of the marquis of Lansdown. The house is a large, commodious, but irregular structure, and contains some fine pictures, among which is a valuable collection of portraits of eminent characters. The park and pleasure grounds are extensive, and diversified with much beautiful scenery. A distinguished feature, and ornament of these grounds, is a large lake, which winding beneath some fine hanging woods, constitutes an interesting object; at the head of this lake is a singularly picturesque cascade, which, though wholly artificial, is justly admired for its approximation to the irregularities of nature.

CALNEH, in *Scripture Geography*, a city in the land of Shinaar, built by Nimrod, and at one time the seat of his empire (Gen. x. 10.); supposed to be the Chalno or Calno of Isaiah, (ch. x. 9.) and the Channeh or Canneh of Ezekiel, (ch. xxvii. 23.) These prophets join it with Haran, Eden, Assyria, and Chilmad, which traded with Tyre; and hence it is inferred, that it must have been situated in Mesopotamia. It is said by the Chaldee interpreters, and also by Eusebius and Jerom, to be the same with Ctesiphon, which was seated on the Tigris, about three miles distant from Seleucia, and for some time the capital of the Parthians. This opinion is confirmed by the name Chalonitis, evidently derived from Chalne or Chalno, which was given

by the Greeks to the country about Ctesiphon. Wells's Geog. of the Old Testament, vol. i. p. 229.

CALOBRA, in *Geography*, the most considerable harbour in the island of Majorca, both for its secure entrance, and the fine country that surrounds it; as well as for the springs of fresh water that are near it.

CALODENDRUM, in *Botany*, (*καλος*, *beautiful*, *δένδρον*, *a tree*.) Schreb. gen. 384. Thu. b. gen. 41. Willd. 437. Juss. 427. Class and order, *pentandria monogynia*. Nat. ord. *incerta sedis*. Juss.

Gen. Ch. *Cal.* perianth one-leaved, permanent, five-parted; segments egg-shaped, acute, beset with strong hairs on the outside; the edges slightly revolute. *Cor.* petals five, lanceolate, obtuse, spreading, channelled, keeled, waved, pubescent, three times the length of the calyx: nectaries five, fixed to the receptacle within the petals, and shaped like them, linear-lanceolate, awl-shaped at the tip, terminated by a gland, smooth, silvery-glandular, narrower than the petals, but of the same length. *Stam.* filaments five, equal, the length of the corolla, one of them generally barren: anthers egg-heart-shaped, furrowed, fixed longitudinally to the filaments. *Pist.* germ pedicelled, capitate, beset with sharp points, superior: style fixed to one side of the germ, thread-shaped, the length of the stamens; stigma simple obtuse. *Peric.* capsule peduncled, egg-shaped, bluntly five-angled, beset with strong points, five-furrowed, five-celled, five-valved. *Seeds* in pairs, somewhat triangular, convex on the back, smooth.

Eff. Ch. *Calyx* five-parted. Petals five. Nectaries five. Capsule five-celled, five-angled.

The corolla, nectary, and stamens, all vary in the number of their parts, which are sometimes four, generally five, and very rarely six; so that in fact the capsule alone forms the essential character.

Sp. C. *capense*, Thunb. Diff. p. 43. La Marek in Journ. Hist. Nat. pl. 3. (*Dictamnus capensis*, Linn. Supp. Vahl. Symb. 3. p. 58.) A tree. Branches opposite, or three together. Leaves opposite, petioled, egg-shaped, entire, evergreen. Flowers in terminal panicles, on opposite, one-flowered peduncles. A native of the Cape of Good Hope. La Marek, in the Journal d'Histoire Naturelle, has noticed its near affinity to dictamnus, under which genus the younger Linnæus and Vahl have placed it.

CALOGERI, *Καλογεροι*, or CALOYERS, monks, or religious, in Greece, both male and female; inhabiting particularly mount Athos, but disseminated also throughout all the churches of the East. They follow the rule of St. Basil, and make vows like the western religious. Tournefort says, the females are most of them only a more moderate sort of Magdalens, who, as they grow old, make a vow to practise those virtues they had much neglected in their youth; and retire into convents to lead a life somewhat less scandalous than before, under the eyes of a superior or *hegumenissa*, who is far from being too severe.

Amongst these monks, whatever their name imports, it is not uncommon, says Sonnini, (Travels in Greece, p. 228.) to meet with young boys, from 10 to 12 years old, clothed in their habit, which consists of a plain, long, black, gown, confined by a girdle. These friars, he says, are very dirty, and very ugly, from the habit which they contract of neglecting their exterior, and of taking care neither of their beard nor hair. Their character, he adds, is formed of hypocrisy, haughty and gross ignorance, meanness and treachery; though they wish to be reckoned to possess great knowledge, and a reputation for sanctity, in order to secure from the people attention and respect. Their vows are obedience, chastity, and abstinence. The first and last of these

tows are observed with sufficient exactness; but the second is more generally disregarded; and some of them are accused of a degree of brutality, in the infringement of laws which nature, more powerful than all the institutions of convents, disallows. The Caloyers, in some places, are divided into Cœnobites, Anachorites, and Ascetics, or hermits; the life of which last is the most severe and reclusive.

The Turks also use the word Caloyers for their dervises, or religious musfulmen. See Dervis.

CALOGERIZA, in *Geography*, a town of European Turkey, in the province of Bulgaria; 64 miles E. of Sofia.

CALOGERO, *Str.* a town of Sicily, in the valley of Mazara; 24 miles E. of Mazara, and 2 N.E. of Sacca or Sciacca.—Also, a mountain of Sicily, one of the highest in the island, next to Ætua, on the summit of which is a residence of hermits.

CALOGURO, *Str.* a cape on the east coast of Sicily; 9 miles E. of Lentini.

CALOIERA, a small Greek island in the Archipelago; 5 leagues south of Andros.

CALOITIAM, in *Zoology*, a species of *TRICHODA* of a broadish oblong shape, with shining horns on the anterior part. *Mill. Hist. Verm.* This kind is found in water where-in vegetables have been infused. It is flat, obtuse at both ends, with a black spot and a few bristles near the posterior extremity.

CALOMEL, in *Pharmacy*. See MERCURY.

CALONE, in *Ancient Geography*, a place of Germany, on the route from Lugdunum Batavorum, to Argentoratum, between Gelduba and Vetera. Itin. Anton. Cellarius places it at Kalen-Hafen; but M. d'Anville refers it to a passage of the arm of the river Kelnct or Kendel. It was near the Rhine in Germanica Secunda, S.E. of Colonia Trajana.

CALONERY POINT, in *Geography*, a cape on the east coast of the island of St. Vincent; one mile S. of Young Point.

CALONI, a town of European Turkey, in the island of Metelin, in a gulph to which it gives name, in which are two Greek convents.

CALONNEA, in *Botany*. (Buchoz.) See GALARDIA.

CALONOSOS, in *Ancient Geography*, a mountain of Arabia, at the entrance of the Persian gulf. Arrian.

CALOO SAND, lies on the coast of Holland, between the Bodkil to the southward, and the east Gat channel to the northward.

CALOPHYLLUM, in *Botany*, (καλός beautiful; φύλλον, a leaf.) Linn. gen. 658. Schreb. 1587. Willd. 1026. Gært. 242. Juss. 258. Lam. Illustr. Pl. 459. (Calaba, Plum. gen. 18. La Marck, Encyc. vol. i. p. 552. Bosc. Nouv. Dict. vol. iv. p. 99.) Class and order, *polyandria monogynia*, Linn. *Polygamia monœcia*, Schreb. Nat. ord. *Guttifera*, Juss.

Gen. Ch. *Cal.* four, two or one-leaved; leaves roundish, concave, coloured, deciduous, sometimes wanting. *Cor.* petals four, roundish, concave, spreading. *Stam.* filaments numerous, thread-shaped, short; anthers oblong, erect. *Pist.* germ superior, roundish; style thread-shaped, the length of the stamens, or none. *Peric.* drupe globular, fleshy. *Seed*, nut globular, rather acuminate, large.

Ess. Ch. *Cor.* four-petalled. *Cal.* four-leaved, coloured. Drupe globular.

Sp. 1. *C. inophyllum*, Linn. Sp. Pl. Gært. Tab. 43. fig. 1. La Marck, Pl. 459. (Ponna or ponna-maoam, Rheed. mal. 4. Tab. 38. Rai. Hist. 1525. Bintangor maritima, Rumph. amb. 2. Tab. 71. Arbor indica, mali medicæ amplioribus foliis, Pluk. alm. 41. Tab. 147. fig. 3. Inophyl-

lum, Burm. Ley. 130. Tab. 60. *β. C. calaba*, Jacquin, Amer. 267. Tab. 165.) "Leaves inversely egg-shaped, obtuse; fruit spherical, yellowish." Lam. A large tree. *Trunk* thick, covered with a blackish, cracked, almost scaly bark, and supporting a vast umbrageous head. *Young branches* quadrangular. *Leaves* four or five inches long, and nearly three inches broad, opposite, obtuse, sometimes emarginate, entire, smooth on both sides, shining, coriaceous, on short petioles, and remarkable for the numerous, extremely fine, lateral, parallel nerves, which Burman fancied to resemble the fibres of a muscle dissected longitudinally, and thence called the tree inophyllum. *Flowers* white, fragrant, growing on the small branches in short, opposite, axillary racemes, or rather, if La Marck's figure be accurate, umbels; some with only stamens mixed with the others in the same raceme or umbel. *Fruit* very resinous or oily; kernel at first sweet, afterwards bitter. La Marck observes, that the calaba of Jacquin can scarcely be called a variety, differing only in being rather smaller in all its parts, and, as Jacquin suspected, having none of the peculiar characters of the next species, to which it has been erroneously united by Linnæus. When the bark is wounded, there exudes a viscous, yellowish fluid, which thickens and hardens in the air, and is the resin imported by the French from Madagascar, and the Isle de France, under the name of Tacamaque. It is also called green balsam, or balsam of the Virgin Mary, and is used as a vulnerary. According to Dutoir (Nouv. Dict.), that which is produced by the West Indian variety is of a deeper green colour. A native of the East and West Indies, and of the Society Isles, and New Caledonia. 2. *C. calaba*, Linn. Sp. Pl. (Tejerou-ponna, Rheed. Mal. 4. p. 81. Tab. 39. Rai. Hist. 1537.) "Leaves egg-shaped; fruit inversely egg-shaped, very red." *Leaves* only half as large as those of the preceding species, more finely veined, not inversely egg-shaped. *Fruit* a little elongated, resembling that of the cornus mas, or cornelian cherry. It is eaten by the natives, and an oil is expressed from the kernel, which serves for lamps. A native of the East Indies. 3. *C. acuminatum*, La Marck, Enc. (Bintangor sylvestris, Rumph. Amb. 2. p. 26. Tab. 72?) "Leaves oblong-egg-shaped, acute; fruit egg-shaped, acuminate." It differs from the two preceding in the shape of the fruit, and of its leaves, which are also less smooth, and less finely veined. A native of Java, and the Molucca Islands.

CALOPHYLLUM *foliis tripetalibus*, Brown, Jam. 245. See *GRIS cauliflora*.

CALOPHYLLUM *nagassarium*, Burm. ind. 121. See *MESUA ferrea*.

CALOPINACO, in *Geography*, a small river of Naples, in Farther Calabria.

CALOPUS, in *Entomology*, a genus of *COLEOPTERA*, having filiform antennæ; feet four, the anterior pair clavated, and those behind filiform; thorax gibbous; wing-cases linear.

This is one of the new Fabrician genera, including three species of the Linnæan cerambyces, ferraticornis, hispicornis, and pygmæus, which see respectively.

CALOR, in *Ancient Geography*, *Calore*, a river of Italy, in Samnium, which rose in the mountains of the Hirpini, passed Beneventum, and discharged itself into the Vultur-nus.—Also, a river of Italy, in the country of the Picennini, probably between Tanager and Silurus.

CALORIC, a name originally given by the authors of the new French Chemical Nomenclature, to that substance by whose influence the phenomena of heat are produced, and which had before been distinguished by the terms *igneous fluid*, *matter of heat*, and other analogous denominations.

There are perhaps few subjects respecting which a more remarkable versatility of general opinion has been evinced, than with regard to the existence or non-existence of this principle. Are the physical effects of heat produced by the operation of a material fluid *sui generis*, or is heat merely an affection of matter, consisting in internal vibrations and collisions of its particles, or in some other mode of corpuscular action of which we are ignorant;—and is there consequently no such thing as caloric?

Zeno, it appears, conceived that heat was material. We have a curious dissertation on this subject in Cicero's book, "De Naturâ Deorum," consisting of a dialogue between an epicurean, a platonian, and a stoic, respecting the Supreme Power, which the latter supposes to reside principally in the sun; and it is remarkable that the author has made him speak of the materiality and nature of heat very nearly as we do at the present day. "That heat is combined with water," he says, "its liquefaction itself sufficiently proves, nor can it either freeze or congeal into snow or hoar-frost without suffering that heat to escape." * * * * "Even the air, however cold it may be, is by no means devoid of heat; indeed it is combined with a great deal of heat;" and more to this effect.

This indeed appears to have been the most general notion respecting this part of the subject till about the time of Lord Chancellor Bacon, who in his treatise "De Formâ Calidi" considers heat as the effect of an intestine motion or mutual collision of the particles of the body heated; an expansive undulatory motion in the minute particles of the body, by which they tend with some rapidity towards the circumference, and at the same time incline a little upwards;" which idea was also with some modification adopted by Descartes, Newton, Boyle, and the other mechanical philosophers of that and the succeeding age. The chemists, however, whose opinions, at least, possess that degree of authority which arises from their being most used to the observation of the effects of this agent, seem to have still retained a strong notion of the materiality of heat, which, in consequence of our improvement in chemical science, again became general, and continued so till the experiments of Count Rumford, which appeared to shew that it was imponderable and capable of being produced ad infinitum, from a finite quantity of matter, again threw some doubt on this question.

It is known that when water freezes, a portion of heat is given out by it during the congelation, which is so considerable, that if we were to conceive it to be transmitted to and imbibed by an equal quantity of water at the temperature of 32° of Fahrenheit's thermometer, the latter would be heated no less than 140°, or to 172°. If, therefore, heat were a ponderable substance, it might be imagined that a given quantity of water would become lighter when frozen in a vessel hermetically sealed. Count Rumford accordingly made this experiment with great care by the help of a balance of extreme accuracy; but the result was, that the ice produced appeared to be of precisely the same weight as the water had originally been of at the temperature of 61°, viz. 4214.28 grains; from which he infers, that all attempts to discover any effect of heat on the apparent weights of bodies will be fruitless.

The other deduction, of the possibility of producing an inexhaustible supply of heat from a given quantity of matter, was made from the following experiment. The Count caused a cylinder of brass to be turned $7\frac{3}{4}$ inches in diameter, and 9.8 inches long, which was bored like a cannon with a calibre 3.7 inches in diameter, and 7.2 deep, so that the bottom was 2.6 inches in thickness. The hollow cylinder

contained 385 $\frac{3}{4}$ cubic inches of brass, and weighed 113.13 lbs. avoirdupoise. By means of the engine used for boring cannon in the arsenal of Munich, a blunt borer or flat-piece of hardened steel, 4 inches long, 0.63 inch thick and $3\frac{1}{2}$ inches wide, was kept with one of its extremities, whose area was about 2 $\frac{1}{2}$ square inches, pressed against the bottom of this hollow cylinder on the inside with a force of about 10000 lbs. avoirdupoise, whilst the latter was turned about its axis with a velocity of 32 revolutions in a minute. The cylinder was in one experiment covered on the outside with a coating of thick flannel to prevent the access of heat from the atmosphere; in another the borer was made to work through a collar of leathers so as to prevent the access of air also to the interior of the bore; in a third, the whole cylinder was immersed in water, the borer still working through a collar of leathers so as to prevent its access to the interior of the bore; in a fourth, the collar of leathers was removed, and the water had access to the bottom of the interior of the cylinder where the friction took place. The result was, that in all these cases heat was generated by the friction in sufficient quantity to cause about 26 $\frac{1}{2}$ lbs. of ice-cold water to boil in two hours and a half, or at about the same rate as that at which it would have been produced by 9 large wax candles; the capacity of the brass for heat, or its power of producing it by friction, did not appear to be diminished, and it seemed as if this generation of heat would have gone on for ever if the friction had been continued: the source was inexhaustible. Now, as any thing which an insulated body or system of bodies can continue to supply without limitation cannot possibly be a material substance, the Count's inference is, that heat is not of this description, but that it must be an effect arising from some species of corpuscular action amongst the constituent particles of the body.

We will confess, however, that we conceive neither of these experiments nor any other with which we are at present acquainted to be conclusive in favour of the immateriality of caloric. Omitting the question, whether gravitation is essential to matter, we may observe that there may be an indefinite series of material substances, each a million of times rarer than the preceding, of which, though the weight of the heaviest be imperceptible by our nicest balances, the lightest may still be ponderable. Any instruments which we at present possess would scarcely enable us to detect the weight of a fluid which was only a thousand times lighter than atmospheric air.

The other experiment affords an argument against the materiality of this principle, to which it is perhaps somewhat more difficult to give a distinct and decisive answer; and yet, notwithstanding the precautions which were taken, it is by no means demonstrative, that the heat which was evolved was not derived ab extero, for there is no absurdity in supposing, that a body may be receiving caloric in one state or at one part of it, and giving it out in another. We have an instance of the simultaneous attraction and emission of a subtle fluid, the materiality of which is admitted by every one, in the case of an excited electric, which at the same time receives the fluid from the rubber, and communicates it to the conductor. In Count Rumford's experiment we must recollect, that the whole apparatus was immersed in a great bath of caloric, the atmosphere.

With regard to this part of our subject, we ought also not to omit, that in another experiment of the same author, heat was found to be communicated through a Torricellian vacuum. Now it is manifest, that in such a vacuum there could be nothing to communicate or propagate motion. Heat therefore must be material: the conclusion is almost physically certain.

Without further insisting, however, that we can conclusively demonstrate the existence of caloric, it at least appears upon the whole, that, in the present state of our knowledge, we ought rather to consider it as a material substance, because of the two theories, that which supposes it to be so is infinitely the most intelligible, the most agreeable to the analogy of nature, and the least exceptionable; and we shall accordingly regard it as an elastic fluid *sui generis*, capable of pervading with various degrees of facility, all the solid bodies with which we are acquainted, and of being imbibed and retained by them in different proportions according to their respective degrees of specific attraction or capacity for it. See CAPACITY.

It will easily be conceived that from the elasticity and power of pervading other substances, which we have attributed to this fluid, it must necessarily follow, that whenever a body is by any means charged with a larger quantity of it than is proportional to its mass and capacity, when compared with those of other bodies in its vicinity, the surplus will be communicated to those other bodies, until the density of the fluid in every body in the system becomes equal; in like manner as a quantity of air thrown into one of a number of vessels communicating with each other will pass from it to the others, until it becomes distributed amongst the whole of them in proportion to their respective capacities, or till it becomes of equal density in all of them. This state of density or compression of the caloric, contained in a body, constitutes what is called its *temperature*; see this article.

The celerity and facility with which this fluid pervades different substances are however extremely various, as may be shown by the following experiment. Take a small cylindrical earthen or wooden vessel, between three and four inches in diameter, and insert into it, through holes drilled in its bottom for that purpose, several wires, about an eighth of an inch in diameter, and six or seven inches long, of equal size in every respect, but of different metals, as gold, silver, copper, iron, brass, and zinc; and also two small rods, one of glass and the other of wood, of equal dimensions with the wires, so that they may each of them project about half an inch on the inside of the vessel, the rest of them being on the outside, and forming a kind of stand for it. Dip a portion of the inferior extremities of these wires and rods into melted wax, so that they may become equally coated with it. When the wax has cooled, fill the vessel with a heated fluid, as boiling water or melted lead, and observe the intervals between the time of filling it and the melting of the wax, which intervals will indicate the relative conducting power of the substances. Dr. Ingenhousz tried this experiment, though in a somewhat different manner, with wires of silver, copper, gold, tin, iron, steel, and lead, whose conducting powers he conceived to be in the order in which we have enumerated them, though he found some differences in the results, except with regard to the silver and lead, of which the former always appeared to be the best, and the latter the worst conductor. In the experiment which we have described it will be found, that the conducting powers of glass and wood are almost infinitely smaller than those of any of the metals which are the best conductors known. Fluids of every kind are almost perfect non-conductors; and light spongy substances, or such as contain fluids in their interstices, conduct heat with great slowness and difficulty.

This difference in the conducting powers of various substances is the source of many practical conveniences and inconveniences. The cellular texture of organized substances enables them to withstand the effects of change of temperature in the atmosphere, by resisting the passage of this fluid, and the wooden handle of a tea-pot, and the cloth made use

of for handling hot irons, are familiar examples of the economical application of this property. An iron door to a furnace will be red hot before the furnace itself, if of any earthly composition, is heated in any considerable degree. Large iron bars or cylinders are made to pass from the fire for the purpose of communicating heat to those ovens which are constructed at the side of kitchen-ranges, and a poker put into a low fire improves it by promoting a similar communication amongst the different portions of the fuel through which it passes.

We will, in the next place, consider very shortly the effects arising from the condensation or rarefaction of this fluid in bodies. By the former their temperature is elevated, or they are heated; by the latter it is depressed, or they become cooled.

In our investigation of the most universal operations of nature we generally find that the more immediate instruments employed for the production of the effects which we perceive are two counteracting powers, by whose co-operation and mutual counterpoise the necessary equilibrium is preserved, and the purposes of their creation effected with greater regularity than would probably result from the employment of a single agent. Thus, gravity is, as we know, counteracted by inertia, that tendency which all bodies have to continue in a state of rectilinear motion, when once they are thrown into it by the impulse of force. The effects of cohesion, a no less universal principle than gravity, are in like manner restrained and modified by the agency of caloric; and, as without inertia all the celestial bodies would be drawn together into some one part of extended space, so, without heat all the matter in the universe would become a congealed and concrete mass; and fluidity, organization, vegetation, and life could have no existence. Solids become first expanded, and then liquified by its influence, and liquids assume the æriform state. It is essential to the idea of a solid body, that it should in a certain degree resist both compression and dilatation, that is, that its particles should repel each other when brought nearer together, and attract each other when farther separated within certain limits, and it is incontrovertible, that they can only remain in a quiescent state by the equilibrium of these opposite forces. The latter of these constitutes cohesion, and the existence of the former is, perhaps, attributable to the substance of which we are now speaking. Be this as it may, it is at least a fact, that the repulsive energies of these corpuscles are increased, and the sphere of action enlarged by its influence, for the body becomes expanded; that is, this equilibrium no longer takes place, unless its molecule are removed farther from each other than when it was at a lower temperature. Elevate its temperature still farther, and the body fuses; that is, the attractive power of its particles becomes annihilated or wholly counteracted, and they are only kept together like a quantity of shot by the action of gravity, operating independently on each. Increase still the action of heat on the body, and the sphere of repulsion of its particles, or the distance, to which this power operates, again becomes much farther extended, perhaps infinitely so; it is now sufficient to overpower the action of gravity, and the body becomes resolved into an elastic fluid. We know of no substance which is capable of resisting the power of this universal solvent. Gold itself may be expanded into vapour by the action of heat, and as these effects are always producible by the same cause, so is it, at least, probable, that the converse of this is also true; that whenever a substance is formed in a state of fluidity it is attributable solely to this cause, and that the abstraction of the caloric, by which it is held in solution, would again reduce it to a solid. Mercury is, we know, capable of congelation, and the atmosphere itself

would probably become a concrete, if we could deprive it of all or the greater part of its heat. We have therefore arrived at a very distinctive and appropriate definition of caloric; that it is that substance or affection of matter which is the cause of fluidity in all or the greater part of the bodies which we meet with in that state.

Several writers on this subject appear to us to have involved it in no inconsiderable degree of obscurity, by an unwarrantable distinction between *latent* and *free* or *sensible* caloric. There seems to be no such distinction in nature: caloric is always sensible and never latent. The proportion of it in any body is always sufficiently indicated either by its temperature or its state with regard to the counterpoise of those attractive and repulsive powers of which we have been speaking, and no change can take place in that proportion without its occasioning a concomitant change in one or the other of these affections.

We have thus traced the outlines of that part of the doctrine of heat which relates to the existence of this fluid, and which we conceived to belong to the present article; fuller details of the effects of this powerful agent, and the other parts of the theory connected with them, will be found under **HEAT**, and the other articles to which we have already referred.

CALORIMETER. See **HEAT**.

CALOS, in *Geography*, a bay on the W. coast of the peninsula of E. Florida, in which are excellent fishing banks and grounds. At a small distance is a considerable town of the Seminole Indians.

CALOTES, in *Zoology*, a species of **LACERTA**, with a round long tail, and the fore part of the back, and hinder part of the head dentated. Gmelin. This is the iguana calotes of Laur. Amph. Its body is ceruleous, with acute scales beneath, and lanceolated spines on the back. Found in Asia, particularly in the island of Ceylon.

CALOTO, in *Geography*, a town and department belonging to the jurisdiction of Popayan in South America. The extent of this department is considerable; it is also rich, and abounds in the products of the earth; the soil being fertile, and the country every where interspersed with farms. But of all the parts in this jurisdiction, it is the most subject to tempests of thunder and lightning. This has brought into vogue "Caloto bells," which are used under a persuasion that they have a special virtue against lightning; and of which we have the following account. The town of Caloto, the territory of which contains a great number of Indians, of a nation called "Paezes," was formerly very large; but these Indians, suddenly assailing it, forced their way into it, set fire to the houses, and massacred the inhabitants. Among the slain, was the priest of the parish, who was the particular object of their rage, because he exposed the folly and wickedness of their idolatry, and the turpitude of their vices; nor did the bell of the church escape their rancour, as by its sound it reminded them of the hours for receiving religious instruction. After many fruitless endeavours to break it, they determined to bury it under ground, that they might not any more be reminded of their duty, and abridged of their liberty. On the news of their revolt, the Spaniards, in the neighbourhood of Caloto, took arms, and having avenged themselves of the insurgents in a battle, they rebuilt the town, and having taken up the bell, placed it in the steeple of the new church; since which event, the inhabitants, to their great astonishment and joy, observed, that when a tempest appeared to be blowing in the air, the tolling of the bell dispersed it. The news of this imagined miracle induced many persons to solicit pieces of it to make clappers for little bells, in order to enjoy the benefit of its virtue, which, in a country peculiarly subject to tempests

was deemed highly advantageous. To this circumstance Caloto owes its reputation for bells. Adams's Voyage to South America by Juan and Ulloa, vol. i. p. 342.

CALOTTE, a cap, or coif of hair, fatten, or other stuff; used first for necessity, but now become an ecclesiastical ornament in France.

It was first worn by cardinal Richlieu: the red calotte is a badge of a cardinal.

CALOTTE, in *Architecture*, a round cavity, or depresso, in form of a cup, or cap, lathed and plastered, used to diminish the rise, or elevation of a chapel, cabinet, alcove, &c. which, without such an expedient, would be too high for other parts of the pile.

CALOUDE, in *Geography*, a town of Hindoostan, in the soubah of Dowlatabad; four miles W. of Carballa, and 210 N.W. of Hydrabad.

CALOVIVS, **ABRAHAM**, in *Biography*, a Lutheran divine, was born in 1612, at Morungen, in the duchy of Brunswick, and became doctor in theology at Rostock, in 1637, and theological professor in that university. In 1643, he was made rector of the college at Dantzick: and in 1650, professor of theology at Wittenberg. He was the most rigid divine of his party, and distinguished himself on a variety of occasions by his disputes with the reformed ministers, and particularly with Calixtus, of whom an account is given under the article **CALIXTINS**. Such was the part he took in this controversy, that those who enlisted under his banner were denominated "Calovians." He exercised the office of superintendant-general of the Lutheran churches, and continued his controversial warfare till his death in 1686. His works were numerous; they were chiefly polemical, and are now forgotten. Moreri. Mosheim, E. H. vol. v.

CALP, in *Mineralogy*, a black quarry stone of Dublin, a species of basalt, found in large masses, of a bluish black, or dark-greyish blue colour, variously intersected with veins, of white calcareous spar, and often invested with the same. In the direction of its strata it easily splits into large flags. Sp. gr. from 2.646 to 2.70. It effervesces with mineral acids; and at 130° melts into a black compact glass; contains 50 per cent. mild calx, the remainder being silica, argil, and iron. This mineral seems to be the calcareous trap of Laffus, Hartz. 170. Kirwan's El. of Min. vol. i. p. 233.

CALPAS, in *Ancient Geography*, a river of Asia Minor in Bythynia, at a small distance W. of Sangarius. Strabo and Ptolemy.

CALPAS, or **CALPE**, a sea-port of Asia Minor, in the Euxine sea, between Heraclea, and Byzantium in Bithynia.

CALPE, a mountain of Spain, in that part of Bætica which is now called Andalusia, opposite to that in Africa which bore the name of Abyla, and one of those which were called the "Columns of Hercules." At the foot of this mountain, towards the sea, stands Gibraltar. Calpe is styled by Strabo, a famous ancient Spanish sea-port; whereas, Pliny, Ptolemy, Mela, and others, only call it a mountain: whence the learned Bochart and Casaubon have thought, that the Calpe of Strabo was inserted, by the mistake of some transcriber, for Carteia. But it has been inferred by some learned persons, from an inscription on a medal, with these letters, C. I. CALPE, and "Colonia Julia Calpe," that Strabo's text is correct; and they further allege, that Octavius overtook Cæsar near the city of Calpia, which is the same with Calpe. We may therefore conclude, either that there were several cities situate at the mouth of the strait, on account of its advantageous situation, one of which was called Calpe, or Calpia; or else that the Carteia, which was situate near the promontory of Calpe, had likewise taken that name from it.

CALPE,

CALPE, in *Gra. Antiquity*, a race performed by mares, which constituted. of the Olympic games. This race was instituted in the Olympiad, and, together with the "Apené," abolished in the 84th. In this race, the riders were accustomed, like Anabaze, to leap from the backs of the mares towards the last stage or period of the course; and laying hold of the sides, they finished the race in that manner. *West's Pm.* vol. iii. p. 143.

CALPENTEEN, *Geography*, an island in the Indian sea, near the west coast the island of Ceylon, about 40 miles long and six broad; lat. 8° E. long. $79^{\circ} 50'$.—Also, a town of Ceylon, oppoe to this island. N. lat. $8^{\circ} 15'$ E. long. $79^{\circ} 50'$. *Perce*, in his "Account of the Island of Ceylon," (p. 107.) informs us, that a company or two of Malays is stationed here, and that when he left the island, it was commanded by a Dutch officer, who had entered into the English service, and who received this appointment from governor North. This, he says, is one of the best places on the whole island for game; and between this and Putallom, at a small distance, the coast remarkable for its salt-pans, which are formed by an arm the sea, which overflows part of the country between these two places. The Dutch manufactured on this part of the island a large quantity of salt, which they considered as very important to their interests, and the most formidable weapon which it was in their power to employ against the natives, who could not procure any salt but by their means. See the English took possession of the island, this manufacture has been almost wholly neglected. It is capable, however, of being rendered very profitable, as it is the only one of the kind on this side of the island, and the most conveniently situated for supplying the king of Candy's dominions.

CALPENY, one of the Laccive islands, in the Indian Sea. N. lat. $10^{\circ} 5'$ E. long. $1^{\circ} 29'$.

CALPOLAI PAN, a mountain in New Mexico, which abounds with quarries of jasper and marble of different colours.

CALPRENDE, *GAUTIER DE OSTES*, in *Biography*, a respectable writer of romances, was born in the diocese of Cahors, and educated at Toulouse. In 1632, he entered into the regiment of guards at Paris, obtained a pension from the queen, and became gentleman in ordinary of the king's bed-chamber. The first pieces by which he made himself known as a writer, were composed for the theatre, and his "Mithridates" appeared in 1635. He was, however, chiefly distinguished by his romances, in the composition of which he has the merit of invention. These were his "Cassandra," "Cleopatra," and "Pharamond," each consisting of 10 or 12 large volumes in 8vo., which by their novelty, and the variety of adventures contained in them, attracted attention for some time, but gradually sunk by their prolixity into oblivion. He also wrote tragedies, the best of which is his "Earl of Essex," from which Boyer copied some scenes in his tragedy of the same title. His character was respectable, and he was employed in some foreign negotiations. His death was occasioned by an accident in August 1663. *Nouv. Dict. Hist.*

CALPURNIAN Law, in *Roman Antiquity*, a law proposed by L. Calpurnius Piso, tribune of the people, in the beginning of the third Punic war, during the consulship of L. Marcius Censorinus, and M. Manilius, A. U. 604; and wisely designed to restrain the avarice and injustice of the Roman magistrates, by which the states, whom the governors of provinces had oppressed and plundered, were authorized to apply to the judges for a restitution of what had been unjustly taken from them; hence called "de pecuniis repetundis." In consequence of this law, the tribune Calpurnius

probably acquired the honourable surname of "Frugi," or honest man.

CALFURNIANA, in *Ancient Geography*, a town of Spain, placed by Ptolemy in Bœtica, in the territory of the Turduli, and mentioned in the Itinerary of Antonine.

CALPURNIUS, or **CALPHURNIUS**, **TITUS**, in *Biography*, a Latin Sicilian poet, who lived about the latter part of the third century, under the emperors Carus, Carinus, and Numerianus. Seven of his eclogues are extant; the first of which was composed on the accession of the emperor Carus, in which we may peruse, with pleasure and contempt, the effusions of congratulation and flattery. Two shepherds, avoiding the noon-tide heat, retire into the cave of Faunus. On a spreading beech they discover some recent characters. The rural deity had described, in prophetic verses, the felicity promised to the empire, under the reign of so great a prince. Faunus hails the approach of that hero, who, receiving on his shoulders the sinking weight of the Roman world, shall extinguish war and faction, and once again restore the innocence and security of the golden age. The design of this eclogue is preferred by Fontenelle to that of Virgil's Pollio. But notwithstanding some agreeable description of rural objects, which marks these eclogues, they manifest the declining taste of the age by a want of purity in the style, and of nature in the sentiments. Editions of them have been given by Barthius, Hanov. 8vo. 1613; in the "Poetæ Rei Venat." Leyd. 1728, 4to.; and in the "Poetæ Latini minores," Leyd. 1731, 4to. Voss. Poet. Lat. Nouv. Dict. Hist. Gibbon's Hist. vol. ii. p. 93.

CALPI, in *Geography*, a town of Hindoostan, in the country of Agra, seated on the south bank of the Jumnah river; 98 miles S. W. from Lucknow; 115 N. W. from Allahabad; 160 S. E. of Agra; 239 miles N. W. of Benares; 277 S. E. from Delhi; 821 N. E. of Bombay; 804 N. W. from Calcutta by Moorshedabad; 715 nearly N. from Hydrabad. N. lat. $26^{\circ} 7' 15''$ E. long. $80^{\circ} 4'$.

CALQUING, or **CALKING**, a term in *Painting*, &c. used where the backside of any design is covered with black-lead, or red chalk; and the strokes or lines traced through on a wax plate, wall, or other matter: by passing lightly over each stroke of the design with a point, which leaves an impression of the colour on the plate or wall. This method of *off-tracing* may likewise be performed by pricking the original print, or drawing, and transmitting coloured powder through the punctured holes, in order to mark the outlines of a new ground; or, by dissolving part of the printing ink by means of soap, and impressing it in that state on a fresh ground. See **DESIGNING**.

CALTAGE' RONE, in *Geography*, See **CALATAGI' RONE**.

CALTARO, a town of Dalmatia, in the republic of Ragusa; 24 miles N. of Ragusa.

CALTHA, in *Botany*, (supposed to be derived from *καλαθος*, a basket, alluding to the shape of the flower). Linn. gen. 703. Schreb. 957. Willd. 1090. Gært. 691. Juss. 234. (Populago, Tourn.) Class and order *polyandria, polygynia*, Nat. ord. *Multisiliquæ*, Linn. *Ranunculaceæ*, Juss.

Gen. Ch. *Cal.* none. *Corol.* Petals five or more, egg-shaped, flat, spreading, deciduous. *Stam.* Filaments numerous, thread-shaped, shorter than the corolla; anthers erect, obtuse, compressed. *Pist.* germs superior, from four to fifteen or sixteen, erect, oblong, compressed; style none, stigmas simple. *Peric.* Capsules short, acuminate, spreading, opening at the upper or inner suture. *Seeds* numerous, oblong, egg-shaped, smooth, affixed to the upper suture in a double row.

Ess. Char. *Calyx* none. *Petals* five or more. *Nectaries* none. *Capsules* several, many-seeded.

Sp. 1. *C. palustris*, Linn. Sp. Curt. Flor. Lond. fasc. 1. Tab. 40. Eng. Bot. 505. Flor. Dan. 668. Gært. Tab. 118. Lam. Ill. Pl. 500. Marsh marigold, or meadow-bowls; in Yorkshire, water-blobs. "Stem, erect; flowers yellow, large." Poir. in Encyc. Root perennial, fibrous. Stem a foot and a half high, hollow, a little branched, leafy, roundish, furrowed. Leaves between heart and kidney-shaped, acutely scolloped, veined, smooth, of a deep shining green; root-leaves on long, hollow, semi-cylindrical petioles, sometimes entire; the others alternate, and nearly sessile. Stipules brown, membranous, withering. Flowers in all their parts of a golden hue, axillary, solitary, on simple peduncles; the inner row of filaments with broad anthers; the outer twice as long, club-shaped with compressed anthers. The young buds are pickled as a substitute for capers, which they greatly resemble in form, and according to Dr. Smith, perhaps equal in merit; for both are acrid and only rendered eatable by the acid pickle. The true caper buds are easily distinguished by their simple germ. There is a double variety frequent in gardens; but the flower in its single form is larger, and, as Dr. Smith justly observes, to the admirer of genuine nature, much more beautiful. Its only advantage is that it is more durable. The juice of the petals, boiled with alum, stains paper yellow. A native of England and of all the northern parts of Europe, Asia, and America. 2. *C. natans*, Willd. Poir. in Encyc. vol. v. p. 568. Gmel. Sibir. 4. p. 192. Tab. 82. "Stem procumbent, floating; flowers smaller, white, red at the edge." Poir. It agrees in general habit with the preceding species, but is less in all its parts. Capsules triangular. Perennial. Found by Gmelin and Pallas in Siberia.

CALTHA alpina, Tabern. ic. 336. See *ARNICA montana*.

CALTHA, Burm. Zeyl. Tab. 22. fig. 1. See *VERBESINA calendacea*.

CALTHA officinalis, Scop.; *arvensis*, C. Bauh.; *minima*, J. Baugh. See *CALENDULA arvensis*.

CALTHA vulgaris, C. Bauh. See *CALENDULA officinalis*.

CALTHA maritima, Tourn. iust. 499. See *CALENDULA incana*.

CALTHA africana, *flore extus ferruginea*, Moris. hist. 3. Tab. 3. fig. 8. See *CALENDULA pluvialis*.

CALTHA femine majore oblonga, Breyer. Tab. 14. fig. 2. See *CALENDULA hybrida*.

CALTHA femine plano cordato, Boerhav. Lugd. See *CALENDULA nudicaulis*.

CALTHA foliis croci angustis, Boerhav. Lugd. See *CALENDULA graminifolia*.

CALTHÆ, in Entomology, the species of *CHERMES* that feeds on the flowers of the *caltha palustris*, whence its name. Linn. Fn. Succ.

Obs. The antennæ are black at the tip; thorax rufous with three black curves; wings white with yellowish veins, and a brown dot.

CALTHELLA, a species of *PHALÆNA*, in the *Tinea* family, the anterior wings of which are entirely golden; and the head ferruginous. Linn. Fn. Succ. Frequent in Europe, on the flowers of *caltha palustris*. Its size is small. This is *tinea rufo-metallica* of the Vienna catalogue.

CALTIORISSA, in Ancient Geography, a town of Asia, in Lesser Armenia, according to Ptolemy, marked in the Itinerary of Antonine on the route between Nicopolis and Satala.

CALTROP, or *CALTHROP*, in Military Language, an instrument with four iron points, each three or four inches long, disposed triangular-wise; so that there are always three points bearing on the earth, the fourth being in the air. Several of these, fixed in the ground, or thrown into breaches

where the cavalry is to pass, stick into the horses' feet and embarrass them.

An instrument of this kind with three iron spikes is used in Siberia, &c. in hunting the wolf.

CALTROPS, in Botany. See *TRIBULUS*.

CALTROPS, water. See *TRAPA*.

CALTURA, in Geography, a fortress of the island of Ceylon, at the mouth of a river, which is one of the largest branches of the *Maliwaddy*, and is here about a mile broad. It washes two sides of the fort which commands it, and is navigable by boats to the sea. The eminence on which the fort stands overhangs the river, and commands an extensive and most picturesque prospect. This fort from its situation is capable of being rendered a very strong post. The commanding officer presides in the court of justice, and determines all disputes among the peasants. The sea, the esplanade, and the village on the outside of the fort, as well as the beautiful surrounding country, render *Caltura* a very delightful scene. Some tracts of cinnamon are scattered up and down in the vicinity of it; and a little way south of it is the termination of that fertile district of *Columbo* which contains so great a proportion of the wealth of Ceylon. About ten miles from *Caltura* is a temple of "Bud-dou," built on a flat space, cut out of a small hill. It is a small square building, constructed of brick, with a sloping tiled roof, and a gallery surrounding it. In an apartment of this temple, the image of the Deity, about 12 feet long, lay reclining on his side, with his right hand under his head: the place was illuminated with lamps, and flowers in abundance were spread around. The walls were daubed with streaks of red, black, and white paint; and on them were marked some Chinese characters. Near the temple were a few huts for the priests. The country about *Caltura* abounds with game, and certain native manufactures are carried on to a considerable extent around it. A great quantity of arrack is made from the groves of cocoa-trees, which extend several miles in every direction, forming from *Columbo* to *Caltura*, and several miles beyond it, one continued grove. Here is also a large plantation of sugar-canes, and a distillery of rum is carried on by some Dutchmen who reside in the village and neighbourhood; but this rum is much inferior in quality to that of the West Indies. Six miles onward from *Caltura* lies "Barbareen," a small village, with a sort of harbour formed by a projection of land where the river runs into the sea. This is almost the only place where the high surf and rocky shore on this coast allow ship-boats of European construction to land. At *Barbareen* there is a considerable manufactory of cordage and cables from the cocoa-tree. Large quantities are sent from hence to *Columbo* and *Point de Galle*, to supply the vessels, which trade to these ports. A few miles further lies "Bentot," only remarkable for producing the best cysters on the island, and almost the only species used on the island as food. *Caltura* is distant about 28 miles from *Columbo*. N. lat. 6° 34'. E. long. 79° 50'. Percival's Ceylon. See *COLUMBO* and *POINT DE GALLE*.

CALVA SERPENTIS DIADEMA, in Testaceology, one of the synonyms of *CHITON PUNCTATUS*, Eph. Nat. Cur. 8æ. See *PUNCTATUS*.

CALVADOS, in Geography, a ridge of rocks, near the coast of France, 12 miles in length. N. lat. 49° 22'. W. long. 0° 51' to 0° 32'.

CALVADOS, one of the five departments so called from the long ridge of rocks above-mentioned, formed of Normandy and the north part of *Perche*. It is bounded on the north by the Channel; on the east by the department of *Eure*;

the south by that of Orne, and part of the department of the Channel, which also bounds it on the west. It extends from the mouth of the Seine easterly, to the river Eure westerly, about 50 miles, and 30 miles from north to south: its superficies is about 1,117,643 square acres, or 1,042,7 hectares: its population consists of about 484,212 persons; and it is divided into six communal districts. Its capital is Caen.

CALVARIA, or **CALVA**, the scalp, or upper part of the head: so called from its growing bald first. See **BALDNESS**.

The external parts of the calva are the *frontiput*, *occiput*, *vertex*, and temples; all invested with the hair, and the common integuments of the body.

The calvaria in adults consists of eight bones, one of the forehead, another of the *occiput*, two of the *frontiput*, two of the temples, and two others common also to the upper jaw, viz. the *cuneiforme* and *spongiosum*.

CALVART, **DENIS**, in *Biography*, a painter of history and landscape, was born at Antwerp in 1555. He began with painting landscapes; but as he wished to adorn them with human figures; he determined to seek improvement for this purpose in Italy. In his way to Rome he stopped at Bologna, where he became the disciple of Prospero

Fontana. During his residence in this city, he applied with diligence to the study of his art, and copied the works of Correggio and Parmigiano. He then accompanied Lorenzo Sabattani to Rome; and perfected himself in design, perspective, architecture and anatomy. From Rome he returned to Bologna, where he opened an academy, which was much frequented, and which produced, besides a number of other excellent artists, Guido, Albano, and Domenichino. He lived with his pupils on terms of easy familiarity, and took great pains in improving them; though his character was degraded by passion and avarice. His own works were simple in their design, correctly drawn, well disposed, coloured in a grand style, and touched with freedom and elegance; but they are not altogether free from a Gothic air, which he brought from his own country. His principal performances are at Rome and Bologna; in the latter place there is a fine picture, representing two hermits, which is correctly designed, beautifully coloured, and delicately pencilled; and in the Pembroke collection at Wilton, there is a nativity painted by this master. Some of his works have been engraved. Calvart died at Bologna in 1619. D'Argenville. Pilkington.

E N D . O F V O L . V .

LIST OF PLATES, VOL. V. PART II.

- AGRICULTURE*, Plate VI.
ARCHITECTURE, Plate IX.
_____, Plate X.
_____, Plate XXXVIII.
_____, Plate XLIII.
_____, Plate LXIII.
_____, Plate LXXIII.
_____, Plate LXXV.
_____, Plate LXXVIII.
BARK BEDS AND PITS, Plate I.
CHEMISTRY, Plate IX.
_____, Plate XX.
INDIAN MUSICAL INSTRUMENTS, Plate I.
ORNITHOLOGY, Plate III.
_____, Plate IV.

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